

**WHY BREASTFEED? APPLYING THE REASONS MODEL  
TO INFANT FEEDING DECISIONS**

by

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## Abstract

### Why breastfeed? Applying the reasons model to infant feeding decisions

Breastfeeding an infant for a minimum of six months is an important health promotion activity, yet many women do not breastfeed for the recommended length of time. This study used the reasons model to understand how women make their decisions about breastfeeding initiation and duration. The reasons model, developed by Meichenbaum and Fong (1993), suggests that there are three levels of reasons for and against adherence to health-related advice: evidence-based (Level I) reasons; self-consequential (Level II) reasons; and affective, schema-related (Level III) reasons. The model suggests that reasons at all three levels will be predictive of health behavioral decisions, but that Level III reasons may be particularly important.

This study tested the ability of the reasons model to predict the breastfeeding decisions of 317 pregnant women. The reasons that women gave for and against breastfeeding and numerous other factors were assessed before they gave birth to their babies. All women who breastfed were followed after the birth of their babies to assess their breastfeeding experiences and their ongoing pro and con breastfeeding reasons. The study also assessed the breastfeeding beliefs of 213 male partners of study participants before the birth of their babies. Women who breastfed their babies were followed in the first and second month postpartum, and at 4 months, 6 months, 9 months, and 12 months after birth, as long as they continued to breastfeed.

The reasons model was predictive of prenatal intentions to breastfeed, and postpartum intentions to continue breastfeeding. Level III reasons were predictors of Level I and II reasons, which predicted breastfeeding intentions. Level III reasons were also independent predictors of prenatal breastfeeding intentions and intentions to continue breastfeeding over the first few months postpartum. Level I and II reasons, particularly Level II con breastfeeding reasons, were



the strongest independent predictors of postpartum intentions to breastfeed for more than 4 months. Intentions to breastfeed were consistently significant predictors of actual breastfeeding behaviour.

The reasons model was also predictive of male partners' prescriptive beliefs about breastfeeding duration from 4 months on. The prescriptive beliefs of male partners were significantly related to participants' breastfeeding reasons but predicted participants' breastfeeding intentions over and above participants' breastfeeding reasons.

The relationship of additional variables such as happiness, stress, and education to prenatal breastfeeding intentions was partially mediated by the reasons model. In addition to the relationship that education had to pregnant women's breastfeeding reasons, education was an independent predictor of breastfeeding intentions and behavior.

The reasons model was also tested against the theory of reasoned action (TRA) (Fishbein & Ajzen, 1975) and the theory of planned behavior (TPB) (Ajzen, 1991). Although both TRA and TPB predicted prenatal breastfeeding intentions, the reasons model added to the prediction of intentions, over and above TRA and TPB.

This study underscores the importance of individuals' own value-relevant, affective, schema-related reasons as well as evidence-based and self-consequential reasons as predictors of their intentions and subsequent behaviour. It suggests that the reasons model may a useful and powerful model for predicting and understanding behavior across a variety of health domains.

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## **Dedication**

**I dedicate this thesis to my dear sons, Steven and Philip. You are my delight. I hope that watching me complete this degree will inspire you to pursue and accomplish the dreams you have for your own lives.**

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## CHAPTER I

### Introduction

#### Breastfeeding: A Recommended Health Promotion Behaviour

Breastmilk is considered to be the optimal food for infants. Not only does it meet the nutritional needs of virtually all infants (Lawrence, 1994), but its immunological components provide a degree of protection from common diseases such as gastrointestinal illnesses, lower respiratory tract infection, bacteremia and meningitis, otitis media, Sudden Infant Death Syndrome, and allergies (Bauchner, Leventhal, & Shapiro, 1986, van den Bogaard, van den Hoogen, Huygen, & van Weel, 1991; Cunningham, Jelliffe, & Jelliffe, 1991). Breastfeeding also seems to reduce mothers' risk of breast cancer (Layde et al., 1989; Siskind, Schofield, Rice, & Bain, 1989). These health benefits are the reasons that promoting breastfeeding is an important public health activity. Indeed, on the basis of such evidence, organizations such as the Canadian Pediatric Society have taken strong stands recommending that all infants be breastfed for the first six to nine months of life (Canadian Pediatric Society Nutrition Committee, 1979). Taking an even stronger position, the World Health Organization (1990) has suggested that all infants should be fed exclusively on breast milk from 4 to 6 months of age and continue to be breastfed for up to 2 years and beyond.

The prevalence of breastfeeding in North America has partially mirrored these changes in breastfeeding recommendations, with steady increases in the rates of breastfeeding initiation in Canada and the United States between 1963 and 1982. At the end of that period, 75% of Canadian women fed their newborns at the breast while in hospital, in comparison to 38% in 1962 (McNally, Hendricks, & Horowitz, 1985). These initiation rates have been encouraging, but the rates of breastfeeding maintenance have been less so. In

1982, although most Canadian mothers began by breastfeeding their newborns, only 44 % were still breastfeeding when the infant was 4 months of age (McNally et al., 1985). A 1991 survey of breastfeeding prevalence in Waterloo Region found that 85 % of women initiated breastfeeding in hospital, but only 52 % were still breastfeeding by the age of 4 months (Verhoeve, Bell, & Lee Han, 1992). Those promoting breastfeeding have been further disappointed by data from the United States that showed a decline in both rates of breastfeeding initiation and breastfeeding at 6 months during the period from 1984 to 1989 (Ryan, Rush, Krieger, & Lewandowski, 1991). Breastfeeding rates were lowest among women who were black, had no more than high school education, received social assistance, were young, worked outside the home, and/or had a low birthweight infant (Ryan et al., 1991). These findings correspond to other research documenting the relationships between breastfeeding and maternal education, age, socioeconomic status, and ethnicity (see Agnew, 1994, for a review).

Thus, there are two significant problems in the area of breastfeeding promotion. First, although there are many women who breastfeed their newborn infants, a substantial proportion quit at some point prior to the recommended age. Second, the tendency for women to quit breastfeeding earlier is more pronounced among young and socio-economically disadvantaged women.

Why do women quit breastfeeding earlier than health professionals recommend? Although it is known that these demographic variables are generally predictive of breastfeeding outcomes, it is not sufficient to say that women do not breastfeed because they are young, poor, or uneducated. These demographic correlates may help identify high-risk groups to target for breastfeeding interventions, but it does not really explain why these

women are at higher risk, nor does it suggest how to intervene. Certainly, mothers' age, education, and ethnicity cannot be altered, and a significant increase in income is not really feasible, even if it would result in longer breastfeeding duration. Rather, effective interventions must target variables that are malleable and that have been demonstrated to predict breastfeeding outcomes. Thus, it is important to have a thorough knowledge of why women breastfeed and why they stop.

How do women make their decisions about breastfeeding? I suggest that women's breastfeeding decisions are determined by a combination of important psychosocial factors that include both cognitive and experiential aspects. Women have different levels of knowledge about breastfeeding that comes from a variety of sources. They have likely heard that breastfeeding is the optimal infant feeding choice. They may or may not have seen other women breastfeeding. They may have seen or heard the reactions of significant others to breastfeeding. Women may have information about the potential ease or difficulty of breastfeeding. They also know something about the way their own values, personal traits, and tendencies could make it easier or more difficult for them to breastfeed. In addition, if they do breastfeed, mothers' own experiences will inform their breastfeeding decisions. These and other psychosocial factors combine to determine women's decisions about whether or not they will breastfeed and, if they do breastfeed, how long they will continue. In order to develop effective interventions to increase breastfeeding initiation and duration, it is important to understand how these psychosocial factors predict women's breastfeeding intentions and behaviour.

How can we effectively enhance our understanding of the ways in which women make their decisions about breastfeeding initiation and duration? A valuable first step



would be to develop a psychosocial model that could be shown to be empirically valid and predictive of breastfeeding intentions and behaviour. Such a model need not be specific to the domain of breastfeeding. Several models exist to explain why people do not adhere to recommended health advice, more generally. The model that I have chosen to employ to examine the predictors of breastfeeding decision making is the reasons model. This model, developed by Meichenbaum and Fong (1993), suggests that an important strategy for understanding people's non-adherence to health related recommendations is to examine the reasons they give for their behavioural choices. The reasons model was developed to provide a psychological framework for the different kinds of reasons that people give to explain their behaviour.

### The Reasons Model

#### Overview

The reasons model focuses on the reasons that people offer for their own health-related behaviour—their own explanations, justifications, and, more generally, the ways in which people come to understand their own behaviour. This model provides a framework for organizing the "constructive narratives" that people use to create attributions for their behaviour. It recognizes the importance of the notion that people are able to think about their behaviour and provide explanations for their actions. These narratives may be used to explain past behaviour as well as future behavioural decisions. Thus far, this constructive-narrative approach to the understanding of adherence has been applied in the domains of smoking (Farrow, 1992; Fong & Meichenbaum, 1995), exercise behaviour (Fong & Meichenbaum, 1995), and safer sex (L. Rempel & Fong, 1995, 1999).

The reasons model focuses on the reasons that people give for failing to engage in a health behaviour or for discontinuing a health behaviour. As applied to breastfeeding, research has identified reasons that mothers give for discontinuing breastfeeding. For example, once breastfeeding has been initiated, a mother may encounter problems over which she does not have complete control, and these problems might become reasons for discontinuation. Common breastfeeding problems include breast or nipple soreness, poor infant suck, or frequent feedings (Beaudry & Aucoin-Larade, 1989; Martin, 1978; West, 1980). Research also indicates that women who have less confidence in their ability to breastfeed are less likely to continue breastfeeding during the first two months, the period during which most problems are likely to occur (Buxton et al., 1991; Ferris, McCabe, Allen, & Pelto, 1987; Loughlin, Clapp-Channing, Gehlbach, Pollard, & McCutchen; 1985).

#### Organizing Breastfeeding Reasons Using the Reasons Model

The reasons model can also be used to conceptually organize the reasons that people give for choosing to engage in given health behaviour. Research has identified a number of reasons that women might give for engaging in breastfeeding. For example, women who hold more emotionally positive attitudes toward breastfeeding and who believe that breastfeeding is better for babies are more likely to breastfeed (Dusdieker, Booth, Seals, & Ekwo, 1985; Joffe & Radius, 1987; Jones, 1987; Martin, 1978; Yeung, Pennell, Leung, & Hall, 1981). A pregnant woman's perception of the attitudes and support of significant others such as her partner, mother, or close female friends regarding breastfeeding is also related to her intentions to breastfeed (Baranowski et al., 1983; Bryant, 1982; Dusdieker et al., 1985; Joffe & Radius, 1987; Jones, 1987; Martin, 1978; Yeung et al., 1981).

**Level I Reasons.** According to the reasons model, all of the reasons that women might give for or against breastfeeding can be classified into three categories, or levels. Level I reasons are evidence-based reasons, that is, those reasons that bear on the evidence for and against breastfeeding. These reasons are based on the general consequences that could be expected to result from breastfeeding.

For example, a breastfeeding mother may continue to breastfeed because she believes that breastfed babies are generally healthier than formula-fed babies. Although she may recognize that this does not mean that her own baby will always be healthy, she bases her decision, in part, on the general rationale that breastfed babies are healthier. Level I reasons may also include recommendations from authorities based on accepted scientific evidence. Thus, a woman may breastfeed because health professionals recommend breastfeeding as the best nourishment for her infant. On the other hand, scientific evidence may be interpreted by others in a way that supports non-adherence to a recommended behaviour. For example, an individual who does not intend to breastfeed for at least six months may reason that there is no evidence that breastmilk is necessary for babies after that age. A woman who is considering discontinuation in the first week may reason that all the antibodies are in the colostrum, so, after the first week, formula is just as good as breastmilk. Whether or not the evidence is true, when forming Level I reasons, people cite evidence that supports the behaviour that they are choosing.

**Level II Reasons.** Level II reasons are self-consequential reasons, that is, those reasons that relate to the more specific consequences that the breastfeeding choice will have on the individual making the decision. They include the costs and benefits that the behaviour will present for the person, such as convenience, physical comfort, and the maintenance and

enhancement of social relationships. Level II reasons are similar to attitudes that fulfill the utilitarian function proposed by Katz (1960), in that they deal with the rewards and punishments that the behaviour can engender from the environment (Maio & Olson, 1994).

Thus, concerns about nipple pain, unresolved engorgement, and fatigue are Level II reasons for not continuing to breastfeed. Lack of support from family, friends, or health professionals, or actual censure from significant others for continuing to breastfeed are also Level II reasons for discontinuing. On the other hand, the convenience and financial benefits of breastfeeding and the encouragement of family and friends are Level II reasons for continuing to breastfeed.

Level II reasons differ from Level I reasons in that, whereas Level I reasons focus on a statement of "fact" that is true for people in general, Level II reasons focus on the relevance of the evidence for the individual. In short, Level II reasons answer the question, "What will it be like for me if I breastfeed?"

Level III Reasons. Finally, Level III reasons are affective, schema-related reasons, that is, those reasons that focus on the meaning of the behaviour for the individual. These reasons represent costs and benefits of breastfeeding that involve an individual's core values and self-concept. They include reasons that express the ways that the behaviour reflects individuals as they really see themselves.

An example of a Level III reason for not breastfeeding might be, "I'm just not the type to have a baby tie me down." On the other hand, mothers may persevere in breastfeeding because, "I've always thought of myself as a breastfeeding mom." Level III reasons reflect the values or "guiding principles" (Schwartz, 1992) that people deem to be important to their decisions about breastfeeding. For example, self-transcendent values that

motivate a mother to engage in an act that is good for her baby, even though it may produce some negative consequences for her, may represent Level III reasons for breastfeeding. Other Level III reasons include the emotional consequences of the behaviour for the individual. For example, feelings of intense emotional discomfort or happiness may characterize the breastfeeding experience. Reasons based on such feelings derive from the effect that breastfeeding has on one's self-identity. For some women, embarrassment over the exposure of their breasts in the presence of others or the obviousness of physical signs of breastfeeding, such as large breasts or leaking nipples, may be affect-related reasons for breastfeeding cessation. For others, the intense closeness with their infants may be a reason for continuation. These Level III reasons differ from Level II reasons in that they focus on emotions and on the personal relevance of the reason for the individual as she really sees herself.

#### Qualitative Differences Between Reasons Levels

Thus, the reasons model suggests that pro and con breastfeeding reasons can be categorized into three qualitatively different levels. As can be seen, these levels differ in several important ways. The reasons model suggests that evidence-based, self-consequential, and affective, schema-related reasons differ in the degree of person relevance and the depth of importance of reasons that fall into the three categories. They also differ in the scope of the implications of the reason for individuals. These qualitative differences suggest that the reasons that people can give for and against engaging in a given health behaviour fall onto a continuum of personal relevance that the reasons model has divided into the three levels. Although all of the reasons that a woman holds for or against breastfeeding are somewhat personally relevant, since she has chosen those reasons as her

own, the reasons model suggests that some reasons may be more significant than others. Thus, the reasons model suggests three levels of reasons that reflect the notion that people can reason in more or less personally meaningful ways. The least personally meaningful reasons are categorized as Level I reasons, whereas the most personally relevant reasons are categorized as Level III reasons.

One way of differentiating the personal relevance of reasons is to consider the depth of their importance. Level I reasons are the most superficial reasons. When offering these types of reasons, people are taking a somewhat logical stance and citing the evidence as they see it. Thus, women who intend to breastfeed will cite generally accepted "scientific" evidence as reasons for breastfeeding. Those who are unsure about breastfeeding, however, may provide evidence that calls "scientific evidence" into question. The reasons may be flawed and driven by errors in thinking and judgment but they represent people's attempts to think about their behavioural decisions in a logical and perhaps emotionally detached way. Thus, Level I reasons are considered to have minimal personal relevance because they deal with evidence that is true for people in general.

Level II reasons are driven by more personally relevant evidence because they are formed from information and experience regarding the more immediate personal consequences of breastfeeding. Self-consequential Level II reasons deal with the outward costs, benefits, barriers and advantages to behaviour itself. They deal with the more objective, practical aspects of engaging in the behaviour. However, Level II reasons do not consider the ways in which engaging in the behaviour might relate to the woman's sense of herself. That is the domain of the Level III reasons.

Schema-related Level III reasons focus on the costs and benefits that are related to a person's core values and self-concept. The reasons model suggests that these Level III reasons are the most personally significant reasons. These are the reasons that are derived from and relate to an individual's identity. They indicate ways in which the act of breastfeeding fits into and will affect personal constructs that are not just specific to breastfeeding. Rather, these Level III reasons indicate the degree to which women think that breastfeeding expresses and could more globally affect the way they see themselves. The personal schemas that lead to Level III reasons may not only relate to breastfeeding but may be motivators of behaviour in other domains. Thus, Level III reasons are likely to have more connections with other aspects of the self than will Level I or Level II reasons.

Level II and Level III reasons may actually be similar in content but differ in the scope of the consequences of the reasons for the individual. Level II reasons focus directly on the behavioural act whereas Level III reasons focus on the meaning of the act for the person. For example, a woman may choose not to continue breastfeeding because she is experiencing difficulty getting her baby to latch on to the breast correctly, or she may stop breastfeeding because she doesn't have the personal strength to persevere with difficulties. The first reason is a Level II, because of its focus on a specific barrier to breastfeeding continuation. The second reason is a Level III because it deals with the same barrier in terms of the woman's core self-concept. The Level II reason could be compartmentalized as strictly being a breastfeeding barrier, whereas the Level III reason could be generalized to other difficult situations and be seen as a more global example of personal failure. In that way, the Level III reason focuses on the meaning of the act for the individual.

Level III reasons may be seen as the underlying reasons for behaviour. They may be the more global reasons that lead people to generate and lend importance to Level I and II reasons. In that way they may also be seen as deeper than Level I and II reasons. This does not suggest that they are deeper in a psychoanalytic sense. By definition, if they can be cited as reasons, they reflect conscious processes. However, most psychologists talk about the self-concept as a construct that precedes and informs situationally specific motivation. For example, Markus and Kunda (1986) describe the working self-concept that people develop to regulate particular behaviour as being constructed from a more general set of core self-conceptions. Because of the increased globality and centrality of affective, schema-related reasons that reflect these core self-conceptions, Level III reasons are understood to be the deepest of the three levels of reasons proposed by the reasons model.

Thus, the reasons model suggests that there are three increasingly personal categories of reasons that people can use to explain their behavioural decisions. Evidence-based Level I reasons are reasons based on the general evidence for and against a recommended behaviour. Self-consequential Level II reasons add to the general evidence by considering the specific benefits and barriers of engaging in the behavioural act. In addition, affective, schema-related Level III reasons enrich the reasoning process by including the ways in which adherence or non-adherence to the recommended behaviour reflects and affects the individual's feelings and core self-concept. When considered together, these three levels of reasons are expected to be powerful predictors of behavioural choices in many domains, including the domain of breastfeeding.



### Rationale For Use of the Reasons Model to Predict Breastfeeding Decisions

It has been shown that the reasons model provides a framework for organizing a broad spectrum of the reasons that people give to explain their health behaviour choices. But why use the reasons model to study breastfeeding decisions? Why use a new, relatively untried model when there are many established and tested models of health behaviour available for use, some of which have been employed to understand breastfeeding decisions? Can the reasons people use to explain their behaviour be used to predict and change the ways people will behave in the future? I believe that the reasons model provides an excellent way to understand and predict behaviour such as breastfeeding and is an important addition to the field of health behaviour models for two reasons. First, the reasons model specifies the explicit inclusion of variables that many existing models only imply, in particular, the affective, self-identity related motivators of behaviour. Second, the reasons model focuses on people's own explanations for their behavioural choices and, therefore, may hold more face validity for persons involved in planning and taking part in behaviour change interventions. The following section will explain why I have chosen to use the reasons model to frame my understanding of breastfeeding choices.

Theoretical Framework for Breastfeeding Predictors. One important rationale for my choice of the reasons model is that it provides a logical framework for examining the predictors of health-related behaviours such as breastfeeding. Many studies have been conducted to examine breastfeeding duration but few studies have been guided by any type of theoretical framework. Most researchers have chosen to study breastfeeding by examining an ad hoc set of potential predictors of breastfeeding behaviour (e.g. Dix, 1991; Dusdieker et al., 1985; Grossman, Fitzsimmons, Larsen-Alexander, Sachs, & Harter, 1990;

West, 1980). This has also been the style used in studies of breastfeeding practices that have been conducted across Ontario in recent years (Bourgoin & Lahaie, 1996; City of North York Health Department, 1994; Issacs & Litwak, 1996; Valaitis, 1995; Verhoeve, Bell, & Lee-Han, 1992).

One set of models that have been used to frame understanding of breastfeeding decisions is the theory of reasoned action (Manstead, Proffitt, & Smart, 1983) and its extension, the theory of planned behaviour (O'Campo, Faden, Gielen, & Wang, 1992). These two theoretical models have been useful in that they have identified the importance of women's attitudes and beliefs about breastfeeding, the perceived support of significant others, and the role of self-efficacy or confidence in one's ability to breastfeed as predictors of breastfeeding initiation and duration. Yet, such models may not be the best way to understand the predictors of various health-related behaviours, especially if the ultimate goal is to create interventions that would alter the target behaviour.

The problem is that, although such factors as those noted above may be objectively important in determining behavioural choices, they may not fully represent people's own understanding of the causes of their behaviour. It is plausible that, in order to effect behavioural change, it may be useful to focus on factors that target individuals, themselves, consider to be important in determining their own behavioural choices. People can and do create explanations about the causes of their behaviour. The reasons that they cite for their behavioural choices likely include their beliefs about the positive and negative attributes of a behaviour, and their resultant attitudes, subjective norms, self-efficacy concerns, and other factors. However, the reasons they cite are more than just a collection of those variables. People are capable of taking information from these varied sources and weaving them into

an explanation for their own choices that includes their subjective evaluation of the importance of those variables that they, themselves, think affect their behaviour. Although these explanations may or may not agree with the more objective predictors of behaviour, they indicate the factors that people, themselves, think are important determinants of their own behaviour.

The Value of People's Own Explanations. The reasons model recognizes the value of knowing people's own explanations for their health-related decisions. This model provides a framework for categorizing the types of reasons that people use to create their own stories explaining their behavioural choices. Using this model allows an examination of the importance of the broader levels of reasons and specific types of reasons within those levels. In the realm of breastfeeding, we will be able to examine whether reasons at all three levels are considered by women to be important in their breastfeeding choices. This information can then be incorporated into the design and evaluation of future breastfeeding interventions.

Each of the explanatory models of health behaviour can guide the development of behaviour change interventions, but interventions based on the reasons people identify as being important to a behavioural decision will assist people to make changes in areas that they, themselves, consider to be relevant. If we want to empower people to make changes in their behaviour, it makes sense to do so by focusing on issues that they have identified as important. In addition, making a connection between different kinds of reasons for engaging in a behaviour is an intuitive way to encourage desired behaviour that has been used by researchers in other contexts. For example, in order to manipulate attitude function and attitude-related behaviour, Maio and Olson (1994, 1995) exposed subjects to different

reasons for engaging in the target behaviours—reasons that expressed either utilitarian or value-expressive attitude functions. When subjects were given value-expressive reasons for attending a dance to support the construction of an enclosed smoking section in the student centre or for donating money to support cancer research, they were more likely to intend to support the cause than if they were presented with utilitarian reasons for engaging in the desired behaviour. Thus, reasons can be used to understand behavioural choices, and, when different reasons are made salient, to promote behaviour change.

Inclusion of Affect, Values, and Self-Concept. Another reason that extant models such as the theory of planned behaviour may not be sufficient for understanding and predicting health behaviour is that such models fail to explicitly account for a potentially important component of any important behavioural choice, that is, the role of one's feelings and self-identity in making decisions. Despite the fact that attitude theorists note the importance of affect in the development of attitudes (Zanna & J. Rempel, 1987), they have typically relegated affect and emotion to a secondary position as an otherwise unspecified component of the overall evaluation of an attitude object. More recently, the role of affect has gained visibility, as researchers have begun to investigate its role in maintaining ambivalent attitudes (Thompson, Zanna, & Griffin, 1995). But attitudinal models have not yet included the role of affect as a potentially independent predictor of behaviour. The reasons model does this by the inclusion of Level III reasons as potential explanations for people's health-related behavioural decisions.

Not only do emotions potentially affect people's attitudes and subsequent choices, but the way people see themselves—their self-identities—may also have an effect on behavioural decisions. For example, there is evidence that if people see themselves as

engaging in an activity because of an underlying value that they hold, they will stick with volunteering even in the face of adversity (Lydon & Zanna, 1990) or support charities (Ball-Rokeach, Rokeach, & Grube, 1984; Maio & Olson, 1994, 1995) more than people who have not been induced to see that their activities represent their underlying values. Yet, the effect of values and self-concept are not explicitly included in most of the models presently used to understand and explain health behaviour. The reasons model also explicitly includes the effects of self-concept on behavioural decisions at Level III. This inclusion of affect and self-identity, especially in the form of Level III reasons, sets the reasons model apart as a more complete model of behavioural determinants.

### Reasons Path Model

Predictive Power of Level III Reasons. I have indicated that Level III reasons are necessary for a complete understanding of the predictors of health behaviour. If this assertion is true, Level III reasons should add to the prediction of health-related behaviours over and above that explained by the knowledge, beliefs, subjective norms, and self-efficacy which result in Level I and Level II reasons. My previous research using the reasons model to understand safer sex decisions indicated that reasons from all three levels were predictive of safer sex behavioural intentions (L. Rempel & Fong, 1995; 1999). Additionally, the reasons that students gave for condom use and non-use in the first wave of our sexual behaviour study were predictive of reported condom use in the second wave of the study, one month later. These results were replicated with a second sample of students, a year later. Thus, initial evidence supported the usefulness of all three levels of reasons for understanding and predicting behaviour, and demonstrated the independent predictive power of the Level III reasons.

The reasons model suggests that all three levels of reasons should be predictive of decisions regarding breastfeeding initiation and duration, but that Level III reasons should hold a prominent position. Pro and con reasons at all three levels are expected to be fairly highly correlated because they all focus on the general question of whether or not to engage in the behaviour. For example, in one study of condom use, the inter correlations within pro condom reasons at the 3 levels ranged from .57 to .62 and the inter correlations within con condom reasons ranged from .38 to .56. I suggest that those high correlations may be, in part, related to causal paths from Level III to Level I and Level II reasons. Figure 1, on page 82, illustrates the hypothesized causal paths.

Level III Reasons Cause Level I and II Reasons. It is certainly plausible that, in some situations, affective, schema-related reasons are affected by experiences or information that correspond to Level I and Level II reasons for breastfeeding. However, I suggest that the primary causal paths are more likely to move from Level III to Levels I and II. That is, Level III reasons may be important for the interpretation and development of Level I and Level II reasons. Level I and II reasons are quite specific to the evidence for or against the specific recommended behavioural act and the consequences of that particular behavior. The beliefs that people have about themselves, however, are somewhat domain independent. General values such as altruism and benevolence or independence and hedonism that may underlie Level III reasons for or against breastfeeding are generally understood to be somewhat stable components of people's self-concepts. The working breastfeeding self-concept that leads to specific Level III reasons can be understood as being derived from these previously held beliefs about one's self. For example, some women may plan to breastfeed because they value making the best choices for their babies. Conversely,

women may think about not breastfeeding because breastfeeding might tie them down. Similarly, women who value positive affective experiences for themselves may resist breastfeeding because it leaves them feeling strange and unpleasant.

Closely related to the schema-related reasons for breastfeeding are the affective consequences that breastfeeding might engender, especially as these reflect a woman's self-concept. Thus, women for whom breastfeeding is an important reflection of their self-schema should expect that breastfeeding will have positive affective consequences. Conversely, women for whom breastfeeding does not fit with their self-view may be more likely to think that breastfeeding would engender negative affective outcomes.

Because affective, value-oriented, schema-related reasons are, to a great extent, derived from these kinds of domain independent characteristics that predate a specific behavioural decision, we have suggested that Level III reasons may be the starting point from which other reasons are formulated. Level III reasons could be expected to contribute to the development of evidence-based and self-consequential reasons that are consonant with Level III values and affective reactions. The values and self-concepts that people bring to their decisions may lead them to place greater importance on Level I and II reasons and may cause them to seek out Level I and II reasons that validate their intentions. For example, because breastfeeding is described as the optimum choice for infant feeding, women with strong Level III reasons for breastfeeding would be expected to consider any evidence for the health benefits of breastfeeding to be important reasons for breastfeeding. This would lead to the creation of consonant, important Level I reasons for breastfeeding. These same women would also be expected to consider the positive personal consequences of breastfeeding as somewhat important and, thus, would also hold important Level II reasons

for breastfeeding. Women who have somewhat stronger Level III reasons for not breastfeeding might be expected to be more concerned about the possible problems with breastfeeding or ways in which breastfeeding might restrict their lifestyle. These Level II reasons may be more concrete manifestations of their underlying discomfort with the idea of breastfeeding.

These ideas about the possible relationships between the three levels of reasons and their effect on intentions result in the path model that can be found on Figure 1. In this model, Level III pro and con reasons are hypothesized to lead to the development of their respective Level I and II reasons. The resultant Level I and II reasons are hypothesized to be the immediate predictors of behavioural intentions. Theories such as the theory of planned behaviour, health belief model, or self-efficacy theory suggest that people use the evidence that they have about the potential health effects of a behaviour and the way that behaviour will affect them to decide whether or not to engage in the behaviour. Consistent with such theories, I expected that Level III reasons would affect breastfeeding intentions indirectly, through Level I and II reasons.

Condom Study Support for the Hypothesized Causal Paths. The results of my previous research lend some support to the hypothesis that Level III reasons may cause changes in Level I and II reasons. Reasons for and against condom use were measured on two occasions on month apart. Cross-lag regressions indicated that Levels I and II pro condom reasons measured at Wave 1 did not predict Level III reasons at Wave 2, controlling for Wave 1 Level II reasons. However, Wave 1 Level III pro condom reasons did predict Wave 2 Level I and II reasons, controlling for Wave 1 Level I and II reasons. For con condom reasons, however, the only predictive cross-lag regression saw Level III con



condom reasons at Wave 2 predicted by Wave 1 Level I con condom reasons. Thus, although there is some evidence that causal effect may lead in both directions, the stronger evidence indicates a Level III to Level I and II causal direction.

In addition to the indirect effects of Level III reasons on behavioural intentions, I also believe that the strength of these value-based, affective, schema-related Level III reasons may be sufficiently powerful for them to have a direct effect on breastfeeding intentions over and above their relationship to Level I and II reasons. My previous research also supports this hypothesis. Level III pro and con condom reasons were highly predictive of Level I and II reasons and all three levels of reasons accounted for variance in the prediction of condom use intentions. These Level III reasons not only predicted the strength of Level I and II reasons, but were also direct predictors of condom use intentions.

Thus, previous research has provided some support for this theoretically derived path model. Through this current research, I endeavored to test whether this hypothesized path model would also apply to breastfeeding reasons and intentions. Demonstrating that this model can be supported in two very different health behaviour domains will add validity to our claim that this model is applicable to a wide variety of health decisions and should be welcomed as a useful addition to the field of decision-making models.

### The Reasons Model Across Time

Behavioural decisions are often made in the context of ongoing behavioural experience. Often, the reasons for and against a behaviour are based on direct experience with the behavioural choice being faced. There are few domains in which it is easy to examine the predictors and effects of a decision made in the absence of experience and

compare them to those made after experience with the behaviour in question. Breastfeeding a first infant is one domain in which this is possible.

The reasons that women give for and against breastfeeding prior to the birth of their first infant and their initial behavioural intentions are derived without any direct experience with breastfeeding. They may not be able to adequately predict the reasons that will be important to their eventual decisions about breastfeeding duration. Loewenstein (1996) suggests that people who are in a “cold” emotional state, who are not experiencing the “hot” emotions that may accompany a chosen behaviour, are not very good at predicting how they will actually behave while in that “hot” state. Consistent with this idea, the reasons model would suggest that mothers’ experiences with breastfeeding after birth might change the reasons that they give for and against continuing to breastfeed and, as a result, change their breastfeeding intentions.

The experiences of women may increase or decrease the strength of their breastfeeding reasons, depending on the nature of those experiences. For example, women who have a very easy and emotionally satisfying experience with breastfeeding may increase the strength of pro breastfeeding reasons. Their positive affective reactions to breastfeeding may increase their Level III reasons for breastfeeding. In turn, because they feel good about breastfeeding, they may also increase the importance of Level I or II reasons for breastfeeding. They may be more aware of the ease and convenience of breastfeeding and how beneficial breastfeeding is expected to be for their newborns. Conversely, women who have a very difficult and frustrating time breastfeeding would be expected to increase the importance of con breastfeeding reasons, in particular their affectively intense Level III reasons for not breastfeeding. These stronger Level III reasons may encourage women to

ascribe more importance to the Level II problems that they have experienced as reasons to stop breastfeeding. Women who develop stronger Level III reasons in response to their breastfeeding experiences would be more inclined to consider stopping or stop breastfeeding because breastfeeding has too many negative consequences for themselves.

The degree to which women respond to their positive or negative breastfeeding experiences with stronger Level III reasons would, then, be expected to influence their post-experience behavioural intentions through their effect on the resulting Level I and II reasons. However, it is also expected that the power of post-experience Level III reasons should be demonstrated as a direct effect on intentions over and above that predicted by Level I and II reasons. Thus, I expected that the prediction of ongoing breastfeeding intentions and behaviour would be enhanced by examining the reasons that women would give after they had initiated breastfeeding. In order to empirically test the effect of breastfeeding experience on the predictive value of the reasons model, this present research examined the reasons that women gave for and against breastfeeding both before the birth of their first infant as well as after they had experienced breastfeeding.

#### Relationship of Male Partners to the Reasons Model

The reasons model suggests that people will use a variety of sources to create reasons for and against a recommended behaviour. The previous section has indicated that reasons may be developed as a result of direct experience with the behaviour in question. The reasons model suggests that people will also hold reasons that are derived from the opinions and experiences of others. For example, one potentially important source of information that women may incorporate into their own reasons are their partners' reasons

for and against breastfeeding and their own ideas about whether their partners' think they should or should not breastfeed.

Partners' attitudes toward breastfeeding would be expected to lead to Level II reasons for or against breastfeeding. For example, if a partner is not supportive of breastfeeding, choosing to breastfeed might result in strained relationships between the new mother and her partner. If the mother considered not breastfeeding because of the partner's apparent disapproval, the reason would be considered a Level II reason. However, the reasons model would suggest that degree to which partner's thoughts about breastfeeding might result in the development of Level I or II reasons should depend, in part, on the degree to which such information is consistent with the woman's values, self-concepts, and the expected affective consequences of breastfeeding. Thus, I would expect that partners' thoughts about breastfeeding should be related to reasons at all three levels, but predominantly at Levels II and III.

The reasons model would also suggest that partners' thoughts about breastfeeding should predominantly affect the breastfeeding intentions of pregnant women through their effects on women's breastfeeding reasons. However, given the many ways that close relationship partners influence each other, it is also possible that partners may have an effect on women's breastfeeding intentions and behaviour in ways that women may not be able to articulate as reasons for or against breastfeeding. Thus, it is possible that partners' opinions about breastfeeding may predict breastfeeding intentions over and above pregnant women's pro and con breastfeeding reasons. The present research examined how the reasons that male partners hold for and against thinking that their pregnant partner should breastfeed do relate to the breastfeeding intentions of pregnant women.

The examination of partners' thoughts and attitudes is an under-researched area in the breastfeeding literature. Most of the extant literature regarding the influence of the support and attitudes of others on breastfeeding decisions and behaviour is limited to the perceptions of the mother. Studies that have examined the actual rather than the perceived attitudes of significant others are rare. Freed, Fraley, and Schanler (1992) asked expectant fathers about their attitudes toward breastfeeding and found that partners of women who intended to breastfeed were more knowledgeable about breastfeeding and had more favourable attitudes toward breastfeeding than partners of women who intended to bottle-feed. They also found that the majority of men in both groups believed that breastfeeding in public was not acceptable. When they asked mothers to predict their partners' attitudes regarding breastfeeding, it was found that women did little better than chance (Freed, Fraley, & Schanler, 1993).

Studies that have examined the effect of a significant other's actual preferences regarding infant feeding on the infant feeding decision of pregnant women are also rare. In one study that did contact significant others to determine whether or not they preferred pregnant women breastfeeding, the breastfeeding preference of significant others and the breastfeeding attitudes of the pregnant women were the only significant predictors of breastfeeding intentions (Kessler, Carlson, Diener-West, & Paige, 1995). These findings highlight the importance of knowing fathers' actual beliefs and attitudes about breastfeeding. Thus, this present research will fill a gap in the breastfeeding literature as it examines the relationship of male partners' actual attitudes and prescriptive breastfeeding beliefs to their pregnant partners' pro and con breastfeeding reasons, intentions, and behaviour.

### Relationship of Affect-Related Constructs to the Reasons Model

The reasons model has the potential to explain the effects of many other constructs on the decision-making process. Another set of constructs that were examined in this study are those related to the affective state of pregnant and breastfeeding women. To the extent that women are aware of the potential effects of their affective state on their decisions, the reasons model, through Level III reasons, should be expected to account for the effects of emotions on intentions and behaviour. I have chosen to examine the relationship of two such constructs to the reasons model—specifically, happiness and stress. If happiness is related to breastfeeding, it would be expected that happier women would probably intend to breastfeed longer. They might be less likely to be concerned about breastfeeding problems because, as generally happy people, they may not expect such problems to make them feel unhappy and quit. Thus, happy people should hold higher level Level III reasons for breastfeeding and lower Level III reasons for not breastfeeding. In addition, their propensity to feel less frustration should lead them to be less concerned about the potential problems that translate into Level II reasons for stopping.

Similarly, stress levels should also be related to Level III reasons in that women experiencing higher stress should be expected to have more concern for the possible negative affective consequences of breastfeeding. They may also be more worried and place more importance on Level II reasons for stopping. This may be even more the case after the birth of the baby, when the added challenge of breastfeeding and infant care has been experienced. I expect that stress levels should rise after birth and suggest that the extent to which stress changes should be reflected in the importance placed on Level III reasons to

stop breastfeeding. Women who find breastfeeding more stressful should place more importance on Level III reasons to stop.

Thus, it is expected that, because happiness and stress could lead to reasons for and against breastfeeding that fit with people's affective tendencies, any effect that these variables might have on breastfeeding intentions and behavior should, in great measure, be accounted for by the reasons model. In order to demonstrate the power of the reasons model to account for affect that could lead to Level III reasons, this research tested the relationship of happiness and stress to breastfeeding intentions and behavior, over and above the reasons model.

#### Relationship of Demographic Characteristics to the Reasons Model

I have argued that Level III reasons for and against a behaviour are based on somewhat stable, enduring factors that comprise the self-concepts of decision-makers. There are many factors involved in the development of values and self-concepts. Some of these factors include familial experiences (Rohan & Zanna, 1996), peer influences, and educational experiences. Culture, family, education, and personal resources shape the way people think and see themselves by determining the information and experiences to which they will be exposed during their lives.

Researchers often use demographic or socioeconomic variables as proxies for the effects of other psychosocial variables on a behaviour of interest. For example, in the breastfeeding literature, maternal education, age, income, and ethnicity (Agnew, 1994) have been identified as significant predictors of breastfeeding initiation and duration. But, as I have argued previously, knowing the relationship of such demographic factors to breastfeeding outcomes is not very helpful in terms of formulating effective interventions.

However, knowing the reasons that women hold for and against breastfeeding is potentially very useful for intervention planning. For example, it is quite likely that people from different economic, ethnic, cultural or educational backgrounds will have somewhat different values, schemas, and affective reactions regarding breastfeeding. Responding to the reasons that are derived from the experiences of being poor, being a pregnant adolescent, or having a limited set of educational experiences could be effective ways to change those reasons and, ultimately change breastfeeding behaviour.

The reasons model may provide a way to explain the effects of demographic variables on breastfeeding. The reasons model suggests that the reasons that people give for their behavioural decisions will be shaped by their social context and the experiences of those around them. If that argument is true, the effects of demographic variables on breastfeeding intentions and behaviour should be explained by the reasons model. For example, pregnant adolescents may have somewhat higher Level III reasons for not breastfeeding because they are still coming to terms with their physical and sexual changes of adolescence. Women with more education may give more importance to Level III reasons for breastfeeding because they have had more opportunities to develop values about healthy lifestyles in general. They may also increase the importance they give to Level I reasons for breastfeeding. They are not only motivated to find reasons that are consonant with their Level III reasons for breastfeeding, but they may also have more opportunity or have learned how to research the potential health benefits of breastfeeding. Thus, I view demographic variables as proxies for some unspecified exogenous determinants of women's breastfeeding reasons and suggest that their effect on breastfeeding intentions and behaviour should be mediated by their relationship to Level I, II, III reasons.



In order to demonstrate the power of the reasons model to account for the effect of demographic variables on the breastfeeding decisions of pregnant women, this present research measured three such variables—age, years of education, and level of income. Consistent with the findings from other studies (Agnew, 1994), I expected that these three variables would predict breastfeeding intentions and behaviour. However, I also expected that the relationships between these variables and reasons for and against breastfeeding would account for the effect that age, education, and income might have on breastfeeding intentions and behaviour.

#### Comparing the Reasons Model to the Theory of Planned Behaviour

As mentioned previously, the reasons model is a new model of health behaviour decision-making. In order to strongly support the contention that any new model makes a significant contribution to the field, Weinstein (1993) recommends testing that new model against established models. Breastfeeding intentions and breastfeeding initiation have been predicted by the theory of reasoned action (TRA) (Manstead et al., 1983) and the theory of planned behavior (TPB) (O'Campo et al., 1992). Thus, this present research will demonstrate the contribution of the reasons model to the field of health behaviour decision-making models by testing whether the reasons model adds predictive power for intentions over and above that of TRA and TPB. Reasons should be expected to add to the predictability of intentions over that predicted by attitudes towards breastfeeding and subjective norms, as suggested by TRA, as well as over that predicted by the addition of perceived behavioural control, as hypothesized by TPB. Such a pattern of results will demonstrate that the reasons model provides a novel and useful framework for understanding and predicting breastfeeding intentions and behaviour.

### Collaboration with Waterloo Regional Community Health Department

As I have shown, breastfeeding is an important and interesting domain in which to study factors that can predict intentions and behaviour. Breastfeeding promotion has been an important part of the public health agenda in recent years and several studies of breastfeeding prevalence have been conducted across Ontario (Bourgoin & Lahaie, 1996; City of North York Health Department, 1994; Issacs & Litwak, 1996; Valaitis, 1995). These studies found varying rates of breastfeeding initiation, duration, and breastfeeding-related practices. Because of these variations, Valaitis (1995) has suggested a need for local investigation of infant feeding practices.

The Waterloo Region Community Health Department was already involved in the study of their own breastfeeding practices. They first conducted a breastfeeding study in 1991 (Verhoeve et al., 1992). The primary purpose of that study was to identify breastfeeding prevalence at 4 months postpartum and examine factors that could be related to breastfeeding rates at 4 months. That study identified mothers' reasons for weaning and sources of breastfeeding support. They found that the most significant reasons for weaning were returning to work and perceived lack of milk, the most helpful sources of support were husbands and female relatives and friends, and the most helpful sources of information were books and the hospital. In addition, it was noted that 80 % of women still breastfeeding at 4 months had made the decision to breastfeed either prior to conception or early in their pregnancies.

During the next few years, several changes were made to programs at the Health Department. Prenatal breastfeeding education was revised and preconception education about breastfeeding was introduced. Public Health Nurses discontinued visiting all first-time

breastfeeding mothers and Child Health and Guidance Clinics were eliminated in urban parts of the region. A telephone information line and breastfeeding support sites were introduced to fill the gaps created by the loss of these programs. The impact of these changes on breastfeeding initiation and duration was unclear, so the Health Department was interested in conducting a second study that would compare current breastfeeding prevalence to that identified in the 1991 study. Thus, because of my own interest in conducting breastfeeding research, this present study was proposed in collaboration with the Waterloo Region Community Health Department.

The present research is an extensive examination of the breastfeeding decision-making and the breastfeeding experiences of women in Waterloo region over the first postpartum year. Future reports will document these breastfeeding experiences in detail and compare results from the present research to the 1991 breastfeeding survey. This present paper will focus on the ways in which women make their breastfeeding decisions and will test the ability of the reasons model to enhance our understanding of why women breastfeed and why they discontinue.

### Hypotheses

In summary, I have hypothesized that the reasons model will be predictive of breastfeeding intentions and behaviour. My general hypotheses are as follows:

1. All three levels of reasons will predict intentions to breastfeed.
2. More specifically, the reasons model will be related to breastfeeding intentions as illustrated in Figure 1. Level III reasons will be predictive of Level I and II reasons. Level I and II reasons will predict breastfeeding intentions and Level III reasons will predict breastfeeding intentions directly as well as indirectly.

3. **Intentions to breastfeed will predict breastfeeding behaviour.**
4. **Reasons will change over time as a result of breastfeeding experiences. Reasons measured postpartum, that is, after mothers have begun to experience breastfeeding, will predict intentions to continue breastfeeding.**
5. **Male partners' beliefs about participants' breastfeeding will correlate with participants' breastfeeding reasons and will predict participants' intentions to breastfeed indirectly, by causing differences in participants' breastfeeding reasons.**
6. **Due to the complexity of interpersonal influence in close relationships, I predict that male partners' breastfeeding beliefs may have a direct effect on participants' breastfeeding intentions.**
7. **Happiness and stress, age, education, and income will predict intentions to breastfeed indirectly, through their effect on the reasons model.**
8. **The reasons model will predict breastfeeding intentions and behaviour over and above the theory of reasoned action and the theory of planned behaviour.**

## CHAPTER II

### Overview

This present research tested the ability of the reasons model to predict the strength of breastfeeding intentions and the breastfeeding duration of pregnant women who volunteered to take part in a longitudinal study called the Infant Feeding Study. Study participants were randomly assigned to have their reasons assessed using either a closed-ended format or an open-ended structured interview. Women in the closed-ended condition completed a closed-ended Breastfeeding Reasons Questionnaire (BRQ), indicating how important a variety of breastfeeding reasons were to their breastfeeding decisions. Women in the structured interview condition answered questions about their reasons for and against breastfeeding. All participants completed measures reflecting numerous other factors that could relate to breastfeeding intentions and behaviour, and indicated their breastfeeding intentions. Male partners were also surveyed to examine the relationships between various factors potentially related to breastfeeding and mothers' breastfeeding intentions and behaviour. Mothers who breastfed were contacted after the birth of their infants to reassess their breastfeeding reasons and assess their breastfeeding experiences. Breastfeeding mothers were contacted during the first month postpartum. Those who were still breastfeeding were followed until they discontinued breastfeeding or until their infants were 1 year of age.

### Method

#### Materials

Prenatal questionnaire. The close-ended breastfeeding survey was conducted using three parallel questionnaires. A summary of the measures that were assessed at each wave

of the study can be found in Appendix A. The first questionnaire was developed to assess prenatal predictors of breastfeeding initiation and duration. An example of this questionnaire can be found in Appendix B.

The anchor questionnaire for all waves is the Breastfeeding Reasons Questionnaire (BRQ). The BRQ was developed using reasons for and against breastfeeding and reasons for weaning that have been identified in the breastfeeding literature, as well as reasons identified by health professionals and lay women who have had experience supporting breastfeeding women. Care was taken to include reasons from all 3 levels: general evidence-based Level I, more specifically self-consequential Level II, and affective, schema-related Level III.

Reasons items from the three levels were randomly ordered within the overall domains of reasons for breastfeeding and reasons for not breastfeeding. These two domains were kept separate because of the potential confusion that could be created by switching between reasons for breastfeeding and reasons for not breastfeeding from item to item. The Infant Feeding Study survey was pilot tested with 33 participants: 13 expectant mothers, 10 new mothers, and 10 expectant fathers. One reason for the pilot test was to determine whether the order of presentation of pro and con reasons would create differences in response tendencies. Specifically, I was concerned that, if the pro-breastfeeding reasons were presented first, women might be less likely to endorse the con-breastfeeding items as important as they would be if the con-breastfeeding items were presented first. Participants were randomly assigned to receive a questionnaire with pro breastfeeding items first or con breastfeeding items first. Order did not affect mean importance ratings. Out of the 61 reasons, only 2 differed at  $\alpha = .05$ . Since this number of differences would be expected by

chance when completing that number of significance tests, we concluded that the order of presentation of pro and con reasons would not affect participants' importance ratings in the main study. Subsequently, con breastfeeding reasons were presented first, followed by pro breastfeeding reasons. Also as a result of the pilot test, the wording of individual reasons and the instructions for the BRQ were revised to make them more easily understandable and to reduce the literacy level of the questionnaire to approximately the Grade 8 level.

The BRQ contains a list of 33 con breastfeeding reasons and 25 pro breastfeeding reasons. For the con breastfeeding reasons, participants were given the stem, "I might stop breastfeeding or might not breastfeed because:" and were asked to indicate how important that reason was as one of their reasons against breastfeeding. The response options were N (never thought about this reason), 0 (thought about this reason but definitely not a reason to stop breastfeeding or not breastfeed), 1 (slightly important reason), 2 (somewhat important reason), 3 (fairly important reason), 4 (very important reason), and 5 (extremely important reason to stop breastfeeding or not breastfeed). For pro breastfeeding reasons, participants were given the stem "I might breastfeed because:" and were asked to indicate how important that reason was as one of their reasons for breastfeeding using a parallel scale.

In order to test the predictive value of the reasons model against the theory of reasoned action and the theory of planned behavior, the prenatal questionnaire also included a measure of attitudes, subjective norms, and perceived behavioural control. Attitudes to breastfeeding were measured using a 0 to 10 semantic differential scale. Anchor words were good-bad, foolish-wise, pleasant-unpleasant, and negative-positive. The score on these four items was averaged to form the attitudes variable for purposes of analyses.

The subjective norms (SN) questions measured the degree to which important others in general, partner, mother, mother-in-law, and friends approve of the woman breastfeeding. Approval was measured on a 5 point scale from 1 (strongly disapprove) to 5 (strongly approve). The importance of those opinions to the participants was measured on a 5-point scale from not at all important to extremely important.

The perceived behavioural control (PBC) measure included 3 questions to assess a participant's perception of how easy breastfeeding would be for her, the extent to which she felt she could breastfeed for as long as she wanted, and her confidence in her ability to breastfeed no matter what happens. Breastfeeding ease was measured on a 7-point scale ranging from very easy to very difficult. Participants' belief that they could breastfeed for as long as they wanted was measured on a 7-point scale ranging from strongly disagree to strongly agree. Participants' confidence in their ability to breastfeed no matter what happened was measured on a 7-point scale ranging from very unsure to very sure. The scores from these three items were averaged for purposes of analyses.

Two measures were employed to examine the possible role of stress and emotions on breastfeeding intentions. The first measure was the Perceived Stress Scale (PSS; Cohen, Kamarck, & Mermelstein, 1983). The PSS is a measure of subjective levels of stress which has been widely used in health research and was expected to be a useful measure of perceived prenatal and postnatal levels of stress.

The second measure used to measure the emotional status of study participants was the Short Happiness and Affect Research Protocol (SHARP; Stones et al., 1996). The SHARP, a measure of subjective wellbeing, was included in the prenatal questionnaire for both pregnant participants and male partners.



The Time Perspective Questionnaire (TPQ) is a new measure of short-term and long-term perspective that has been shown to predict intentions to engage in a variety of health related behaviours (Hall & Fong, 1999). The TPQ was also included to test whether time perspective would also be related to breastfeeding intentions and duration.

The prenatal questionnaire also included demographic information and questions about the breastfeeding experiences of the participant's mother and friends. Participants were asked whether or not they planned to breastfeed and those who planned to breastfeed were asked how many months they intended to breastfeed. They were also asked the strength of their intentions to breastfeed at all and the strength of their intentions to still be breastfeeding at 1 month, 2 months, 4 months, 6 months, 9 months, 12 months, and longer than 12 months. Strength of intentions was measured on a scale from 0 (definitely do not intend to breastfeed for that long) to 10 (definitely do intend to breastfeed for that long). Then participants were asked the likelihood, from 0 to 100%, that they would breastfeed for each of the referent time periods.

The prenatal questionnaire also asked participants to indicate their sources of breastfeeding information. These items will provide specific information to the health department and were not be analyzed for the purposes of this paper.

Open-ended reasons survey. The open-ended reasons survey included most of the measures already presented. The only difference was that the closed-ended list of pro and con breastfeeding reasons were not presented to the participants in the open-ended reasons group. Instead, using a semi-structured interview, these participants were asked to list their reasons for not breastfeeding and for breastfeeding during the prenatal interview. A list of the questions that guided the interview can be found in Appendix C.

Women were asked for all their reasons for breastfeeding and for not breastfeeding or stopping breastfeeding. Because I wanted to determine the existence of reasons at all three levels, specific questions probed for responses that would provide a variety of possible reasons at all levels. For example, in order to assess their knowledge of breastfeeding benefits and the degree to which these may be Level I reasons for breastfeeding, participants were asked to list benefits of breastfeeding. To assess the potential impact of affective Level III reasons, participants were asked how they thought breastfeeding might affect them positively, negatively, and emotionally. They were also asked to identify possible problems that they might experience if they breastfed. In order to assess the possible effect of social referents, women were asked what their partner, mother, family members, and doctor thought about them breastfeeding. Participants were also asked whether there were any self-concept related or value-related reasons that had been involved in their breastfeeding decisions. Throughout the interview, participants were asked to indicate how important each potential reason was to their own decisions about breastfeeding. Finally, because I thought that some women might hold very few reasons to stop breastfeeding, participants were asked what they thought might actually be their reasons to stop breastfeeding. Responses to the open-ended questions were recorded in point form.

After the birth of their babies, participants in the open-ended condition were assessed at the same intervals using the same measures as other participants with the exception that their ongoing assessments did not include any reference to reasons for or against breastfeeding. The assessment schedule for the participants in the open-ended questionnaire group can also be found in Appendix 1. At the final assessment, after they had completely weaned their babies, open-ended participants were asked about their experiences regarding

breastfeeding and their reasons for weaning their babies. This final interview was very similar to the prenatal interview. The interview questions for the final open-ended interview can be found in Appendix D.

Partners' Questionnaire. The partners' closed-ended questionnaire paralleled the prenatal questionnaire with items rewritten to the perspective of a male significant other. An example of this questionnaire can be found in Appendix E. Time and financial considerations led to the decision to limit the open-ended partner's questionnaire to two questions regarding their reasons for thinking their partner should breastfeed and thinking she should not breastfeed or should stop breastfeeding. Partners in the open-ended group were not administered the PSS, SHARP, or TPQ. However, they were asked the behavioural questions regarding how long they thought their partner should breastfeed, how strongly they thought she should breastfeed and how likely she was to breastfeed at each of the referent time points. The partner's open-ended questionnaire also assessed their knowledge regarding the breastfeeding experiences of mother and friends and their sources of breastfeeding information.

Postnatal Questionnaires. Two parallel questionnaires were developed for postnatal administration. One was developed for mothers who were continuing to breastfeed and one for mothers who had discontinued breastfeeding. The postnatal "Questionnaire for Breastfeeding Mothers", which can be found in Appendix F, was administered to women who were still feeding their babies any breastmilk at the time of a postnatal interview. As in the prenatal questionnaire, the anchor questionnaire was the BRQ. For the postnatal BRQ, some items were reworded to present or past tense to reflect the possible experiences of breastfeeding mothers. The postnatal questionnaire also measured participants' overall

evaluations of their breastfeeding success, the exclusivity with which participants were breastfeeding at the time of the interview, their intended breastfeeding duration, and their intentions and likelihood regarding breastfeeding at each of the remaining assessment times. Mothers indicated which problems they had experienced with breastfeeding since the previous assessment using a checklist of common breastfeeding problems. In order to assess the impact of postpartum stress on breastfeeding duration, mothers completed the PSS in the first, second, and fourth months postpartum. Intentions to return to work were measured on a 6-point scale from definitely to definitely not, in order to assess the impact of return to work on breastfeeding duration.

The "Still Breastfeeding" questionnaire also included an assessment of social support. The social support questionnaire assessed the degree to which support from the mother's partner, mother, other family members, and friends was perceived as helpful for continuing to breastfeed. It also included a measure of the helpfulness of different types of support. The three types of support assessed in this study were: instrumental support, such as help around the house to enable the new mother to have the time and energy for breastfeeding; informational support, such as answering questions about breastfeeding; and emotional support, such as encouragement that the mother is doing a good job of breastfeeding and should continue. Support from various resources such as Public Health Nurses, hospital, doctors, and books was also assessed. Questions regarding social support are not directly related to this thesis and will be addressed in later papers.

The "Stopped Breastfeeding" questionnaire assessed the reasons for discontinuing breastfeeding and was used postnatally when interviewing women who had completely

weaned their babies. This questionnaire paralleled the “Still Breastfeeding” questionnaire with the exclusion of items that measured intentions to continue breastfeeding.

### Recruitment of Participants

The Infant Feeding Study recruited women expecting the birth of their first infant through the use of a recruitment video at hospital pre-birth registration clinics, by information sheets distributed by area midwives to their clients, and through visits by the first author to prenatal classes. Most women who intend to deliver their babies in hospital attend a pre-registration clinic at either Grand River Hospital (K/W Health Care Centre) or Cambridge Memorial Hospital. While they were waiting to be seen at the clinic, women expecting their first infant were given an information letter and asked to watch a video explaining the Infant Feeding Study. Then, because pilot test participants indicated that some personal contact with researchers would be important to facilitate participation, all women were asked to complete a Participant Contact Information form. All women who completed the form were telephoned by the author to assess whether or not they were willing to take part in the Infant Feeding Study. Women who declined participation were asked for their reason for nonparticipation and their planned method of infant feeding. The video script can be found in Appendix G and recruitment materials can be found in Appendix H.

To recruit women who did not intend to deliver in hospital, requests for participation were also given to area midwives who were to make them available to their clients. In order to increase the potential participation of younger, higher risk women, requests for participation were also made at regional adolescent prenatal classes and prenatal nutrition classes. I also personally attended prenatal classes at the Waterloo Regional Community

Health Department and Grand River Hospital to increase the participation rate in the study. I handed class members the information letter, briefly described the study, and asked class members to complete the Participant Contact Agreement form and immediately return it to me in an envelope. In order to facilitate confidentiality of participation, class members were asked to return the form whether or not they were willing to allow me to call them.

Recruitment was to continue until 360 women had volunteered to take part in the study. This number was chosen to account for anticipated postnatal attrition and still provide sufficient power to make comparisons to the 1991 breastfeeding study. The goal was to follow a sample of 300 women until they were no longer breastfeeding (or until their infants were 12 months of age). Prenatal attrition was more of a problem than originally anticipated. The greatest loss was due to mothers delivering their babies before they could complete the prenatal survey. In addition, some mothers chose to withdraw from the study before they completed their prenatal survey. In order to avoid confounds that could be related to not having had prenatal experience with the BRQ or the open-ended reasons survey, I decided to replace women who had not completed the prenatal survey. This resulted in the replacement of 22 women who delivered their babies before completing the prenatal questionnaire, 22 women who withdrew from the study prenatally, and 2 women who moved without forwarding addresses. Thus, recruitment continued with replacements until 317 women had both volunteered to take part in the study and completed the prenatal survey. Sixteen women were lost to follow-up postnatally. Nine women did not complete any postnatal surveys, and 7 women withdrew over the course of follow-up assessments.

### Data collection

Prenatal surveys. At the time that women agreed to participate in the study, women were randomly assigned by the toss of a die to either the open-ended or closed-ended conditions. Because 1/6 of the participants were to receive the open-ended survey, women were assigned to this condition when a six was obtained. Sixty-two women (19 %) were assigned to the open-ended group. Participants were then sent a copy of the prenatal survey and a further information letter. A copy of the information letters sent to participants and their partners can be found in Appendices I and J. Women in the close-ended condition were given the option of completing the survey by telephone or returning the survey to the Waterloo Region Community Health Department. Women in the open-ended condition were only informed that they would complete the survey by telephone or home visit. In order to ensure that women were at a similar stage in their pregnancies at the time of completing their surveys, women were surveyed after approximately 32 weeks gestation. All women were contacted by me or by a trained research assistant to ascertain how they planned to complete the survey. If they agreed to complete the survey by telephone or home visit, an appointment was arranged and the responses were obtained. If they chose to mail the questionnaires to the health department, reminder calls were made if the questionnaires had not been received after approximately 2 weeks. Surveys were conducted by home visit on 6 occasions, 182 surveys were conducted by telephone, and 112 surveys were self completed. Eighteen additional surveys were self-completed but were lost by the participants. These 18 participants were retained in the study because they had completed the prenatal survey and, therefore, were comparable to other participants in terms of their experience with the study.

Partner surveys. Women were recruited into the Infant Feeding Study whether or not they had a male partner or whether or not the partner was willing to participate in they study. All partners were sent a questionnaire and information letter in the package with pregnant participants' questionnaires. The research assistant or I ascertained the partners' willingness to take part in the study when we arranged to obtain the prenatal data from pregnant participants. A total of 213 male partners participated in the study, 50 (23%) in the open-ended group and 163 (76%) in the closed-ended group. Men were provided the same options regarding completion of the surveys. In response, 114 chose to complete the surveys over the telephone, 97 self-completed the surveys, and 2 surveys were completed during home visits.

Postnatal surveys. A confidential list of women participating in the Infant Feeding Study was provided to two program assistants at the Waterloo Region Community Health Department. One of the ongoing responsibilities of these program assistants was to record the receipt of referrals obtained from area hospitals on all new mothers in Waterloo Region. Thus, they were able to check the list of participants in the Infant Feeding Study with the new referrals as they received them and inform me of the birth of a baby to any mother on the Infant Feeding Study list. In addition, I kept track of mothers' due dates and, if I had not yet received a referral, contacted them approximately 2 weeks post-dates to determine whether a referral had been missed. In this way, almost all women in the study were contacted in time to obtain an interview within the first month postpartum. Mothers who formula-fed their infants were contacted to determine whether they were interesting in receiving a summary of study results, were informed that their participation in the study was



complete, and were thanked for their participation. Interviews were arranged with all mothers who had done any breastfeeding, even if it was only a single attempt.

In order to facilitate a more detailed examination of changes in breastfeeding practices over the first 2 months postpartum it was felt that assessments every 2 weeks during the first month might be informative. However, my experience and that of other nurses suggested that such frequent interviews might be overly intrusive for new mothers. Thus, it was decided to interview half of the participants at 2 and 6 weeks postpartum and the other half at 4 and 8 weeks postpartum. Participants were randomly assigned to 2- and 6-week or 4- and 8-week assessment groups. Whenever possible, interviews during the first two months postpartum were conducted within two or three days of the predetermined interview schedule.

In order to make it easier for inexperienced mothers to attend to their new babies but still complete the interview, most of the 2- and 4-week interviews were conducted by home visit. This also allowed me to develop a relationship with study participants in order to facilitate postpartum retention in the study. However, mothers were given the option of a telephone interview or self-completion. The survey was self-completed by 6 mothers. Telephone interviews were conducted with 53 mothers and 242 mothers received home visits. I conducted all but three of the first postnatal assessments. Mothers who were still feeding any breastmilk at the time of the interview were assessed using the "Still breastfeeding" questionnaire. Mothers who were no longer breastfeeding were assessed using the "Stopped breastfeeding" questionnaire. At the close of the interview, participants were also asked whether there was anything they wanted to add to the survey to ensure that

the assessment represented their breastfeeding experiences. Point form notes were added to the questionnaire forms in response to this open-ended question.

The interviews conducted at 6 and 8 weeks were generally conducted by telephone using the postnatal questionnaires. Only 2 interviews were completed by home visit and 2 were self-completed. The research assistant from the health department conducted all but 18 of the 6- or 8-week interviews. I conducted all of the interviews at 4 and 6 months and all but 3 assessments were conducted by telephone.

## CHAPTER III

### Results

#### Characteristics of Participants

##### Demographics

Participants. Participants in the Infant Feeding Study represented a wide range of women who were pregnant with their first infants. Tables 1 and 2 report some demographic characteristics of the participants and their partners. Participants in the Infant Feeding Study ranged in age from 16 to 42. The mean age of participants was 27.68 years ( $SD = 5.17$ ). The mean age is very similar to the mean age of 27.5 years reported for randomly sampled participants in the 1991 Waterloo Region breastfeeding survey. Participants were generally fairly highly educated. Most participants had obtained some post-secondary education. The mean number of years of education reported by participants was 14.97 years ( $SD = 2.78$ ), with a range of 5 to 22 years. This is considerably higher than the educational level of the 1991 participants. Only 38% of the randomly sampled 1991 participants had any university or college education. This difference in level of education is likely related to differences in study methodology. The 1991 study was conducted using a single telephone call to randomly sampled participants, whereas the present research was conducted with volunteers who were willing to commit to a multi-wave longitudinal study. Thus, some differences in demographic characteristics are not surprising.

The sample of participants in the Infant Feeding Study also had fairly high levels of income. Family income was assessed categorically, with 8 categories ranging from less than \$6,000 to more than \$60,000. The frequency and proportion of women in each category can be found in Table 2. The modal income category chosen by participants was more than

\$60,00 and the median category was \$50,000 to 59,000. Three percent of participants did not know their family income and 20% refused to provide income information.

Women were also asked to identify their current employment status. The frequency of their responses can be found in Table 1. Most women in the study were employed prior to the birth of their babies: 59% were employed full-time and 16% were employed part-time. An additional 4% were full-time students and 3% were part-time students. Three participants (1%) reported part-time work in addition to either full-time work or school, and 6 women (2%) reported being students in addition to being employed. The remaining 19% of the participants in this study classified themselves as not working or full time homemakers.

As would be expected with pregnant women, most were either married (76%) or living common-law (13%). However, 10% of the sample was single. The 1991 study did not assess the marital status of participants, but an evaluation of Public Health Nurse postpartum services conducted by the Waterloo Region Community Health Department in 1997 (Powell, Tindale, Sianchuk, MacGregor, & Weidmark, 1998) did assess marital status. In that study, in which younger mothers were over-sampled, 19% of the population was single. Only 5% of the mothers sampled in a 1996 breastfeeding study conducted in Perth County contacted all mothers giving birth over a 3 month period were single (L. Rempel, 1998). The similarity of the proportion of single mothers in this present study to those of other local studies suggests that this present sample of volunteers does contain a representative proportion of single mothers.

Table 1

Age, Education, and Employment Status of Participants (N = 299) and Male Partners (N = 213)

	Participants	Partners
Mean Age	27.68 years ( <u>SD</u> = 5.17)	30.49 years ( <u>SD</u> = 5.36)
Mean Years of Education	14.97 ( <u>SD</u> = 2.78)	15.56 ( <u>SD</u> = 2.91)
Employment Status	N (% of total sample)	
Working Full-time	177 (59%)	190 (89%)
Working Part-time	48 (16%)	14 (7%)
Not working	38 (13%)	4 (2%)
Homemaker	20 (7%)	0
Full-time Student	13 (4%)	11 (5%)
Part-time Student	8 (3%)	4 (2%)

Note. Employment percents do not add to 100% because some participants reported more than one option.

Table 2

**Participants' Family Income and Marital Status (N = 299)**

<b>Income</b>	<b>N (% total sample)</b>
Less than \$6,000	4 (1%)
\$6,000 to \$11,999	7 (2%)
\$12,000 to \$19,999	12 (4. %)
\$20,000 to \$29,999	21 (7%)
\$30,000 to \$39,999	23 (8%)
\$40,000 to \$49,999	24 (8%)
\$50,000 to \$59,999	46 (15%)
More than \$60,000	111 (37%)
Did not know family income	10 (3%)
Refused to answer	59 (20%)
<b>Marital Status</b>	
Married	227 (76%)
Living Common-Law	40 (13%)
Single	31 (10%)
Divorced	1 (1%)

Participants came from a variety of cultural backgrounds. Although 85% of participants were born in Canada, the 13% of participants born outside of Canada were born in a variety of other parts of the world including Eastern and Western Europe, Asia, Central America, South America, and the Caribbean. In addition, 38% of the participants had at

least 1 parent born outside Canada. Parents' birthplaces represented all of the participants' birthplaces plus Africa and Australia.

**Partners.** Demographic information about partners can also be found in Table 1. Partners who were willing to participate in the study were somewhat older than female participants and had similar levels of education. On average, partners who participated in the study were 30.49 years of age ( $SD = 5.36$ ) and ranged in age from 18 to 52 years of age. Partners had completed a mean of 15.56 years of education ( $SD = 2.91$ ) with a range from 9 to 26 years of education. Almost all partners were employed full-time (89%), 7% were employed part-time, 6% were full-time students, and 2% were unemployed. Sixteen percent of partners were born outside of North America and 39% of partners had at least 1 parent born outside of North America. Partners represented the same range of cultural backgrounds as the women in the study.

Overall, the participants in the Infant Feeding Study do represent a fairly broad spectrum of mothers pregnant with their first baby and their partners. Although the income and educational levels of the sample are fairly high, the age and marital status are within expected ranges and the sample draws from a variety of cultural backgrounds. Thus, the findings from the Infant Feeding Study should be considered to be fairly generalizable to first-time mothers in Waterloo Region.

#### **Intentions to breastfeed**

One goal of the Infant Feeding Study was to determine current breastfeeding initiation and duration rates in Waterloo region. All participants in this study, including those in the open-ended interview condition, were assessed on all intention and postpartum behavioural measures. Whenever appropriate, intention and behavioural analyses will be

provided for the full sample of breastfeeding mothers in the Infant Feeding Study. Contrary to the hypothesis, there were no differences between the open-ended and closed-ended conditions on intention and behavioural measures. Because it does not appear that repeated exposure to reasons for and against breastfeeding significantly altered breastfeeding intentions and duration for these participants, data from the two conditions were combined for any variables on which all mothers were assessed.

The first of these variables to be considered is participants' breastfeeding plans. Unfortunately, despite a request in the recruitment video and in prenatal class recruitment sessions for all expectant mothers to take part in the study whether or not they planned to breastfeed, all but 14 (5%) of the 299 participants surveyed prenatally in this study planned to breastfeed. Seven participants planned not to breastfeed and seven were unsure. Thus, although the demographic characteristics of participants in this study are fairly representative of women in Waterloo Region, this self-selected sample is probably more positive regarding breastfeeding than the general population.

Women who were considering breastfeeding their babies were asked the strength of their intentions to breastfeed at all, and the strength of their intentions to still be breastfeeding at 1 month, 2 months, 4 months, 6 months, 9 months, 12 months, and longer than 12 months. Table 3 shows the mean strength of intentions to breastfeed to each of those time periods. The strength of their intentions to continue breastfeeding was assessed again at each postnatal assessment period. These intentions are also shown in Table 3.

Prenatal intentions to breastfeed at all were extremely high. The mean strength of participants' intentions to breastfeed at all was 9.50 out of a possible 10. The strength of intentions to still be breastfeeding at 1 month were even higher ( $M = 9.71$ ). This is because



some women who were not definite about beginning to breastfeed indicated that, if they started breastfeeding, they would definitely breastfeed for at least 1 month. Strength of intentions to breastfeed to 2 months were also strong ( $M = 9.61$ ), but, thereafter, intentions decreased with increasing infant age. The mean strength of prenatal intention to still be breastfeeding once their infant was 12 months of age was 2.73, and the mean strength of intention to breastfeed longer than 12 months was 1.27.

This pattern of intentions was also present at all postpartum time points. Although this study assessed the breastfeeding experiences of mothers at either 2 and 6 weeks postpartum or 4 and 8 weeks postpartum, there were almost no significant differences in reported breastfeeding experiences or behaviour between 2 and 4 weeks and between 6 and 8 weeks. Therefore, for the purposes of this paper, the 2- and 4-week data have been combined and will be referred to as the 1-month data, and the 6- and 8-week data have been combined and will be referred to as the 2-month data.

Paired t-tests reveal that, for mothers who were still breastfeeding at one month, strength of intentions to breastfeed to 2 months, 4 months, and 6 months decreased from their corresponding prenatal levels. Intentions to breastfeed to 2 months decreased from 9.84 prenatally, for those mothers who were still breastfeeding at 1 month, to 9.45 at 1 month postpartum,  $t(227) = 3.25$ ,  $p = .001$ . Mean intentions to breastfeed to 4 months decreased from 9.19 to 8.61,  $t(228) = 3.63$ ,  $p < .001$ , and intentions to breastfeed to 6 months decreased from 7.66 to 6.91,  $t(229) = 4.01$ ,  $p < .001$ . These lowered intentions were likely due to the less definite breastfeeding intentions of mothers who experienced more difficulty with breastfeeding than they had anticipated.

However, the opposite was true for mothers who were still breastfeeding at 4 and 6 months. These women had successfully breastfed through the early weeks and actually increased their intentions to breastfeed to 9 or 12 months. For mothers who were still breastfeeding at 4 months, mean intentions to breastfeed to 9 months increased from the 2-month mean of 4.96 to the 4-month assessment mean of 5.40,  $t(169) = -2.03$ ,  $p = .044$ . When the breastfeeding intentions of mothers who were still breastfeeding at 6 months were compared with their 4-month assessment intentions, their mean intentions to continue breastfeeding to 9 months increased from the 4-month mean of 6.81 to the 6-month assessment mean of 7.54,  $t(124) = -2.94$ ,  $p = .004$ . Their mean intentions to breastfeed to 12 months increased from their 4-month assessment mean of 4.56 to the 6-month mean of 5.33,  $t(124) = -2.98$ ,  $p = .004$ . Thus, it appears that new mothers do alter their breastfeeding intentions in response to their breastfeeding experiences. Mothers who have difficult breastfeeding experiences are less likely to intend to continue, and mothers who do continue past the early weeks are more likely to intend to continue breastfeeding even longer than they initially intended.

Table 3

Mean of Strength of Intentions to Breastfeed at Each Time Point

Intentions	<u>M (SD)</u>				
	Prenatal (N=290)	1 month (N=238)	2 months (N=200)	4 months (N=181)	6 months (N=125)
Intentions to breastfeed at all	9.50 (1.55)	--	--	--	--
Intentions to breastfeed to 1 month	9.71 (1.12)	--	--	--	--
Intentions to breastfeed to 2 months	9.61 (1.45)	9.47** (1.83)	--	--	--
Intentions to breastfeed to 4 months	8.91 (2.21)	8.26** (2.69)	9.20 (2.04)	--	--
Intentions to breastfeed to 6 months	7.40 (3.35)	6.92*** (3.61)	7.66 (3.44)	8.46 (2.76)	--
Intentions to breastfeed to 9 months	4.25 (3.68)	4.22 (3.81)	4.46 (3.85)	5.45* (3.74)	7.54** (3.23)
Intentions to breastfeed to 12 months	2.73 (3.49)	2.81 (3.57)	3.02 (3.63)	3.49 (3.75)	5.33** (3.80)
Intentions to breastfeed longer than 12 months	1.27 (2.43)	1.39 (2.40)	1.34 (2.47)	1.63 (2.79)	2.46 (3.07)

\*\*\* significant change from previous time period using paired t-test,  $p < .001$ , 2-tailed.

\*\* significant change from previous time period using paired t-test,  $p < .01$ , 2-tailed.

\* significant change from previous time period using paired t-test,  $p < .05$ , 2-tailed.

Note. Strength of Intentions measured from 0 = "definitely do not intend to breastfeed" to 10 = "definitely do intend to breastfeed". N at each time period includes open-ended and closed-ended participants.

### Experiences with breastfeeding

Given that breastfeeding experiences did seem to affect breastfeeding intentions, it is important to determine the kind of breastfeeding experiences that were described by mothers in the Infant Feeding Study. This study is rich in personal anecdotes as well as quantitative data about their breastfeeding experiences. A thorough description of participants' experiences is beyond the scope of this paper and will be completed in the future. For the purposes of this paper, I will limit my discussion to a description of breastfeeding initiation and duration and the prevalence of breastfeeding problems reported by mothers in the study.

Breastfeeding initiation. Breastfeeding was initiated by 96% of the 313 mothers for whom data was available after birth of their infants. I defined breastfeeding initiation as having breastfed at least once. This proportion is higher than the initiation rates reported in other local breastfeeding studies that have been conducted in recent years. The 1992 Waterloo Region breastfeeding study reported that 85% of the 212 randomly sampled women who were contacted by telephone and agreed to participate had initiated breastfeeding (Verhoeve et al., 1992). ( $z = 3.863, p < .001$ ). A more recent study conducted in Perth County telephoned all mothers who had given birth over a 4-month period in 1996. Of the 206 mothers who participated, 86% were breastfeeding on discharge from hospital (L. Rempel, 1998). The proportion of mothers who initiated breastfeeding in the present study (96%) was significantly greater than both the proportion of mothers who initiated breastfeeding in the 1992 Waterloo Region study (85%),  $z = 3.86, p < .001$ , and the 1996 Perth County study (86%),  $z = 3.56, p < .001$ . Given the design of the present study, it is not completely surprising that the current highly self-selected sample should have been more

likely to initiate breastfeeding. Thus, the breastfeeding initiation rate in this study should not be considered indicative of current Waterloo Region initiation rates.

**Breastfeeding Duration.** The study also assessed the breastfeeding duration of mothers in the study who initiated breastfeeding. Two hundred and ninety-three breastfeeding mothers were contacted after the birth of their babies. Any mother who was feeding any breastmilk in any way, either from the breast, by a bottle, or using a lactation support device, was defined as still breastfeeding.

By 4 weeks postpartum, 53 (18%) of the mothers who were contacted had discontinued breastfeeding. Twenty-seven mothers (9% of mothers contacted) discontinued breastfeeding between 4 and 8 weeks postpartum, and a further 35 more mothers (12%) discontinued breastfeeding between 8 weeks and 4 months. Thus, the breastfeeding prevalence at 4 months was 61%. This proportion was not significantly different from the 4-month breastfeeding prevalence of 52% that was reported in the 1992 Waterloo Region study.

By 6 months postpartum, 53 additional mothers (19% of mothers contacted) had discontinued breastfeeding their babies. Thus, the breastfeeding prevalence at 6 months was 43%. The 1992 Waterloo Region study only assessed breastfeeding continuation to 4 months so a comparison cannot be made to previous Waterloo Region results. However, the 6-month breastfeeding prevalence in this current study is very similar to the 6-month prevalence of 41% found in the 1996 Perth county study. These prevalence comparisons suggest that, although a larger proportion of women in this study initiated breastfeeding than would be expected of the general population in Waterloo Region, breastfeeding duration was not significantly different from the breastfeeding duration found in other studies. The

women who did initiate breastfeeding discontinued breastfeeding at approximately the same rate as women who were surveyed in other studies. These results indicate that, although the prediction of breastfeeding initiation may not be entirely generalizable to the general population of pregnant women, any relationships with breastfeeding duration identified in this study should be generalizable to the population of breastfeeding mothers in Waterloo Region and beyond.

**Breastfeeding Problems.** Breastfeeding is often accompanied by problems during the early weeks, as mother and baby establish the breastfeeding relationship. Mothers who participated in the Infant Feeding Study were asked to indicate which problems they had experienced from a list of common breastfeeding problems. Table 4 shows the proportion of mothers who indicated that they had experienced these problems.

As expected, most problems were experienced during the first month postpartum. Most of the mothers in this study experienced problems with breast discomfort. Nipple pain was experienced by 76% of breastfeeding mothers, and 41% also had cracked nipples. Two-thirds (62%) of mothers had enough engorgement that they considered it to be a problem. Mothers also indicated that they had experienced problems because their babies had difficulty breastfeeding. More than half the mothers in this study indicated that their babies had demonstrated poor latch or suck (55%) or were too sleepy to nurse at some point (55%). One-third (33%) of babies had sufficient jaundice that it was considered to be a problem. Milk supply was also a concern for breastfeeding mothers in the first month postpartum. Approximately one-third of mothers (35%) indicated that they had experienced insufficient milk supply, and 20% indicated that their infants had demonstrated insufficient weight gain at some point in the first month. Conversely, 27% of mothers had experienced too much let-

down—their milk was gushing out too fast for the baby. In addition, 36% of the mothers indicated that they had a fussy baby.

Generally, the prevalence of breastfeeding problems decreased by the second assessment. During the second month, cracked nipples, concerns about suck or latch, insufficient milk, poor infant weight gain, sleepy baby, and jaundice decreased by more than half the prevalence in the first month. The most commonly cited problems during the second month postpartum experienced by mothers who had continued to breastfeed past the first postpartum assessment were a fussy baby (45%), engorgement (37%), too much let-down (27%) and nipple pain (25%). These problems continued to be concerns of mothers who were assessed at 4 and 6 months postpartum. In addition, 22% of mothers at 4 months were concerned that they had insufficient milk. With the exception of infant jaundice, which would be expected to be resolved by 8 weeks in the absence of specific, unusual infant health problems, all problems that were assessed did occur to at least one mother at every time point.

Table 4

Prevalence of Breastfeeding Problems

Problem	Proportion of Women Who Experienced Problem			
	1 Month (N=288)	2 Months (N=226)	4 Months (N=214)	6 Months (N=178)
Nipple Pain	.76	.25	.27	.21
Engorgement	.62	.37	.31	.31
Sleepy Baby	.55	.11	.02	.03
Poor Suck or Latch	.55	.19	.09	.08
Cracked Nipple	.41	.08	.04	.03
Fussy Baby	.36	.45	.29	.27
Insufficient Milk	.35	.08	.22	.17
Jaundice	.33	.04	.00	.00
Too Much Let-Down	.27	.28	.21	.13
Insufficient Infant Weight Gain	.20	.04	.07	.05
Breast Infection or Plugged Duct	.18	.11	.09	.14
Thrush	.07	.09	.09	.06

Description of Breastfeeding ReasonsValidity of the Breastfeeding Reasons Questionnaire (BRQ)

The women in this study, both in anticipation and in response to their breastfeeding experiences, were asked about their pro and con breastfeeding reasons. As indicated previously, the closed-ended reasons questionnaire was compiled from reasons for and against breastfeeding found in the breastfeeding literature and from the experiences of the



Public Health Nurses involved in breastfeeding support. How accurate and how comprehensive was the BRQ in representing the domain of reasons for and against breastfeeding? One of the purposes for the open-ended questionnaires was to check the validity of the closed-ended BRQ. A volunteer undergraduate research assistant compared the responses of the 62 open-ended questionnaires in order to ascertain which open-ended reasons corresponded to the BRQ items and which open-ended responses were missing from the BRQ.

Although many con breastfeeding reasons were mentioned infrequently, the only con breastfeeding reason in the BRQ that was not mentioned at all by pregnant women responding the open-ended survey was, "Breastfeeding will not allow me to go on a strict weight loss diet." This is apparently not something that pregnant women have heard as a concern about breastfeeding. Issues that were missed as con breastfeeding reasons included concerns about the health of mother and baby. Pregnant women indicated that they might stop breastfeeding if their baby wasn't gaining weight or if their baby needed more food than they could provide. Several mothers said that problems with the baby's latch could be a concern for themselves and might get them to think about stopping. They indicated that they would not continue if they felt that it would be detrimental to either their own health or the health of the baby. Women also indicated they might stop if it seemed that the baby did not want to breastfeed. The fact that breastfeeding is time consuming was also an issue of concern to women responding to the open-ended questionnaires.

Pro breastfeeding reasons were abundant in the open-ended responses. Almost all of the pro breastfeeding reasons on the BRQ were mentioned by at least one open-ended respondent. Pregnant participants cited many infant health-related reasons for breastfeeding.

The only health-related reason that was not mentioned at all was that breastfed babies have less chance of getting diabetes. On the other hand, they provided many other specific benefits of breastfeeding such as the fact that breastmilk provides immunity and antibodies and that it is easier on babies' digestion. Respondents to the open-ended interview did not mention some reasons related to benefits of breastfeeding for mothers. They did not mention that breastfeeding would make it easier to get out of the house, that breastfeeding might let them sleep better (they were more concerned that it might deprive them of sleep), or that breastfeeding might make their breasts more attractive. However, they did cite specific advantages of breastfeeding for babies that were not included in the BRQ. These included that breastmilk is sterile and would be the right temperature and the right amount for their baby. Participants also noted that the nutrients in breastmilk change as baby grows. Many women mentioned that breastfeeding would give their baby the best start in life.

These open-ended data indicate that, although some specific pro breastfeeding items were not present, the BRQ generally reflected the pro breastfeeding reasons that pregnant women consider when making their breastfeeding decisions. Regarding the con breastfeeding reasons, it appears that although the BRQ did capture many reasons that could be considered by women as reasons to stop breastfeeding, it did miss reasons that reflected women's concerns about breastfeeding their babies in the face of a health risk to themselves or their babies. However, overall, it appears that the BRQ is a valid measure of pro and con breastfeeding reasons.

#### Categorization of Reasons in the BRQ

The main purpose of this study was to examine the ability of the three levels of reasons in the reasons model to predict breastfeeding intentions and behavior. In order to

conduct analyses to test the reasons model, the pro and con breastfeeding reasons in the BRQ needed to be categorized into the three reasons levels. This was accomplished in two steps. In the first step, the list of closed-ended reasons was given to six raters. These raters were given a description of the reasons model which can be found in Appendix K. This four page document described the characteristics of the three reasons levels and was accompanied by a chart that indicated identifying features of each level. The raters were asked to rate how well each reason met the description of the criteria for a Level I, Level II, or Level III reason using a scale from 1 to 5 where 1 = Does not meet criteria at all, 2 = Slightly similar to criteria, 3 = Moderately similar to criteria, 4 = Very similar to criteria, and 5 = Extremely similar to criteria. Instructions for the rating scale and sample items can be found in Appendix L. A mean similarity for Level I, Level II, and Level III was calculated for each reason, and reasons were categorized according to the Level that received the highest mean rating.

In the second step, the rated level of each reason was compared with similar reasons generated in the open-ended questionnaires to validate the classification. Only 5 reasons out of the 58 breastfeeding reasons in the BRQ (9%) corresponded to open-ended responses that did not appear to fit the levels chosen by the raters. Only 1 of the 33 con breastfeeding reasons did not appear to be correctly rated. That reason was “Breastfeeding a newborn for a few months is all right, but it would seem strange to keep breastfeeding once my baby gets older than that.” Raters classified this as a Level II reason, but open-ended responses suggested that it might be more appropriately classified as a Level III reason. For example, one woman said, “It’s awful when you see children pulling at mother’s shirt. There is a point of letting go.” Another woman said she would stop before the baby started walking or

creeping, then baby was big and strong enough and breastfeeding “would look real awkward to me.” Another woman set a limit of 6 to 9 months because she was not comfortable with breastfeeding children older than that. Because these responses suggest that “seeming strange” may be carry stronger affect than the raters anticipated, this single breastfeeding reason was moved to Level III.

Four pro breastfeeding reasons out of the 28 pro breastfeeding reasons in the BRQ (14%) were changed on the basis of open-ended responses. The first reason was “Breastfeeding will save me money because it is cheaper than formula feeding.” Many mothers indicated that breastfeeding was economical and one said, “It’s the only reason we can afford to have a baby.” Although this reason could be a Level I reason, based on evidence that could be true for anyone, it appeared that people were also considering the more specific economic benefits for themselves. Since specific benefits are Level II reasons, this reason was finally categorized as a Level II reason. Another reason that was first classified as a Level I reason was, “I have family members or friends who think that breastfeeding is a good idea.” This reason could be understood to be evidence for breastfeeding. However, in open-ended responses to the question, “What do your family members think about you breastfeeding?” women most commonly responded, not with evidence regarding whether or not good idea, but by talking about how supportive family and friends were of breastfeeding. This suggested that women would likely have responded to the close-ended reason more in terms of social support than of evidence. Thus, this reason was also classified as a Level II reason.

Two other reasons that were originally classified as Level I reasons were reclassified as Level III reasons. The first was, “Breastfeeding will make my baby secure and loved.”

Comments that breastfeeding creates an emotional, safe environment for the child suggested that this may reflect maternal values regarding providing safety and love for her baby rather than simply reflecting commonly accepted evidence about the consequences of breastfeeding. The second reason to be reclassified as a Level III reason was, “Breastfeeding is natural way to feed a baby.” Although this reason can easily be seen as evidence for breastfeeding, there were numerous open-ended comments that suggested that this reason could also represent values and self-identity. When asked if they had any reasons for or against breastfeeding that represented values or things they thought were important in life, many women responded with answers such as “I’m a natural type person,” “I value a natural lifestyle,” or breastfeeding reflects a “commitment to doing things naturally.” These comments suggested that the reason “Breastfeeding is a natural way to feed a baby,” likely elicits those value images for many women. Thus, this reason was also classified as a Level III reason.

The resulting list of pro breastfeeding Level I, Level II, and Level III reasons are presented in Tables 5 to 7 and the list of con breastfeeding reasons are presented in Tables 8 to 10. The closed-ended reasons were assessed on a scale where N = Never thought about this reason and 0 = Thought about this reason but not a reason of mine. The “N” category was included for Health Department information, to assess the degree to which people were aware of Level I benefits of breastfeeding, such as, “Breastfed babies have better speech and language development.” For the purposes of reasons model analyses, however, I decided that “N” and “0” should be collapsed into one category, since both referred to reasons not considered by the participants. Thus, all reasons analyses reported in this paper combine the

“N” and “0” as zero. Parallel analyses were conducted with “N” scored as -1, and the pattern of results was extremely similar to the results that will be presented.

For the purposes of reasons analyses, indicator variables for pro breastfeeding Level I, Level II, and Level III reasons, and for con breastfeeding Level I, Level II, and Level III reasons were created by calculating the mean importance rating for reasons at each level. Reasons variables were calculated for each assessment wave. Although breastfeeding participants were assessed at 2 and 4 weeks or 6 and 8 weeks, the means for pro and con reasons levels did not differ significantly between 2 and 4 weeks or between 6 and 8 weeks. Therefore, variables for 2 and 4 weeks have been collapsed and will be reported as 1-month reasons, and variables for 6 and 8 weeks have been collapsed and will be reported as 2-month reasons. Parallel reasons variables were also calculated for partners reasons for and against breastfeeding.

#### Relative Importance of Individual Reasons

The reasons model considers a variety of reasons within each level that address different issues that have been demonstrated or postulated to be related to whether or not to engage in a recommended health behaviour. It is likely that some of these individual reasons will hold more absolute importance for most people considering the behaviour than others. Which of the pro and con breastfeeding reasons were considered most important by women in the study? Individual item means for pro breastfeeding reasons at each time period are presented in Tables 5 to 7. Individual item means for con breastfeeding reasons are presented in Tables 8 to 10.

Pro Breastfeeding Reasons. The most important reasons for breastfeeding were “Breastfeeding keeps babies healthy,” and “It is important for me to do anything that is good

for my baby and that includes breastfeeding.” The first reason was consistently given a mean importance rating greater than 4 on a 5-point scale (prenatal  $\underline{M}$  = 4.29 to 4 month  $\underline{M}$  = 4.73). This suggests that women consider the overall evidence regarding the health benefits for babies to be an extremely important reason for breastfeeding. The second reason is a Level III reason that identifies a value that could lead to ascribing such extreme importance to the health benefits of breastfeeding. Thinking it important to do anything that is good for one’s baby was also generally given a mean importance rating of over 4 (prenatal  $\underline{M}$  = 4.30 to 4 month  $\underline{M}$  = 4.68; 6 month  $\underline{M}$  = 3.88).

Other pro breastfeeding reasons that were rated as very important were “I will feel very close to my baby when I breastfeed,” “Breastfeeding will make my baby feel secure and loved,” and “Breastfeeding is a natural way to feed a baby.” All of these Level III reasons were given mean importance ratings greater than 3 on the 5-point importance scale. The Level I reasons “Breastfed babies have less chance of getting diseases like cancer or diabetes when they get older,” and “The more months a mother breastfeeds, the better it is for the mother and the baby,” were also rated as very important reasons for breastfeeding, and given mean ratings greater than 3.

Level II pro breastfeeding reasons were generally considered less important than Level I and III pro breastfeeding reasons. The most important Level II reason was, “Breastfeeding will be convenient for me.” This reason was rated as somewhat important prenatally ( $\underline{M}$  = 2.34) and increased in importance postnatally (1 month  $\underline{M}$  = 2.62 to 6 month  $\underline{M}$  = 3.27). Pro breastfeeding reasons that were given the lowest importance were such personal benefits of breastfeeding as “Breastfeeding will make it easier for me to get out of the house,” (prenatal  $\underline{M}$  = 0.78) “Breastfeeding will let me sleep better,” (prenatal  $\underline{M}$  = 0.68) and “My breasts will

be more attractive when I breastfeed.” (prenatal  $\underline{M}$  = 0.31). The benefit that breastfeeding makes it easier to get out did increase in importance between 1 and 2 months postpartum for women who were still breastfeeding at those times (1 month  $\underline{M}$  = 0.96, 2 month  $\underline{M}$  = 1.71). Thus, it appears that women consider pro breastfeeding values and health benefits to be the most important reasons for breastfeeding, whereas the self-consequential reasons for breastfeeding are seen as less important. In fact, in the open-ended interviews, several mothers referred to these Level II reasons as “perks”—they are not really important but they are added benefits.



Table 5

**Level I Pro Breastfeeding Reasons**

Reason	<u>M (SD)</u>				
	Prenatal (N=240)	1 month (N=190)	2 months (N=152)	4 months (N=140)	6 months (N=100)
Breastfeeding keeps babies healthy.	4.29 (1.31)	4.62 (0.84)	4.63 (0.77)	4.73 (0.67)	4.65 (0.77)
Breastfed babies are less likely to get allergies.	3.55 (1.87)	3.83 (1.60)	3.99 (1.53)	4.00 (1.55)	4.22 (1.25)
Breastfed babies have less chance of getting diseases like cancer or diabetes when they get older.	3.48 (1.93)	3.85 (1.69)	4.14 (1.49)	3.96 (1.64)	3.93 (1.63)
The more months a mother breastfeeds, the better it is for the mother and the baby.	3.43 (1.72)	3.95 (1.34)	4.11 (1.17)	3.99 (1.38)	4.40 (1.41)
Mothers who breastfeed have less risk of getting breast and ovarian cancer.	2.75 (1.97)	3.13 (1.79)	3.38 (1.67)	3.39 (1.79)	3.33 (1.71)
Breastfed babies are less likely to get ear infections.	2.52 (2.25)	2.97 (2.09)	3.44 (1.87)	3.57 (1.84)	3.68 (1.80)
I've seen family members and friends breastfeed successfully.	2.08 (1.92)	2.23 (1.90)	2.26 (1.88)	2.25 (1.85)	2.02 (1.79)
Breastfed babies have better speech and language development.	1.74 (2.15)	1.98 (2.11)	3.09 (2.00)	3.19 (2.02)	3.32 (2.00)
Doctors, nurses, midwives, and prenatal teachers say you should breastfeed.	1.73 (1.77)	1.97 (1.76)	2.30 (1.84)	2.05 (1.80)	2.02 (1.76)
My doctor or midwife supports breastfeeding.	1.66 (1.93)	2.14 (2.03)	2.34 (2.00)	2.16 (1.92)	1.93 (1.86)

Note. Cronbach's Alpha = .840

N at each time point postpartum includes only mothers who are still breastfeeding.

Table 6

Level II Pro Breastfeeding Reasons

Reason	<u>M (SD)</u>				
	Prenatal (N=240)	1 month (N=190)	2 months (N=152)	4 months (N=140)	6 months (N=100)
Breastfeeding will be convenient for me.	2.34 (1.82)	2.62 (1.73)	2.91 (1.68)	3.35 (1.48)	3.27 (1.58)
Breastfeeding will save me money because it is cheaper than formula feeding.	2.35 (1.90)	1.80 (1.87)	2.28 (1.90)	2.04 (1.86)	2.15 (1.94)
Breastfeeding will help me get my figure back more quickly.	2.25 (1.85)	2.03 (1.78)	2.30 (1.79)	2.12 (1.86)	1.82 (1.75)
I have family and friends who think that breastfeeding is a good idea.	1.77 (1.80)	2.06 (1.76)	2.18 (1.68)	2.13 (1.75)	2.17 (1.86)
Breastfeeding will make it easier for me to get out of the house.	0.78 (1.36)	0.96 (1.51)	1.71 (1.64)	1.63 (1.76)	1.66 (1.71)
Breastfeeding will let me sleep better.	0.68 (1.38)	0.65 (1.36)	1.11 (1.62)	0.99 (1.55)	1.04 (1.59)
My breasts will be more attractive when I breastfeed.	0.31 (0.87)	0.32 (0.98)	0.76 (1.40)	0.36 (0.98)	0.47 (1.11)

Note. Cronbach's Alpha = .747

N at each time point postpartum includes only mothers who are still breastfeeding.

Table 7

**Level III Pro Breastfeeding Reasons**

Reason	<u>M (SD)</u>				
	Prenatal (N=240)	1 month (N=190)	2 months (N=152)	4 months (N=140)	6 months (N=100)
It is important for me to do anything that is good for my baby and that includes breastfeeding.	4.30 (1.26)	4.57 (0.82)	4.61 (0.89)	4.68 (0.72)	3.88 (1.54)
I will feel very close to my baby when I breastfeed.	3.76 (1.58)	3.81 (1.45)	4.05 (1.16)	4.21 (1.11)	3.55 (1.54)
Breastfeeding will make my baby feel secure and loved.	3.62 (1.76)	3.95 (1.52)	4.07 (1.34)	4.32 (1.15)	4.46 (0.91)
Breastfeeding is a natural way to feed a baby.	3.36 (1.79)	3.64 (1.50)	3.70 (1.58)	3.79 (1.53)	2.15 (1.94)
I have always thought that I would breastfeed when I became a mother.	2.42 (1.99)	2.52 (2.00)	2.86 (1.99)	2.45 (1.95)	1.81 (1.94)
Breastfeeding will make me feel happy.	2.11 (1.89)	2.63 (1.72)	3.06 (1.66)	3.19 (1.61)	3.33 (1.65)
I will feel great about myself when I breastfeed.	1.80 (1.87)	2.37 (1.83)	2.84 (1.76)	2.98 (1.77)	3.05 (1.70)
Breastfeeding is part of being a woman.	1.70 (1.84)	2.02 (1.91)	2.33 (1.93)	2.03 (1.95)	2.17 (1.86)

Note. Cronbach's Alpha = .855

N at each time point postpartum includes only mothers who are still breastfeeding.

**Con Breastfeeding Reasons.** Women considered con breastfeeding reasons to be far less important for themselves. Con breastfeeding reasons are reasons for not breastfeeding or to stop breastfeeding. The fact that these reasons were not highly rated is not altogether surprising, given that this sample of women was almost uniformly planning to breastfeed. The con breastfeeding reason given the highest importance rating was, “I plan to go back to work or school outside my home.” This was the only con breastfeeding reason to be consistently given a mean importance rating over 1 (prenatal  $\underline{M}$  = 1.56, 1 month  $\underline{M}$  = 1.57, 2 months  $\underline{M}$  = 1.49, 4 months  $\underline{M}$  = 1.68, 6 months  $\underline{M}$  = 1.15). Concerns regarding their ability to breastfeed were also somewhat important reasons to consider not breastfeeding or stopping. “I may not be able to make enough milk for my baby,” (prenatal  $\underline{M}$  = 1.00 to 4 month  $\underline{M}$  = 0.50) and “Breastfeeding may be (or is) difficult,” (prenatal  $\underline{M}$  = 0.90 to 6 month  $\underline{M}$  = 0.24) were both more important before breastfeeding was started than they were after breastfeeding was established. “I’m afraid that my baby would bite me when the baby gets teeth,” increased in importance as the baby got older (prenatal  $\underline{M}$  = 0.80 to 6 month  $\underline{M}$  = 1.32). No other con breastfeeding reasons received mean ratings greater than 1.

All of the con breastfeeding reasons that were given mean importance ratings greater than 1 were Level II reasons. Generally these reasons deal with the barriers to breastfeeding for mothers. Other Level II reasons were rated as slightly important, with mean ratings above 0.50. “Breastfeeding may give me (or has given me) sore breasts or sore nipples,” (prenatal  $\underline{M}$  = 0.76 to 6 month  $\underline{M}$  = 0.45), and “I want to be able to get out of the house and that is hard to do when you are breastfeeding,” (prenatal  $\underline{M}$  = 0.63 to 6 month  $\underline{M}$  = 0.76) were slightly important reasons to consider stopping. Two additional reasons were slightly important after breastfeeding was started. “I’m afraid that my baby might want to breastfeed

all the time,” (prenatal  $\underline{M}$  = 0.36, 1 month  $\underline{M}$  = 0.63) and “Breastfeeding is tiring for me,” (prenatal  $\underline{M}$  = 0.32, 2 month  $\underline{M}$  = 0.66). These reasons, although breastfeeding mothers still did not rate them highly, indicate an increased concern about the consequences of breastfeeding for themselves.

Level III reasons for not breastfeeding were also rated as only slightly important to women in the study. The most important Level III con breastfeeding reason was “Breastfeeding a newborn for a few months is all right, but it would seem strange to keep breastfeeding once my baby got older than that,” (prenatal  $\underline{M}$  = 0.63 to 6 month  $\underline{M}$  = 0.39). Two other slightly important Level III reasons were, “I would feel embarrassed to breastfeed in front of other people,” (prenatal  $\underline{M}$  = 0.56 to 6 month  $\underline{M}$  = 0.35) and “I might not be able to handle it if I had a breastfeeding problem,” (prenatal  $\underline{M}$  = 0.51 to 6 month  $\underline{M}$  = 0.23).

Level I con breastfeeding reasons were given very low importance ratings. Some participants in this study actually disagreed with the truth of statements such as “Breastmilk can contain substances that might hurt a baby,” and “Formula is just as good for a baby as breastmilk.” The Level I reason that was considered the most important was, “You can’t tell how much a breastfed baby drinks,” (prenatal  $\underline{M}$  = 0.45, 1 month  $\underline{M}$  = 0.62 to 4 month  $\underline{M}$  = 0.38). Level I contained the reasons that were given the lowest importance rating. That reason, “My doctor doesn’t really support breastfeeding,” received mean importance ratings from 0.02 to 0.05. Other extremely unimportant reasons were “I don’t know anyone who has been able to breastfeed for long,” and two Level II reasons, “I have family and friends who don’t really support breastfeeding,” and “Sometimes it seems like my partner doesn’t want to share my breasts with the baby.”

Table 8

**Level I Con Breastfeeding Reasons**

Reason	<b><u>M (SD)</u></b>				
	Prenatal (N=240)	1 month (N=190)	2 months (N=152)	4 months (N=140)	6 months (N=100)
You can't tell how much a breastfed baby drinks.	0.45 (1.03)	0.62 (1.19)	0.51 (0.96)	0.38 (0.95)	0.46 (1.14)
Breastmilk can contain substances that might hurt a baby.	0.30 (1.10)	0.17 (0.71)	0.25 (0.82)	0.23 (0.81)	0.28 (0.83)
Formula is pretty much as good for a baby as breastmilk.	0.18 (0.72)	0.25 (0.78)	0.18 (0.62)	0.22 (0.55)	0.32 (0.82)
People do not like to see a woman breastfeed.	0.16 (0.62)	0.15 (0.62)	0.21 (0.62)	0.13 (0.41)	0.20 (0.65)
I don't have many friends or acquaintances who breastfeed.	0.12 (0.56)	0.08 (0.42)	0.11 (0.47)	0.13 (0.55)	0.11 (0.45)
I don't know anyone who has been able to breastfeed for long.	0.06 (0.31)	0.04 (0.31)	0.06 (0.33)	0.04 (0.19)	0.06 (0.28)
My doctor doesn't really support breastfeeding.	0.02 (0.21)	0.04 (0.40)	0.05 (0.36)	0.04 (0.36)	0.02 (0.14)

**Note.** Cronbach's Alpha = .553

N at each time point postpartum includes only mothers who are still breastfeeding.

Table 9

**Level II Con Breastfeeding Reasons**

Reason	<b><u>M (SD)</u></b>				
	<b>Prenatal</b> (N=240)	<b>1</b> <b>month</b> (N=190)	<b>2</b> <b>months</b> (N=152)	<b>4</b> <b>months</b> (N=140)	<b>6</b> <b>months</b> (N=100)
I plan to go back to work or school outside my home.	1.56 (1.74)	1.57 (1.69)	1.49 (1.71)	1.68 (1.74)	1.15 (1.53)
I may not be able to make enough milk for my baby.	1.00 (1.54)	0.62 (1.24)	0.54 (1.08)	0.50 (1.08)	0.60 (1.12)
Breastfeeding may be difficult.	0.90 (1.22)	0.85 (1.36)	0.68 (1.20)	0.26 (0.76)	0.24 (0.77)
I'm afraid that my baby would bite me when the baby gets teeth.	0.80 (1.19)	0.94 (1.34)	0.97 (1.34)	1.20 (1.43)	1.32 (1.46)
Breastfeeding may give me sore breasts or sore nipples.	0.76 (1.19)	0.62 (1.12)	0.64 (1.20)	0.42 (0.89)	0.45 (0.95)
I want to be able to get out of the house and that is hard to do when you are breastfeeding.	0.63 (1.06)	0.70 (1.13)	0.76 (1.17)	0.78 (1.26)	0.76 (1.11)
My partner wants to be able to feed the baby.	0.47 (1.11)	0.24 (0.77)	0.27 (0.74)	0.29 (0.78)	0.31 (0.68)
I'm afraid that my baby might want to breastfeed all the time.	0.36 (0.91)	0.63 (1.14)	0.61 (1.03)	0.46 (0.89)	0.45 (1.04)
I might not like the way my body would feel when breastfeeding.	0.34 (0.83)	0.19 (0.65)	0.19 (0.64)	0.18 (0.59)	0.18 (0.56)
Breastfeeding may be tiring for me.	0.32 (0.78)	0.65 (1.16)	0.66 (1.20)	0.56 (1.06)	0.43 (0.98)
Breastfeeding would not allow me to go on a strict weight-loss diet.	0.31 (0.85)	0.18 (0.56)	0.33 (0.84)	0.56 (1.06)	0.43 (0.98)

Table 9 continues

Table 9, continued

Level II Con Breastfeeding Reasons

Reason	<u>M (SD)</u>				
	Prenatal (N=240)	1 month (N=190)	2 months (N=152)	4 months (N=140)	6 months (N=100)
I have no support person who can give me breastfeeding advice or encourage me if things don't go well.	0.31 (0.91)	0.13 (0.53)	0.14 (0.48)	0.11 (0.48)	0.13 (0.46)
Breastfeeding would not allow me to drink alcohol or smoke as much as I want.	0.21 (0.78)	0.11 (0.50)	0.24 (0.75)	0.19 (0.73)	0.12 (0.43)
My partner doesn't really support me breastfeeding.	0.18 (0.71)	0.06 (0.38)	0.03 (0.16)	0.04 (0.22)	0.05 (0.26)
My breasts will look unattractive if I breastfeed.	0.12 (0.53)	0.09 (0.37)	0.07 (0.36)	0.11 (0.48)	0.10 (0.36)
Sometimes it seems like my partner doesn't want to share my breasts with the baby.	0.08 (0.42)	0.07 (0.36)	0.03 (0.18)	0.04 (0.22)	0.11 (0.43)
I have family members or friends who don't really support breastfeeding.	0.06 (0.34)	0.07 (0.41)	0.07 (0.27)	0.04 (0.24)	0.05 (0.22)

Note. Cronbach's Alpha = .809

N at each time point postpartum includes only mothers who are still breastfeeding.



Table 10

Level III Con Breastfeeding Reasons

Reason	<u>M (SD)</u>				
	Prenatal (N=240)	1 month (N=190)	2 months (N=152)	4 months (N=140)	6 months (N=100)
Breastfeeding a newborn for a few months is all right, but it would seem strange to keep breastfeeding once my baby gets older than that.	0.63 (1.23)	0.65 (1.15)	0.50 (1.00)	0.40 (0.80)	0.39 (0.83)
I would feel embarrassed to breastfeed in front of other people	0.56 (1.18)	0.54 (1.11)	0.40 (0.95)	0.48 (1.10)	0.35 (0.94)
I might not be able to handle it if I had a breastfeeding problem.	0.51 (1.01)	0.67 (1.12)	0.25 (0.82)	0.22 (0.69)	0.23 (0.71)
I sometimes find it hard to continue doing something that is difficult.	0.45 (0.97)	0.37 (0.98)	0.36 (0.80)	0.28 (0.79)	0.24 (0.62)
Breastfeeding may make me feel frustrated and unhappy.	0.40 (0.94)	0.39 (1.04)	0.28 (0.73)	0.16 (0.56)	0.13 (0.42)
I'm not the kind of person who wants to breastfeed so much that I would continue long after other people might think breastfeeding should stop.	0.39 (0.97)	0.38 (0.90)	0.38 (0.85)	0.36 (0.75)	0.37 (0.77)
Breastfeeding may make me feel awkward around some people who can't really understand what a breastfeeding mother goes through.	0.28 (0.84)	0.26 (0.70)	0.43 (0.90)	0.36 (0.75)	0.25 (0.72)
I'm not the type to let a baby tie me down.	0.14 (0.61)	0.08 (0.42)	0.21 (0.68)	0.11 (0.45)	0.11 (0.40)

Note. Cronbach's Alpha = .772

N at each time point postpartum includes only mothers who are still breastfeeding.

### Aggregated Reasons Variables

Knowing the relative importance of reasons for and against breastfeeding is useful because it identifies the reasons that people, themselves consider to be the most important reasons for their decisions. However, the reasons model suggests that, even if reasons such as the con breastfeeding reasons are considered relatively unimportant, the degree to which reasons from each level vary with intentions to breastfeed could be important in the prediction of breastfeeding intentions. Thus, reasons indicator variables were created by calculating the mean importance rating of pro and con reasons at each level. These variables have fairly high reliabilities. Cronbach's alphas for prenatal pro breastfeeding reasons variables were as follows: alpha = 0.84 for Level I; alpha = 0.75 for Level II; and alpha = 0.86 for Level III. Cronbach's alphas for con breastfeeding reasons variables were alpha = 0.55 for Level I, alpha = 0.81 for Level II, and alpha = 0.77 for Level III. The alpha for con breastfeeding Level I reasons was probably lower than that of other levels because of the generally low endorsement of those reasons. This general lack of endorsement of those reasons created a restriction in range that could be responsible for the attenuated alpha.

The mean levels of the aggregated pro and con breastfeeding reasons levels at each time point are presented in Table 11. As the discussion of individual item means suggests, Level III pro breastfeeding reasons were rated the highest in mean importance. Pregnant participants gave Level I pro breastfeeding reasons a mean importance rating of 2.88 on the 5-point importance scale (SD = 1.24). Pregnant participants gave Level I pro breastfeeding reasons a mean importance rating of 2.72 (SD = 1.21) and they gave Level II pro breastfeeding reasons a mean importance rating of 1.50 (SD = 1.01). Level II con breastfeeding reasons were rated the highest of the con breastfeeding reasons, with a

prenatal mean importance rating of 0.50 ( $SD = 0.51$ ). Pregnant participants gave Level III con breastfeeding reasons a mean importance rating of 0.42 ( $SD = 0.61$ ). They gave Level I con breastfeeding reasons the lowest mean importance rating ( $M = 0.18$ ,  $SD = 0.36$ ).

As indicated previously, this longitudinal study of breastfeeding reasons allows investigation of the changes in reasons from before initiating breastfeeding to following breastfeeding experience. For example, it might be expected that Level II or III con breastfeeding reasons might increase in mean importance after experience with some of the difficulties of breastfeeding. It has already been shown that some individual reasons change in importance after breastfeeding experience. In order to test whether any changes in mean reasons levels were significant, paired t-tests were conducted between successive time points. Paired t-tests were chosen for this analysis because multiple time point comparisons would only have analyzed the reasons means for women who were still breastfeeding at 6 months and could contribute data for all time points. Paired t-tests allowed the use of data from all women who discontinued breastfeeding after the second time point in each pair.

Table 11 shows the mean reasons importance ratings at each time period. For breastfeeding women, mean levels of con breastfeeding reasons remained low and stable across all time points. Thus, it appears that con breastfeeding reasons did not increase in overall importance for women who continued to breastfeed. Mean levels of pro breastfeeding reasons did increase with early breastfeeding experience. Women who were still breastfeeding at 1 month significantly increased the importance they ascribed to Level I and Level III pro breastfeeding reasons in comparison to the importance they ascribed to those reasons prenatally. For women who were still breastfeeding at 1 month, Level I reasons increased in importance from the prenatal mean of 2.85 to the 1-month mean of

3.07,  $t(182) = 3.34$ ,  $p = .001$ . Their Level III reasons increased from a prenatal mean of 3.04 to a 1-month mean of 3.19,  $t(182) = 2.02$ ,  $p = .04$ . Furthermore, women who were still breastfeeding at 2 months increased the importance they ascribed to pro breastfeeding reasons at all 3 levels. For women who were still breastfeeding at 2 months, Level I reasons increased in mean importance from the 1-month mean of 3.13 to the 2-month mean of 3.37,  $t(151) = 3.61$ ,  $p < .001$ . Level II reasons increased in mean importance from the 1-month mean of 1.55 to the 2-month mean of 1.88,  $t(151) = 4.74$ ,  $p < .001$ , and Level III reasons increased in mean importance from the 1-month mean of 3.27 to the 2-month mean of 3.44,  $t(151) = 2.47$ ,  $p = .015$ .

It should be noted that these results cannot be explained by the attrition of breastfeeding women who were less positive about breastfeeding. Only 12 of the 240 women in the closed-ended group who were surveyed prenatally (5%) left the study before they had discontinued breastfeeding. Thus, it appears that women who initiate breastfeeding and continue for at least 2 months increase the importance of pro breastfeeding reasons in response to their breastfeeding experience.

**Table 11**  
**Mean of Pro and Con Reasons Levels at Each Time Point**

Reasons level	<u>M (SD)</u>				
	Prenatal (N=240)	1 month (N=190)	2 months (N=152)	4 months (N=140)	6 months (N=100)
Con breastfeeding Level I	0.18 (0.36)	0.19 (0.41)	0.20 (0.34)	0.17 (0.34)	0.21 (0.43)
Con breastfeeding Level II	0.50 (0.51)	0.45 (0.48)	0.46 (0.51)	0.42 (0.44)	0.39 (0.47)
Con breastfeeding Level III	0.42 (0.61)	0.43 (0.69)	0.38 (0.61)	0.30 (0.51)	0.26 (0.47)
Pro breastfeeding Level I	2.72 (1.21)	3.07** (1.05)	3.37** (1.04)	3.33 (1.05)	3.31 (1.03)
Pro breastfeeding Level II	1.50 (1.01)	1.49 (0.99)	1.88** (1.17)	1.80 (0.99)	1.80 (1.03)
Pro breastfeeding Level III	2.88 (1.24)	3.19* (1.11)	3.44* (1.12)	3.46 (1.06)	3.46 (1.07)

\*\* significant change from previous time period using paired t-test,  $p < .001$ , 2-tailed.

\* significant change from previous time period using paired t-test,  $p < .05$ , 2-tailed.

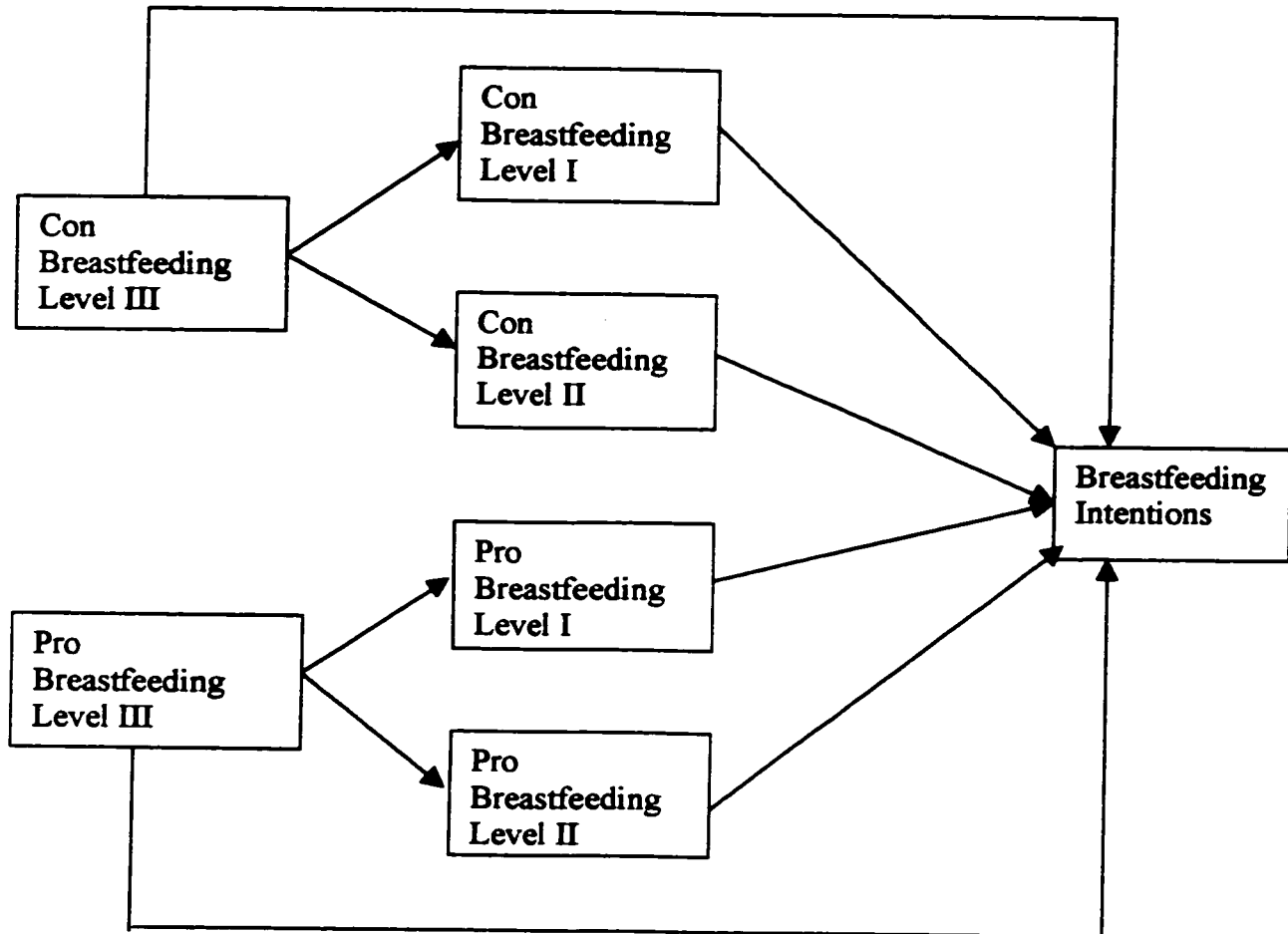
#### Path Model for the Reasons Model

The previous results have described the two primary constructs in this thesis, reasons and intentions to breastfeed. It has been shown that participants in this study have high intentions to breastfeed for the first few months after birth and decreasing intentions to breastfeed as babies get closer to 1 year of age or older. I have also described the higher relative importance participants placed on pro breastfeeding reasons and the way pro breastfeeding reasons and intentions change over the first 6 months of breastfeeding

experience. I will now move to the central analyses for this study—analyses that will assess the ability of reasons for and against breastfeeding to predict breastfeeding intentions.

The reasons model suggests that all three levels of reasons should predict intentions to breastfeed. Our previous research in the domain of condom reasons has shown that all three levels of reasons predict intentions and that Level III reasons are the strongest predictors of intentions. Is this also true in the domain of breastfeeding intentions? How do the three levels of reasons relate to each other and to intentions to breastfeed? It was expected that, as was found for condom reasons, within the pro and con breastfeeding domains, the three reasons levels would be fairly highly correlated. I hypothesized that those high correlations may be, in part, related to causal paths from Level III to Level I and Level II reasons. The hypothesized path model is shown on Figure 1.

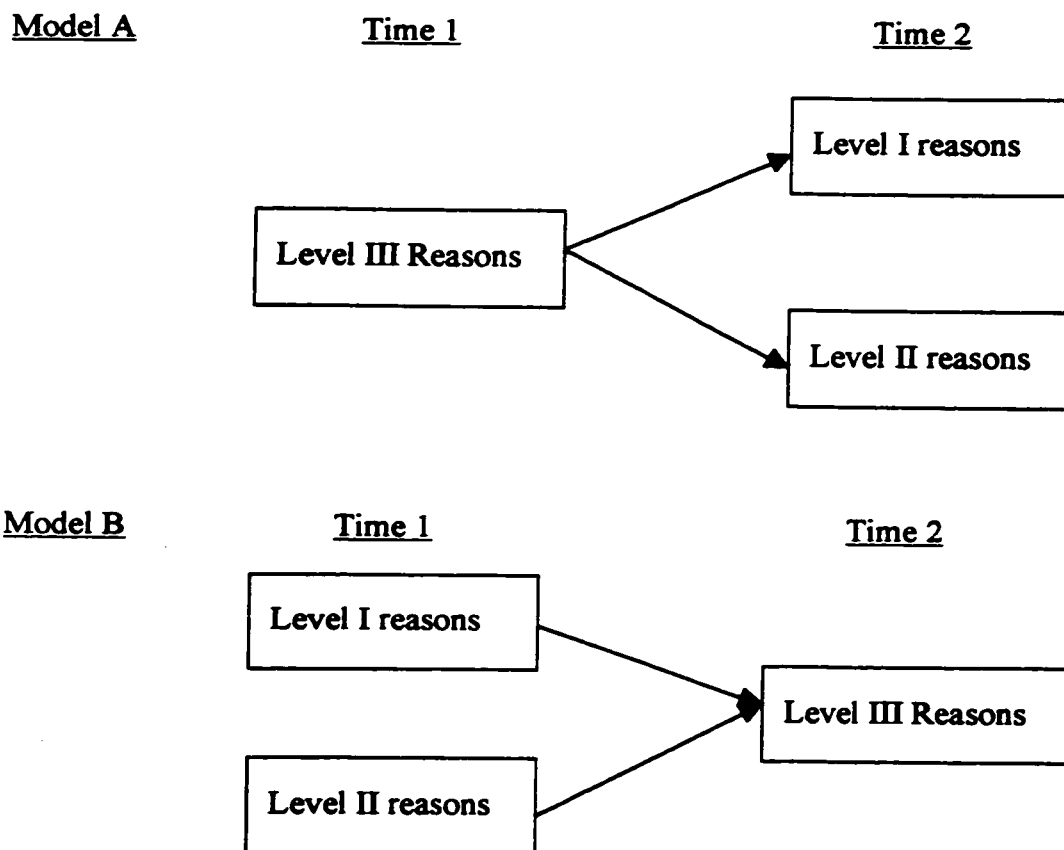
As indicated in the introduction, I suggest that the primary causal paths move from Level III to Levels I and II. The values and self-concepts that people base their Level III reasons upon may lead them to place greater importance on their Level I and II reasons. Thus, I hypothesized a path model in which Level III reasons, pro and con, lead to their respective Level I and II reasons. These Level I and II reasons, then, are the immediate predictors of behavioural intentions. In addition, Level III reasons could be expected to have a direct path adding to the predictability of intentions over and above their effects through Level I and Level II reasons.

**Figure 1.****Hypothesized Reasons Path Model****Cross-lag Regression Analyses**

Although I hypothesized on theoretical grounds that Level III reasons would lead to Level I and II reasons, it is plausible that the Level I and II reasons could cause Level III reasons. One way to test the direction of causality with longitudinal correlational data such as the data I have collected for this thesis, is to examine cross-lag regressions at successive time points. Figure 2 illustrates the two competing paths that I tested in these analyses.

To examine the direction of causality for the reasons model, as shown in Model A, I regressed Level I and II reasons on Level III reasons from the previous time point, controlling for Level I or II reasons from the previous time point. If Level III was able to predict variance in the Level I or II variable, over and above the variance accounted for by the same variable at the earlier time point, it would provide support for the hypothesized causal direction in which Level III causes Levels I and II. To test for the reverse causal direction, as shown in Model B, I regressed Level III reasons on previous Level I and II reasons, controlling for Level III from the previous time point.

**Figure 2.** Path Models for Cross-lag Regression Analyses





Out of the eight cross-lag correlations in which Level III con breastfeeding reasons were used to predict Level I or II con breastfeeding reasons, five were significant. Prenatal Level III con breastfeeding reasons added to the prediction of Level I con breastfeeding reasons, controlling for prenatal Level I con breastfeeding reasons. The  $R^2$  increased from .10 to .19,  $F\Delta(2, 179) = 21.68, p < .001$ . Level III con breastfeeding reasons assessed at 1 month postpartum added to the prediction of both Level I and Level II con breastfeeding reasons assessed at 2 months, over and above 1 month Level I and II reasons. For Level I con breastfeeding reasons, the  $R^2$  increased from .44 to .49 with the addition of Level III reasons,  $F\Delta(2, 149) = 13.49, p < .001$ . The  $R^2$  for con breastfeeding reasons assessed at 1 month postpartum predicting 2 month Level II reasons increased from .51 to .53 with the addition of Level III reasons,  $F\Delta(2, 149) = 6.07, p = .015$ . Level III con breastfeeding reasons assessed at 2 months postpartum added significantly to the prediction of Level I con breastfeeding reasons at 4 months, over and above 2 month Level I reasons. The  $R^2$  predicting Level I reasons at 4 months increased from .47 to .51 with the addition of 2 month Level III reasons,  $F\Delta(2, 125) = 11.04, p = .001$ . Finally, Level III con breastfeeding assessed at 4 months significantly predicted Level I con breastfeeding reasons at 6 months, over and above 4 month Level I con breastfeeding reasons. The  $R^2$  increased from .62 to 0.64 with the addition of 4-month Level III reasons,  $F\Delta(2, 96) = 3.95, p = .050$ .

Conversely, out of the eight possible paths in which Level I or II con breastfeeding reasons could predict con Level III reasons, only three were significant. Level III con breastfeeding reasons at 4 months were significantly predicted by Level I and II con breastfeeding reasons assessed in the second month, over and above 2 month Level III con breastfeeding reasons. The  $R^2$  increased from .54 to .60,  $F\Delta(3, 124) = 9.42, p < .001$ . Level

III con breastfeeding reasons at 6 months were significantly predicted by Level II con breastfeeding reasons assessed at 4 months, over and above 4-month Level III con breastfeeding reasons. The  $R^2$  increased from .63 to .69,  $F\Delta(3, 95) = 9.03$ ,  $p < .001$ .

Out of the eight cross-lag correlations in which Level III pro breastfeeding reasons were used to predict Level I or II pro breastfeeding reasons, two were significant. Prenatal Level III pro breastfeeding reasons were significant predictors of Level II pro breastfeeding reasons in the first month postpartum, controlling for prenatal Level II reasons. The  $R^2$  increased from .28 to .30 with the addition of Level III reasons,  $F\Delta(2, 180) = 5.19$ ,  $p = .024$ . Level III pro breastfeeding reasons assessed in the first month postpartum were significant predictors of Level II pro breastfeeding reasons at 2 months and increased the  $R^2$  from .49 to .50,  $F\Delta(2, 149) = 4.12$ ,  $p = .044$ . Level III pro breastfeeding reasons were only predicted by Level II reasons on one occasion. Level II pro breastfeeding reasons assessed at 1 month were significant negative predictors of Level III pro breastfeeding reasons at 2 months,  $\beta = -.19$ ,  $p = .01$ .

Thus, in this set of data, out of the possible 16 correlations in which Level III reasons could potentially predict Level I or II reasons controlling for Level I or II reasons from the previous assessment, 7 (44%) were significant. In contrast, out of the possible 16 paths predicting Level III reasons from Level I or II reasons, only 4 (25%) predicted significantly in the expected direction. In conclusion, although the model may be somewhat bi-directional, the pattern of the cross-lag regression analyses is slightly more consistent with the hypothesized causal direction.

### Testing the Reasons Path Models

In order to test the hypothesized path models, intentions to breastfeed were regressed on all 6 reasons variables. To examine whether all three levels of reasons were, indeed, predictive of breastfeeding intentions, hierarchical regressions were conducted that entered Level I reasons at Step 1, Level II reasons at Step 2, and Level III reasons at Step 3. The final step in these analyses identified the paths from con breastfeeding Level I and Level II and pro breastfeeding Level I and Level II reasons to intentions, as well as the direct paths from con breastfeeding Level III and pro breastfeeding Level III reasons to intentions. To identify the path from Level III to Level I and II reasons, Level I and II pro and con breastfeeding reasons were regressed on Level III reasons. Because previous research in the domain of condom use has shown that pro and con reasons were not significantly correlated (Rempel & Fong, 1999), pro and con breastfeeding reasons were modeled separately. The path model was analyzed for reasons predicting each intention measure at each time point. The resulting path models can be seen in Figures 2 through 28.

### Path Models for Prenatal Breastfeeding Reasons Predicting Intentions

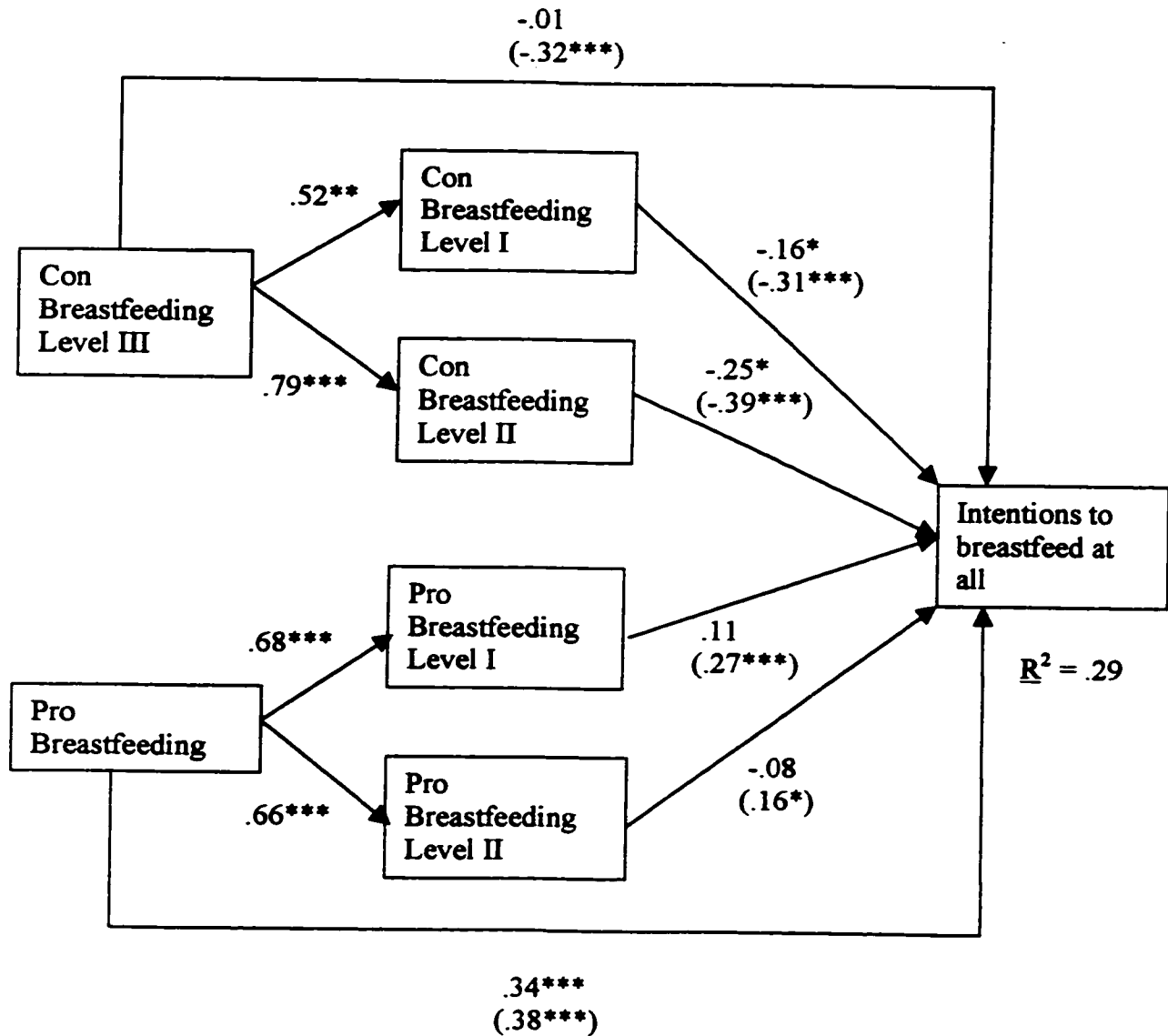
Path models for prenatal pro and con breastfeeding reasons predicting breastfeeding intentions can be found in Figures 3 through 10. These figures show the models for reasons predicting intentions to breastfeed at all, and intentions to breastfeed to 1 month, 2 months, 4 months, 6 months, 9 months, 12 months, and longer than 12 months. The final step in these regressions identified the path coefficients from each of the reasons variables to intentions. The 8 models will be described in sequence.

Intentions to Breastfeed At All. Figure 3 shows the path model for reasons predicting participants' strength of intentions to breastfeed at all. As can be seen, both pro and con breastfeeding reasons were highly inter correlated. The path coefficient from Level III con breastfeeding reasons to Level I con breastfeeding reasons was .52 and the path coefficient from Level III con breastfeeding reasons to Level II con breastfeeding reasons was .79. Similarly, the path coefficient from Level III pro breastfeeding reasons to Level I pro breastfeeding reasons was .68 and the path coefficient from Level III pro breastfeeding reasons to Level II pro breastfeeding reasons was .66. All path coefficients from Level III to Levels I and II were highly significant.

In the hierarchical regressions, Level I pro and con breastfeeding reasons were significant predictors of intentions to breastfeed at all,  $R^2 = .18$ ,  $F(2, 222) = 24.41$ ,  $p < .001$ . Level II pro and con breastfeeding reasons added significantly to the prediction of intentions to breastfeed at all,  $R^2\Delta(4, 220) = .06$ ,  $F\Delta = 8.89$ ,  $p < .001$ , and Level III reasons added significantly more to the prediction of intentions,  $R^2\Delta(6, 218) = .052$ ,  $F\Delta = 8.09$ ,  $p < .001$ . However, not all levels of reasons accounted for unique variance in the prediction of intentions to breastfeed at all. On the con breastfeeding side, as hypothesized, the relationship between Level III reasons and intentions to breastfeed at all was mediated by Level I and Level II reasons. The path coefficient for Level I con breastfeeding reasons leading to intentions was  $-.16$ ,  $p = .023$  and the path coefficient for Level II con breastfeeding reasons was  $-.25$ ,  $p = .014$ . On the pro breastfeeding side, the only significant pro breastfeeding path coefficient is the coefficient for Level III reasons,  $\beta = .34$ ,  $p < .001$ . Level III pro breastfeeding reasons were such strong predictors of intentions to breastfeed at

all that they exerted a significant direct effect that accounted for their indirect effects through Levels I and II and rendered the Level I and II effects non-significant.

**Figure 3.** Path Model for Prenatal Breastfeeding Reasons Predicting Strength of Intentions to Breastfeed At All (N=225)



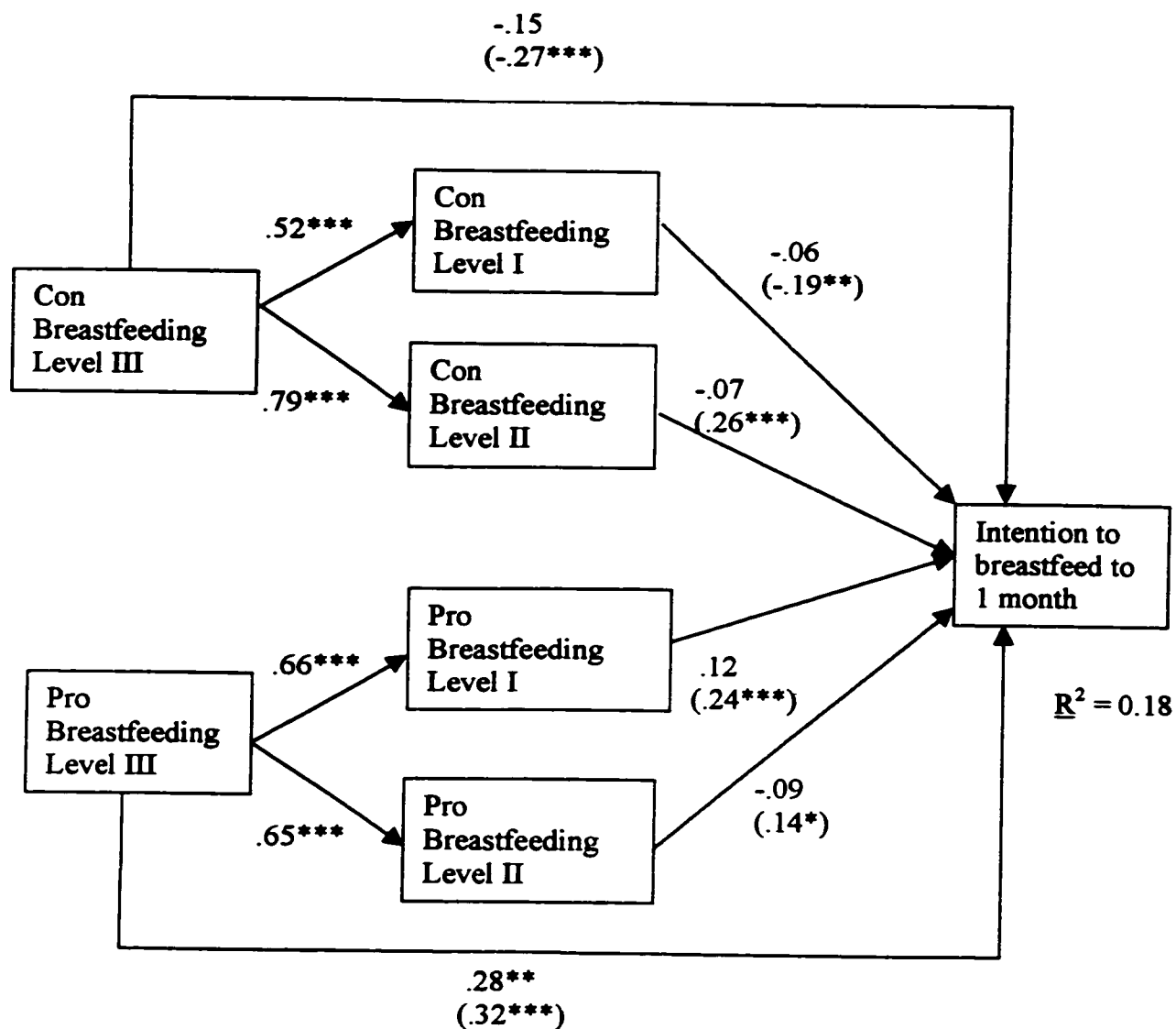
\*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

Note. Brackets contain zero order correlations.

Thus, it appears that the reasons relating to intentions to attempt breastfeeding function differently on the pro and con sides. Pro breastfeeding values and self-concept related reasons seem to be the most significantly related to plans to start breastfeeding. However, Level III con breastfeeding reasons are expressed through Level I and II reasons that cite the evidence against breastfeeding and the negative consequences of breastfeeding as reasons to consider not breastfeeding at all.

Intentions to Breastfeed to 1 Month. Figure 4 shows the path model for participants' prenatal breastfeeding reasons predicting their intentions to still be breastfeeding when their infants were 1 month of age. The path coefficients for Level III leading to Levels I and II were almost identical to the corresponding paths in the first model. Because these path coefficients are equivalent to zero order correlations, the Level III to Level I and II coefficients were almost identical for each prenatal path model. Small differences in the coefficients were due to small changes in the number of participants who completed each intention measure. A small number of participants who completed the questionnaires themselves did not respond to all intentions measures, so some models have slightly smaller sample sizes than others.

**Figure 4.** Path Model for Prenatal Breastfeeding Reasons Predicting Strength of Intentions to Breastfeed to 1 Month (N=234)



\*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

Note. Brackets contain zero order correlations.

In the hierarchical regressions, as in the previous model, Level I pro and con breastfeeding reasons were significant predictors of intentions to breastfeed to 1 month,  $R^2 = .10$ ,  $F(2, 231) = 12.14$ ,  $p < .001$ . Level II pro and con reasons added significantly to the

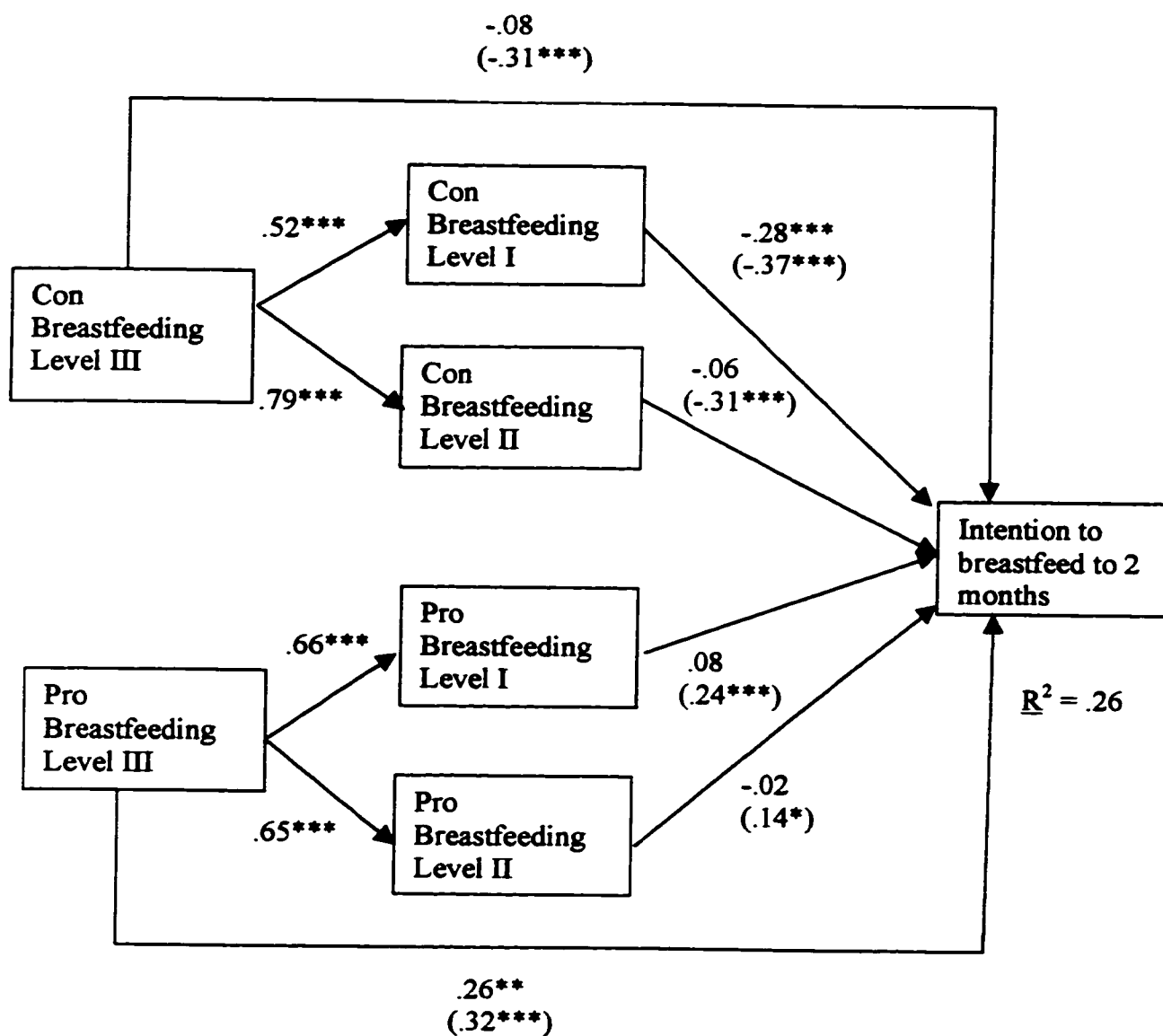
prediction of intentions to breastfeed to 1 month.  $\underline{R}^2\Delta(4, 229) = .03$ ,  $\underline{F}\Delta = 4.37$ ,  $p = .015$ , as did Level III pro and con reasons,  $\underline{R}^2\Delta = .05$ ,  $\underline{F}\Delta(6, 227) = 6.53$ ,  $p = .002$ . As Figure 2 shows, the only significant final path coefficient predicting intentions to breastfeed to 1 month is the one from Level III pro breastfeeding reasons,  $\beta = .28$ ,  $p = .002$ . It appears that strong pro breastfeeding values may be important in getting women to strongly intend to breastfeed for at least one month. However, the significant paths in this model differ from those of the previous model. This may be related to the fact that the mean strength of intentions to breastfeed to 1 month was actually higher than the mean strength of intentions to breastfeed at all. Some women who were unsure about their intentions to breastfeed at all indicated that, if they did breastfeed, they had strong intentions to breastfeed for at least 1 month. This may account for the differences between the model predicting intentions to breastfeed to 1 month and the previous and following models.

Prenatal Intentions to Breastfeed to 2 Months. The path model for breastfeeding reasons predicting strength of intentions to still be breastfeeding when their babies were 2 months of age can be found in Figure 5. This model appears somewhat similar to the model of reasons predicting intentions to breastfeed at all. As was found in the previous models, in hierarchical regressions, Level I reasons predicted intentions at Step 1,  $\underline{R}^2 = .20$ ,  $\underline{F}(2, 231) = 29.29$ ,  $p < .001$ . Level II reasons added marginally to the prediction of intentions at Step 2,  $\underline{R}^2\Delta = .02$ ,  $\underline{F}\Delta(4, 229) = 2.93$ ,  $p = .055$ , and Level III reasons added significantly to the prediction of intentions at Step 3,  $\underline{R}^2\Delta = .04$ ,  $\underline{F}\Delta(6, 227) = 5.67$ ,  $p = .004$ . The two significant path coefficients were con breastfeeding Level I reasons,  $\beta = -.30$ ,  $p < .001$ , and pro breastfeeding Level III reasons,  $\beta = .26$ ,  $p = .002$ . These results indicate that women who indicated that evidence against breastfeeding could be reasons for them to not



breastfeed were less likely to intend to breastfeed to 2 months, whereas women who felt that affective, schema-related reasons for breastfeeding were more important for themselves were more likely to intend to breastfeed to 2 months.

**Figure 5.** Path Model for Prenatal Breastfeeding Reasons Predicting Strength of Intentions to Breastfeed to 2 Months (N=234)

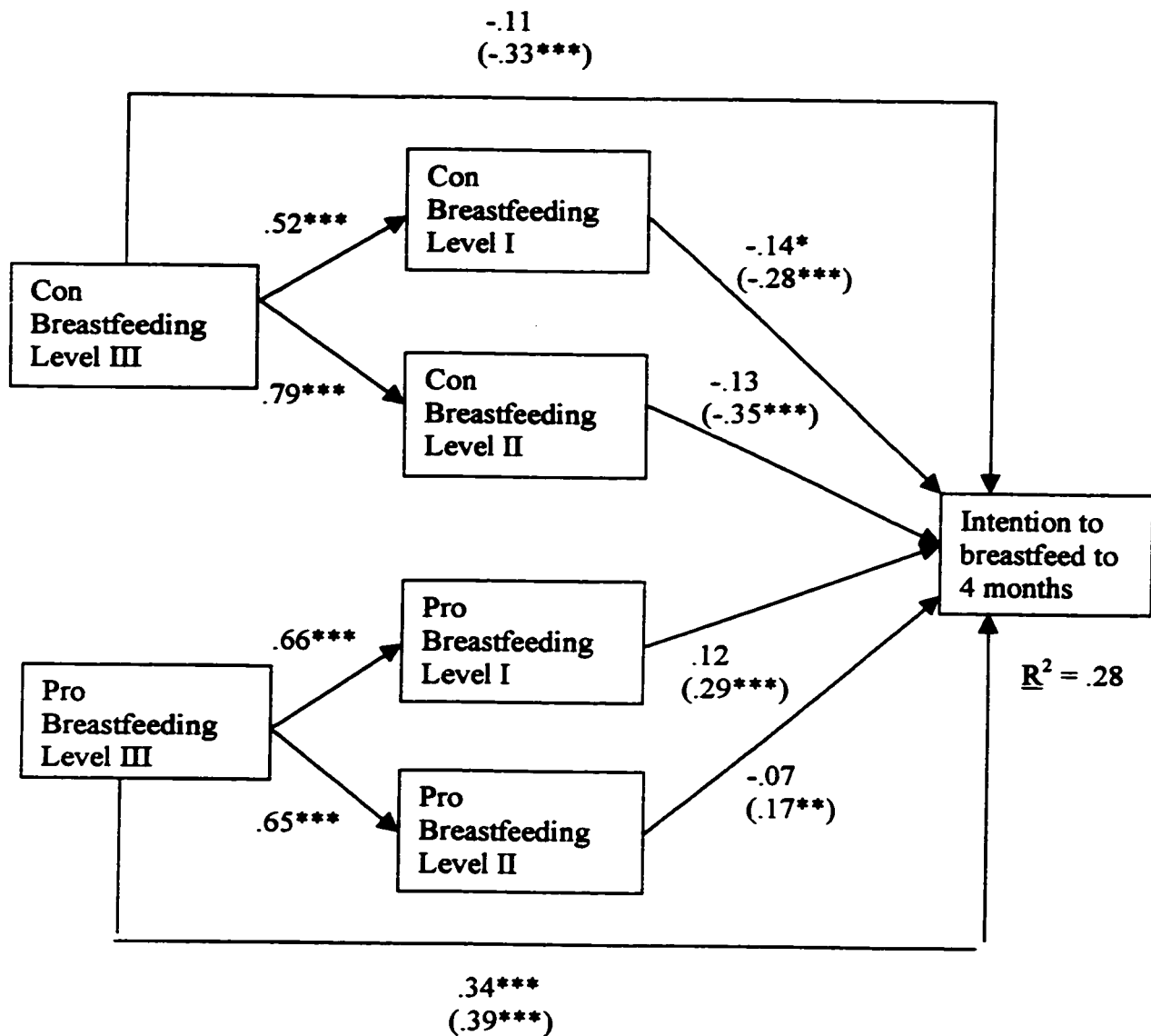


\*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

Note. Brackets contain zero order correlations.

**Prenatal Intentions to Breastfeed to 4 Months.** Figure 6 shows the path model for prenatal breastfeeding reasons predicting intentions to breastfeed to 4 months. This model is very similar to the previous model predicting intentions to breastfeed to 2 months. In hierarchical regressions, all 3 levels of reasons were significant predictors of intentions to breastfeed to 4 months. Level I was a significant predictor in Step 1,  $R^2 = .17$ ,  $F(2, 231) = 23.67$ ,  $p < .001$ , Level II added significantly in Step 2,  $R^2\Delta = .05$ ,  $F\Delta(4, 229) = 6.80$ ,  $p = .001$ , and Level III added significantly in Step 3,  $R^2\Delta = .06$ ,  $F\Delta(6, 227) = 9.81$ ,  $p < .001$ . As in the previous model, only Level I con breastfeeding and Level III pro breastfeeding reasons were significant predictors in the final model. The path coefficient for Level I con breastfeeding reasons was  $.14$ ,  $p = .048$ , and the path coefficient for Level III pro breastfeeding reasons was  $.34$ ,  $p < .001$ .

**Figure 6. Path Model for Prenatal Breastfeeding Reasons Predicting Strength of Intentions to Breastfeed to 4 Months (N=234)**



\*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

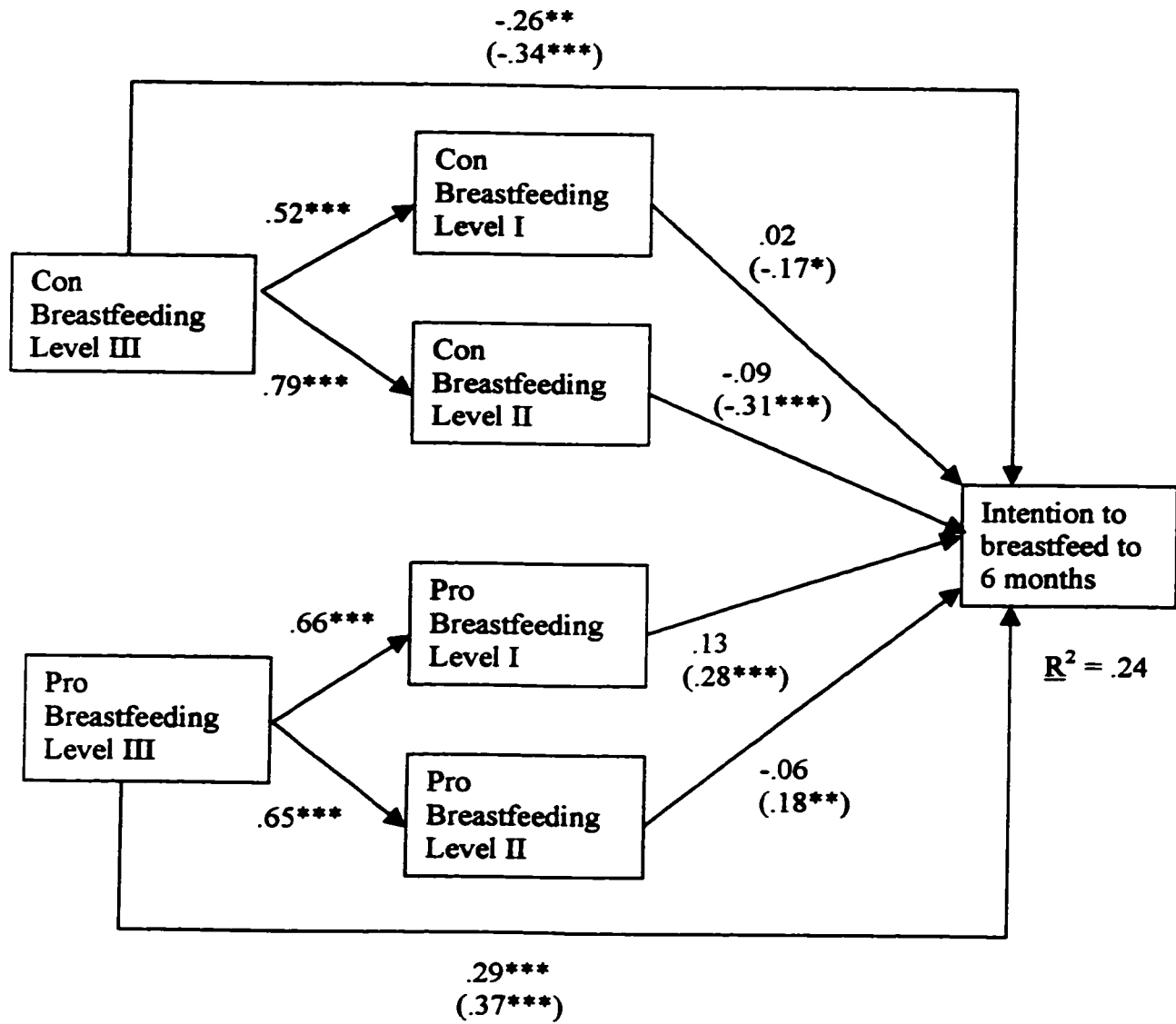
Note. Brackets contain zero order correlations.

Thus, the general pattern for the models predicting breastfeeding intentions up to 4 months appears to be that Level III con breastfeeding reasons predicted Level I and II con breastfeeding reasons and that those reasons, particularly Level I reasons, predicted lower

strength of intentions to breastfeed in the first 4 months. Pro breastfeeding Level III reasons, however, did not appear to exert the bulk of their effect through their relationship to Level I and II reasons, but rather exerted a direct predictive effect, increasing the strength of intentions to breastfeed in the first 4 months.

Prenatal Intentions to Breastfeed to 6 Months. This pattern changed dramatically for prediction of intentions to breastfeed to 6 months. Figure 7 shows the path model for prenatal breastfeeding reasons predicting intentions to breastfeed to 6 months. As in the previous models, all three levels of reasons predicted intentions to breastfeed at 6 months in hierarchical regressions. Level I predicted significantly at Step 1,  $R^2 = .11$ ,  $F(2, 230) = 13.94$ ,  $p < .001$ , Level II added significantly to the prediction of intentions to breastfeed to 6 months at Step 2,  $R^2\Delta = .07$ ,  $F\Delta(4, 228) = 9.31$ ,  $p < .001$ , and Level III added further to the prediction of intentions at Step 3,  $R^2\Delta = .07$ ,  $F\Delta(6, 226) = 10.43$ ,  $p < .001$ . However, in the final model, only Level III reasons predicted intentions to breastfeed to 6 months. The path coefficient for Level III con breastfeeding reasons was  $-.26$ ,  $p = .008$ , and the path coefficient for Level III pro breastfeeding reasons was  $.29$ ,  $p < .001$ . It appears that the decision to breastfeed to 6 months may be a question of breastfeeding schemas, affect, and values. Women who are more likely to indicate that breastfeeding would feel strange once their baby gets older than a newborn or are concerned about feeling awkward or embarrassed with breastfeeding held weaker intentions to breastfeed to 6 months. These Level III reasons were no longer expressed through Level I and Level II reasons, but became directly predictive once women were considering breastfeeding an older baby. However, women who held strong pro breastfeeding schemas continued to be more likely to have strong intentions to breastfeed for 6 months.

**Figure 7. Path Model for Prenatal Breastfeeding Reasons Predicting Strength of Intentions to Breastfeed to 6 Months (N=233)**

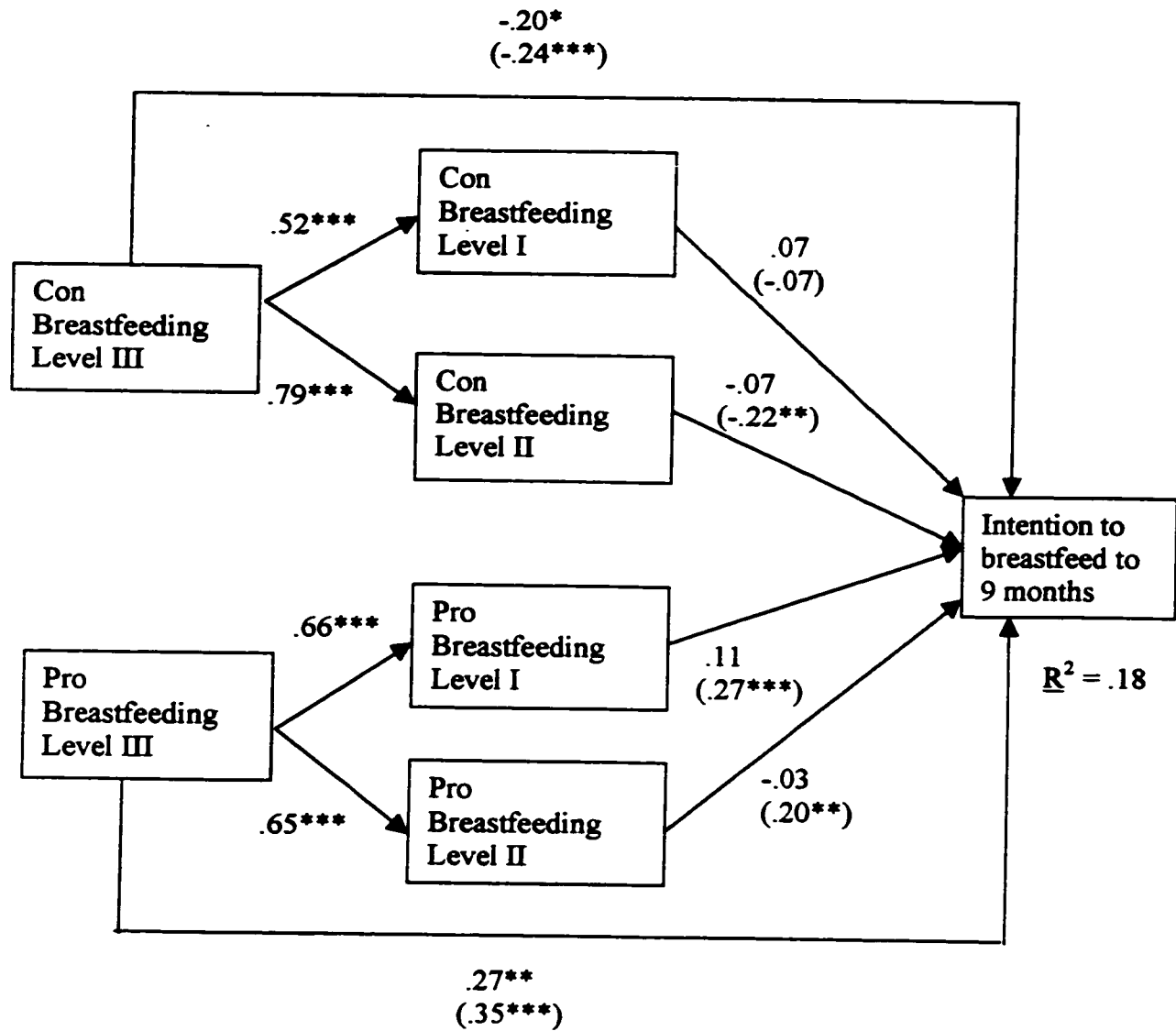


\*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

**Note.** Brackets contain zero order correlations.

**Prenatal Intentions to Breastfeed to 9 Months.** Figure 8 shows the path model for prenatal breastfeeding reasons predicting intentions to breastfeed to 9 months. The pattern in this model is the same as in the path model predicting intentions to breastfeed to 6 months. Again, all three levels of reasons added significantly to the prediction of intentions. Level I was a significant predictor of intentions at Step 1,  $R^2 = .08$ ,  $F(2, 229) = 9.55$ ,  $p < .001$ , Level II added significantly to the prediction of intentions at Step 2,  $R^2\Delta = .05$ ,  $F\Delta(4, 227) = 6.06$ ,  $p = .003$ , and Level III added further to the prediction of intentions at Step 3,  $R^2\Delta = .05$ ,  $F\Delta(6, 225) = 7.15$ ,  $p = .001$ . As in the previous model, Level III con breastfeeding reasons were significant negative predictors of intentions,  $\beta = .20$ ,  $p = .044$  and Level III pro breastfeeding reasons were significant positive predictors of intentions,  $\beta = .27$ ,  $p = .003$ .

**Figure 8.** Path Model for Prenatal Breastfeeding Reasons Predicting Strength of Intentions to Breastfeed to 9 Months (N=232)



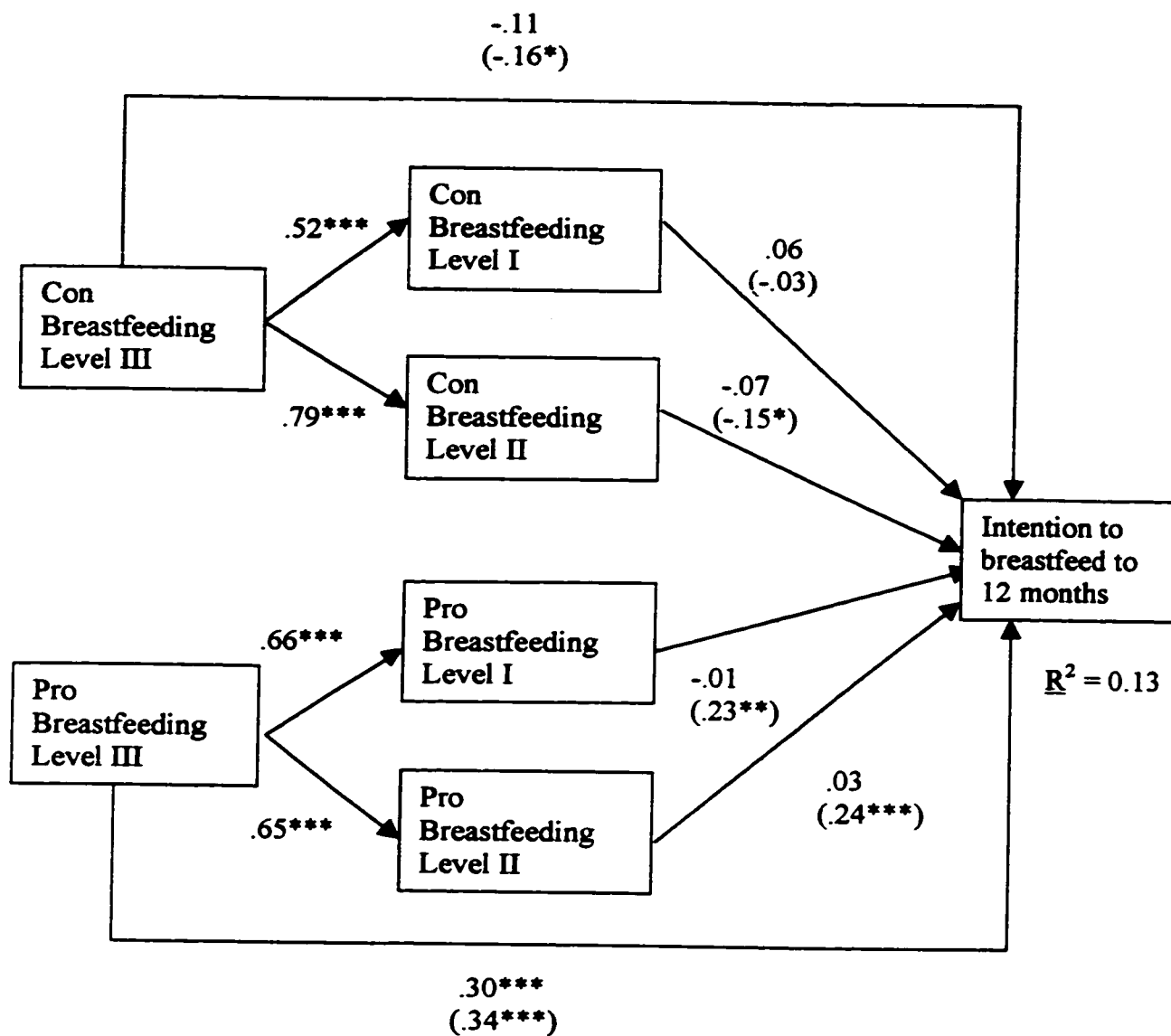
\* p < .05. \*\* p < .01. \*\*\* p < .001.

Note. Brackets contain zero order correlations.

**Prenatal Intentions to Breastfeed to 12 Months.** The path models for prenatal intentions to breastfeed for 12 months and longer differed from previous path models in that they were entirely predicted by Level III pro breastfeeding reasons. The path model for intentions to breastfeed to 12 months is shown in Figure 9. Again, all three levels of reasons predicted intentions to breastfeed to 12 months. Level I reasons predicted intentions at Step 1,  $R^2 = .05$ ,  $F(2, 229) = 6.08$ ,  $p = .003$ , Level II reasons added to the prediction of intentions,  $R^2\Delta = .04$ ,  $F\Delta(4, 227) = 4.37$ ,  $p = .014$ , and Level III added significantly to the prediction of intentions to breastfeed to 12 months,  $R^2\Delta = .05$ ,  $F\Delta(6, 225) = 6.40$ ,  $p = .002$ . As indicated, Level III pro breastfeeding reasons constituted the only significant path in the final model,  $\beta = .30$ ,  $p = .001$ .



**Figure 9.** Path Model for Prenatal Breastfeeding Reasons Predicting Strength of Intentions to Breastfeed to 12 Months (N=232)

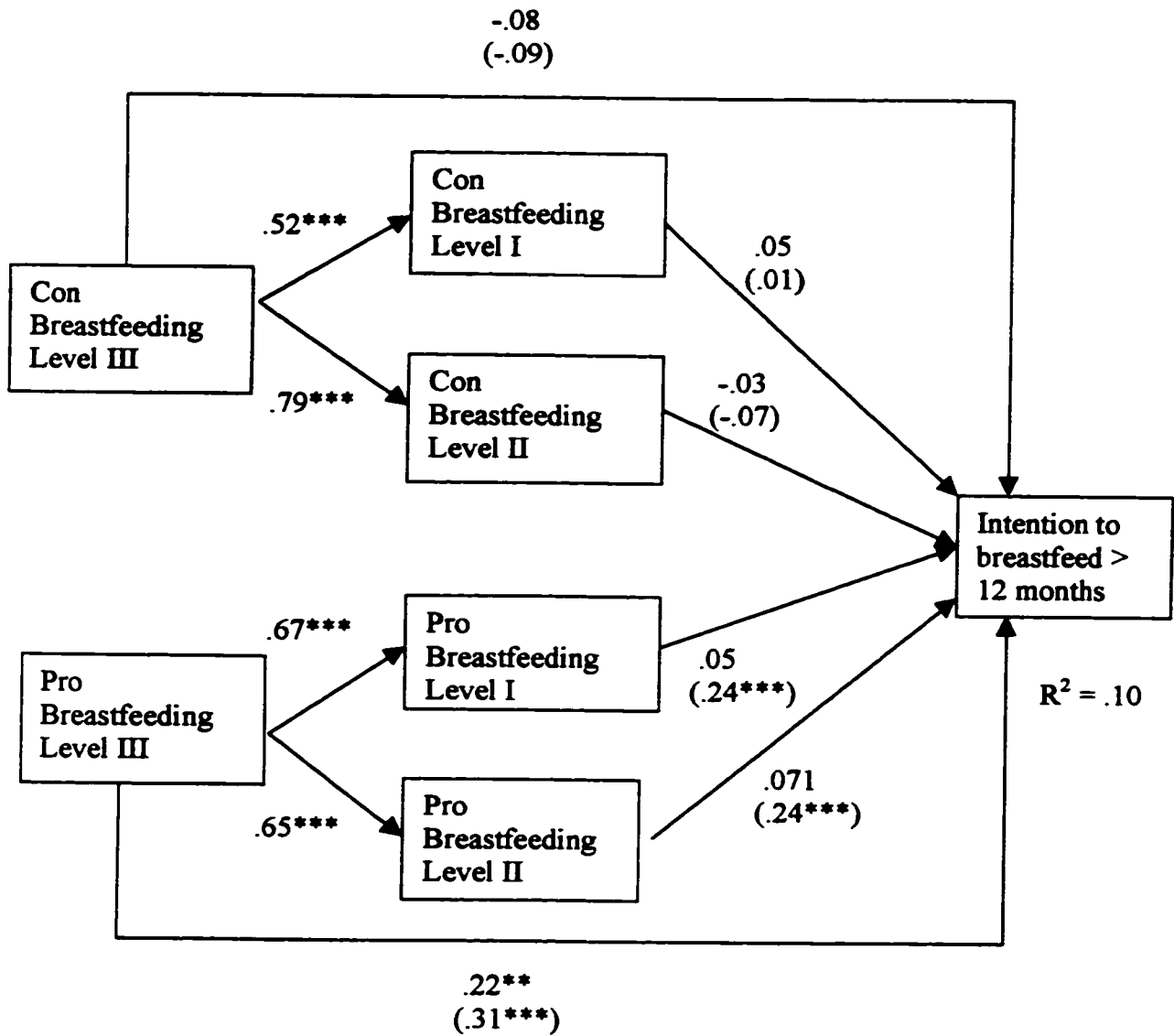


\*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

Note. Brackets contain zero order correlations.

**Prenatal Intentions to Breastfeed Longer than 12 Months.** The path model for strength of prenatal intentions to breastfeed for longer than 12 months is very similar. That model is shown in Figure 10. In the hierarchical regressions for intentions to breastfeed longer than 12 months, Level I was a significant predictor of intentions,  $R^2 = .06$ ,  $F(2, 227) = 6.85$ ,  $p = 0.001$ , Level II added marginally to the prediction of intentions,  $R^2\Delta = .02$ ,  $F\Delta(4, 225) = 2.53$ ,  $p = .082$ , and Level III added significantly to the prediction of intentions,  $R^2\Delta = .03$ ,  $F\Delta(6, 223) = 3.23$ ,  $p = .041$ . Again, Level III pro breastfeeding reasons formed the only significant path in the final model,  $\beta = .22$ ,  $p = .012$ . It appears that pro breastfeeding reasons were the only reasons that varied significantly with intentions to breastfeed longer than 12 months after having controlled for Level I and II reasons. Even the zero order correlations between con breastfeeding reasons and intentions to breastfeed are close to zero. Thus, it appears that pregnant women who hold higher Level III breastfeeding reasons are more likely to consider breastfeeding for 12 months or longer and that reasons against breastfeeding do not have any bearing on the decision to breastfeed that long.

**Figure 10. Path Model for Prenatal Reasons Predicting Strength of Intentions to Breastfeed Longer than 12 Months (N=230)**



\*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

Note. Brackets contain zero order correlations.

### **Path Models for Postnatal Breastfeeding Reasons Predicting Intentions**

This first set of path analyses has demonstrated the predictive power of the reasons model and, in particular, Level III reasons for predicting breastfeeding intentions prior to experience with breastfeeding. Affective, schema-related pro breastfeeding reasons were strongly predictive of increasing strength of breastfeeding intentions and were so strong that they overwhelmed the effects of related Level I and II reasons on intentions. The predictive power of affective, schema-related con breastfeeding reasons on breastfeeding intentions was mediated by Level I and II reasons for decisions about breastfeeding in the early months, but had a direct and strong effect on intentions to breastfeed from 6 to 9 months.

This study also examined pro and con breastfeeding reasons after breastfeeding experience. Because it is unlikely that women could accurately predict the kind of early breastfeeding experience they would have, it was expected that the pattern of predictive power for postnatal breastfeeding reasons on intentions to continue breastfeeding might be different than the patterns seen in the prenatal models. In particular, I thought that women might be more likely to focus on the Level I and Level II reasons for and against breastfeeding in an attempt to explain the effect of Level III reasons on their intentions to continue breastfeeding. The path models for postnatal reasons show the effect of breastfeeding experience on the relationship between reasons and intentions to continue breastfeeding.

### **Path Models for Reasons at 1 Month Postpartum Predicting Breastfeeding Intentions**

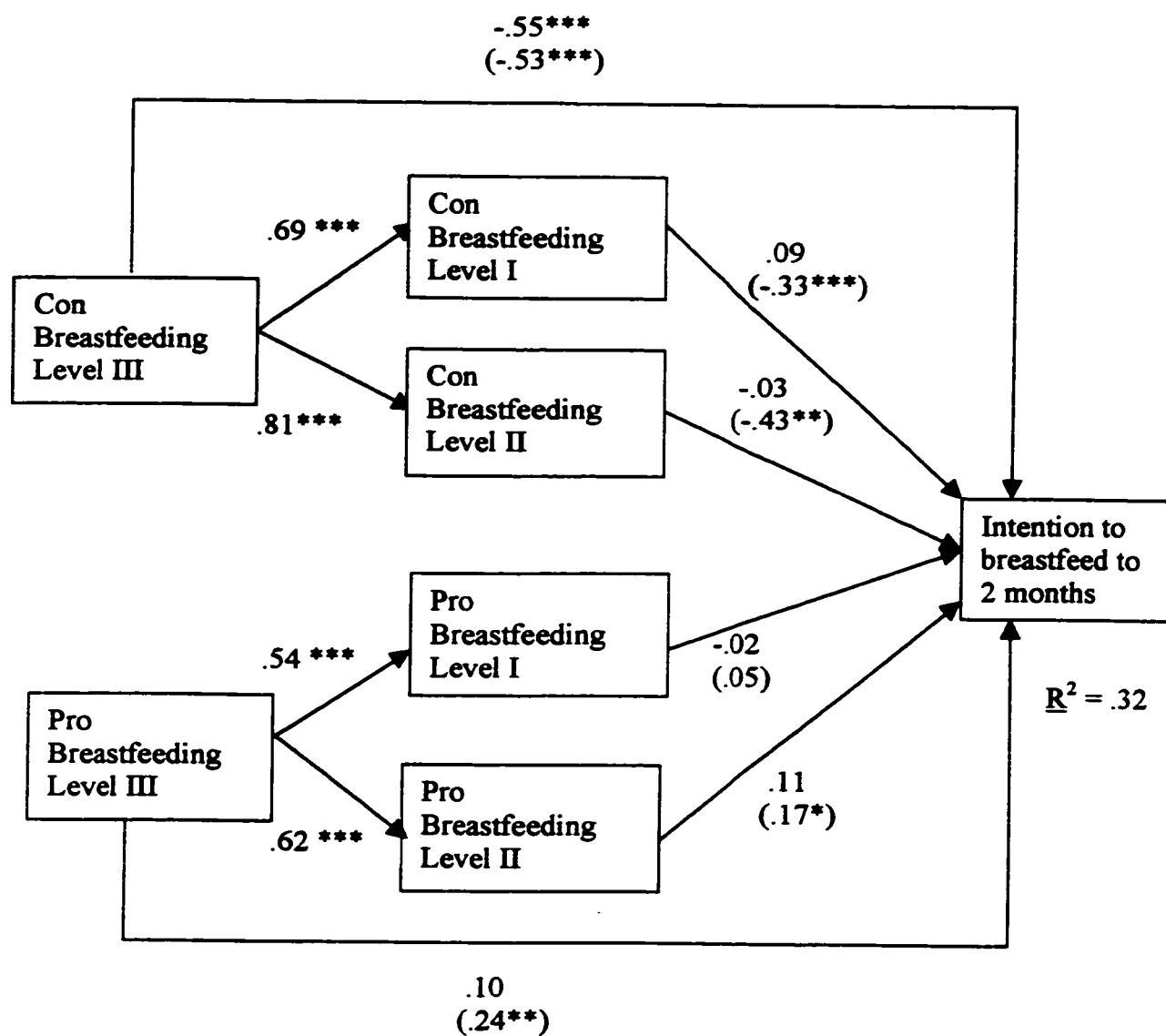
The path models for the breastfeeding reasons of 190 breastfeeding mothers assessed during the first month postpartum, at approximately 2 or 4 weeks after the birth of their

babies, predicting intentions are found in Figures 11 through 16. As I did with the prenatal models, I will discuss these models in sequence.

1-Month Intentions to breastfeed to 2 Months. The first postpartum model is for reasons assessed during the first month postpartum predicting strength of intentions to still be breastfeeding when their babies were 2 months of age. This model can be seen in Figure 11. As was found with prenatal breastfeeding reasons, Level III con breastfeeding reasons strongly predicted Level I con breastfeeding reasons,  $\beta = .69$  and Level II con breastfeeding reasons,  $\beta = .81$ . Similarly, Level III pro breastfeeding reasons were strongly correlated with Level I pro breastfeeding reasons,  $\beta = .54$  and with Level II pro breastfeeding reasons,  $\beta = .62$ .

Also, as was found in the prenatal models, all levels of reasons were significant predictors of intentions in the hierarchical regressions. Level I reasons predicted intentions at Step 1,  $R^2 = .11$ ,  $F(2, 185) = 11.88$ ,  $p < .001$ , Level II reasons predicted intentions at Step 2,  $R^2\Delta = .10$ ,  $F\Delta(4, 181) = 11.47$ ,  $p < .001$ , and Level III reasons added significantly to the prediction of intentions to still be breastfeeding at 2 months in Step 3,  $R^2\Delta = .11$ ,  $F\Delta(6, 179) = 14.01$ ,  $p < .001$ . However, unlike the prenatal models, Level III con breastfeeding reasons were the only significant predictor of intentions to continue to breastfeeding for the next month,  $\beta = .55$ ,  $p < .001$ . Although Level I and II con breastfeeding reasons had strong zero order correlations with intentions to continue to 2 months, it was the strength of negative affect, frustration, and unhappiness that determined the strength of mothers' intentions to continue breastfeeding over the short term. If they were feeling frustrated with breastfeeding they were less likely to intend to continue.

**Figure 11.** Path Model for Reasons at 1 Month Postpartum Predicting Strength of Intentions to Breastfeed to 2 Months (N=188)

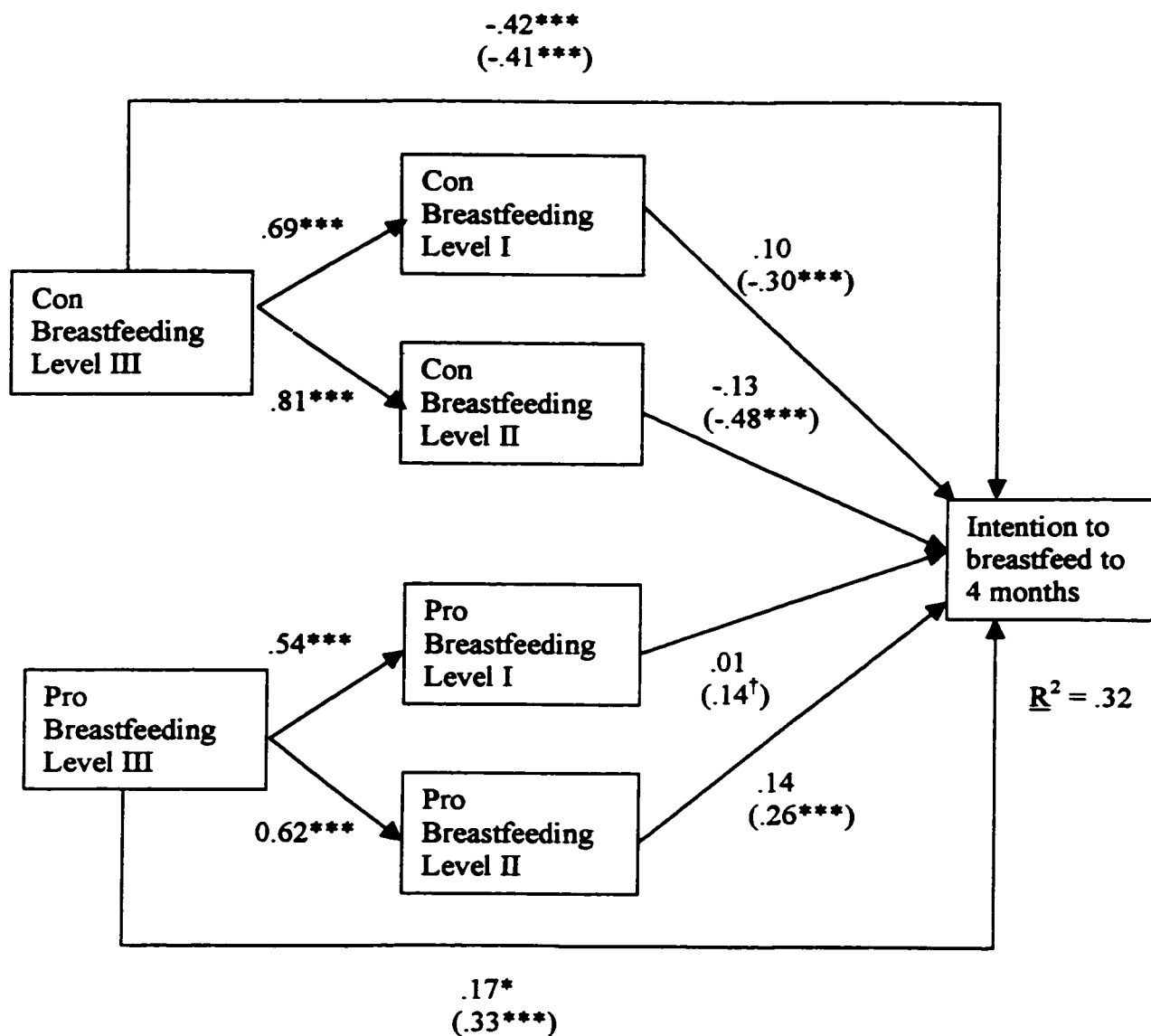


\*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

Note. Brackets contain zero order correlations.

**1-Month Intentions to Breastfeed to 4 Months.** The path model for reasons assessed in the first month predicting intentions to continue breastfeeding until 4 months is shown in Figure 12. Hierarchical regressions again indicated that all levels of reasons were predictive of intentions. Level I reasons significantly predicted intentions at Step 1,  $R^2 = .12$ ,  $F(2, 186) = 12.55$ ,  $p < .001$ , Level II reasons significantly added to the prediction of intentions at Step 2,  $R^2\Delta = .12$ ,  $F\Delta(4, 184) = 15.21$ ,  $p < .001$ , and Level III reasons further added to the prediction of intentions to breastfeed to 4 months at Step 3,  $R^2\Delta = .08$ ,  $F\Delta(6, 182) = 10.09$ ,  $p < .001$ . Similar to the model predicting intentions to breastfeed to 2 months, Level III breastfeeding reasons were the strongest predictors of intentions to continue breastfeeding,  $\beta = -.42$ ,  $p < .001$ . However, pro breastfeeding Level III reasons also predicted intentions to breastfeed to 4 months,  $\beta = .17$ ,  $p = .042$ . Thus, it appears that mothers who indicate that frustration and unhappiness with breastfeeding may be reasons to stop breastfeeding were less likely to intend to breastfeed to 4 months. However, mothers who have stronger affective, schema-related Level III reasons for continuing to breastfeed were somewhat more likely to intend to continue breastfeeding to 4 months.

**Figure 12.** Path Model for Reasons at 1 Month Postpartum Predicting Strength of Intentions to Breastfeed to 4 Months (N=189)



$\dagger p < .1$ .  $* p < .05$ .  $** p < .01$ .  $*** p < .001$ .

Note. Brackets contain zero order correlations.

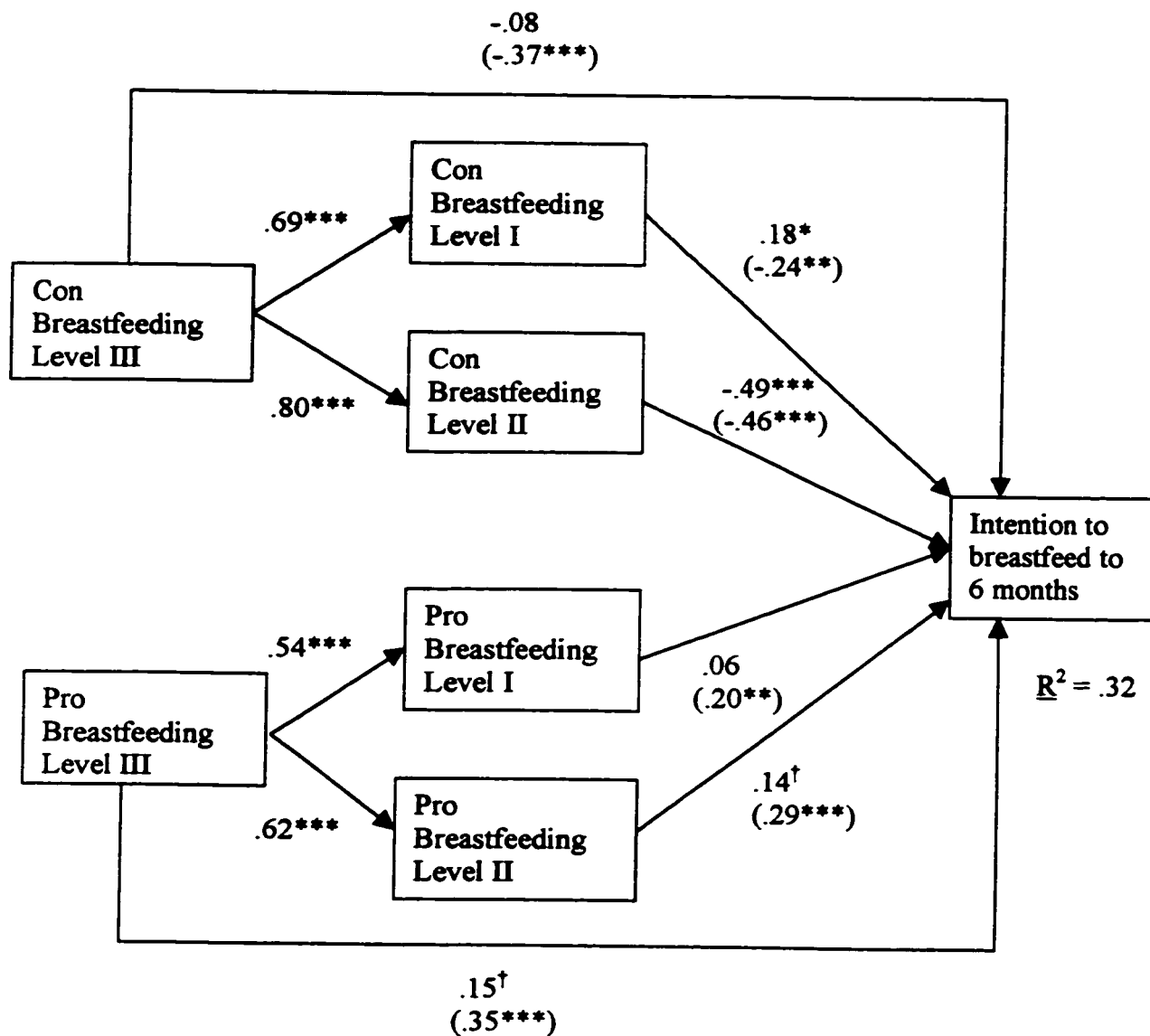


**1-Month Intentions to Breastfeed to 6 Months.** The pattern of reasons predicting breastfeeding intentions changed dramatically for the model for breastfeeding reasons assessed during the first month predicting intentions to breastfeed to 6 months. This path model is shown in Figure 13. In this model, Level III reasons did not predict breastfeeding intentions over and above Level I and II reasons. Only Level I reasons predicted intentions at Step 1,  $R^2 = .11$ ,  $F(2, 187) = 11.30$ ,  $p < .001$ , and Level II reasons added to the prediction of intentions at Step 2,  $R^2\Delta = .19$ ,  $F\Delta(4, 185) = 25.65$ ,  $p < 0.001$ . Level II pro breastfeeding reasons were marginally significant predictors of intentions to breastfeed to 6 months,  $\beta = .14$ ,  $p = .094$ , and Level III pro breastfeeding reasons were still marginally significant predictors of intentions,  $\beta = .15$ ,  $p = .081$ . However, the strongest predictor of breastfeeding intentions was con breastfeeding Level II reasons,  $\beta = -.49$ ,  $p < .001$ . These Level II reasons for stopping were so strong that, in combination with their correlations with the Level I and III con breastfeeding reasons, they caused a suppressor effect to occur with the Level I con breastfeeding reasons. This made the Level I con breastfeeding reasons appear to be significant positive predictors of breastfeeding intentions in the final path.

Thus, Level III reasons no longer exerted significant direct effects on intentions. Mothers' intentions to breastfeed to 6 months were now driven by barriers to breastfeeding such as finding breastfeeding difficult and tiring, wanting to get out of the house, or plans to return to work. These Level II reasons were highly correlated with Level III con breastfeeding reasons and may have been an expression of those Level III reasons. However, the self-consequential barriers may have been acceptable ways to think about stopping breastfeeding at 6 months, and they were the significant predictors. It should also be noted that this is the first model in which Level II pro breastfeeding reasons were

marginally significant predictors. It appears that, once breastfeeding had started, strong Level III pro breastfeeding reasons could also be expressed in terms of Level II benefits to breastfeeding such as convenience or ease. Therefore, this 6-month model suggests that postpartum Level III reasons were mediated by Level I and Level II reasons, with the strongest effect being present in the Level II con breastfeeding reasons.

**Figure 13. Path Model for Reasons at 1 Month Postpartum Predicting Strength of Intentions to Breastfeed to 6 Months (N=190)**

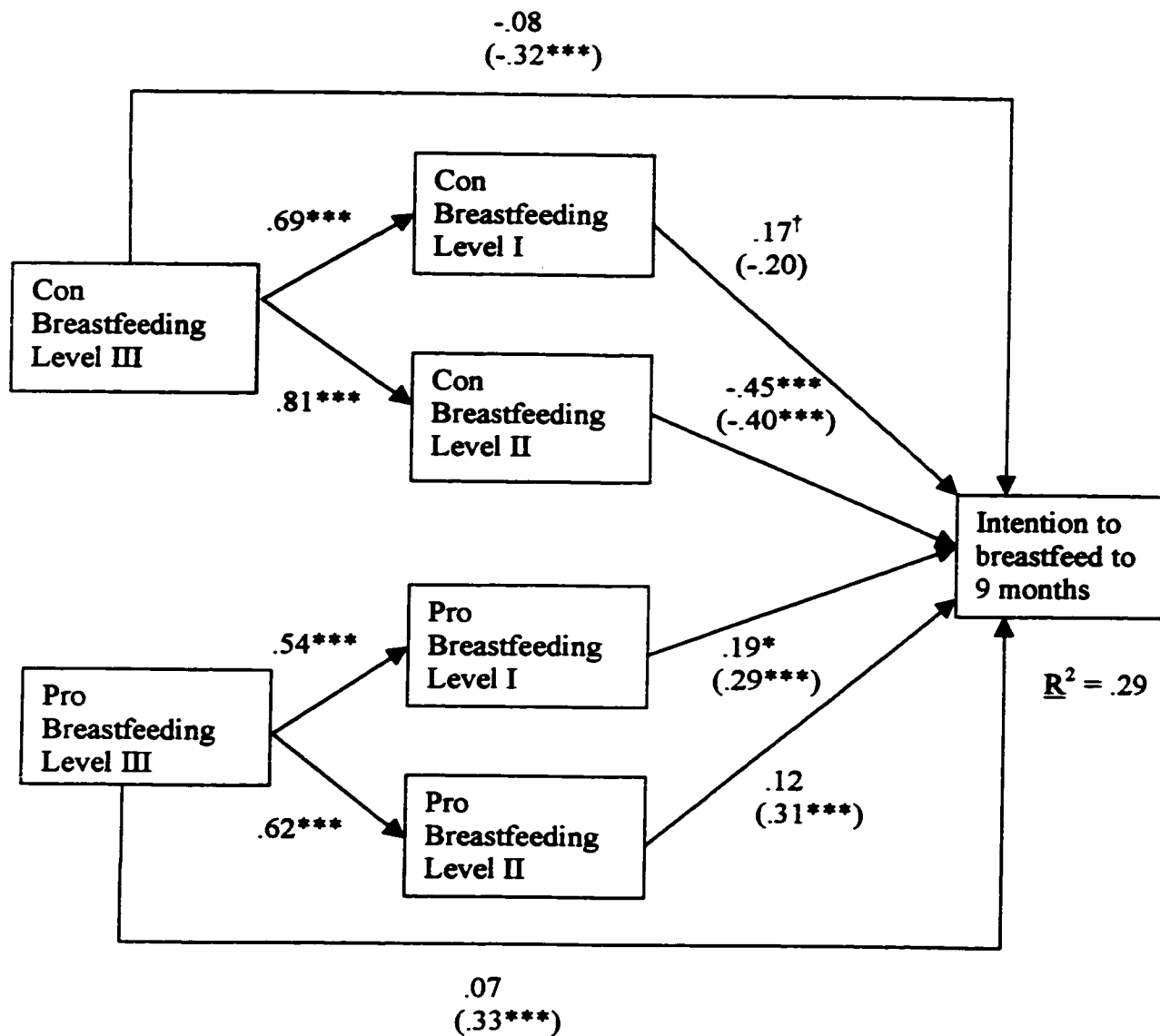


†  $p < .1$ . \*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

Note. Brackets contain zero order correlations.

**1-Month Intentions to Breastfeed to 9 Months.** The path model for reasons assessed in the first month postpartum predicting intentions to breastfeed to 9 months is shown in Figure 14. As in the previous model, hierarchical regressions indicated that Level III reasons did not add significantly to the prediction of breastfeeding intentions over and above Levels I and II reasons. Level I reasons were significant predictors at Step 1,  $R^2 = .13$ ,  $F(2, 187) = 14.58$ ,  $p < .001$ , and Level II reasons were significant predictors of intentions to breastfeed to 9 months at Step 2,  $R^2\Delta = .15$ ,  $F\Delta(4, 185) = 19.33$ ,  $p < .001$ . Both Level II con breastfeeding reasons and Level I pro breastfeeding reasons were significant predictors of intentions. The path coefficient for pro breastfeeding Level I reasons was  $.19$ ,  $p = .020$ , and the path coefficient for con breastfeeding Level II reasons was  $.45$ ,  $p < .001$ . Level I con breastfeeding reasons again showed a marginally significant suppressor effect due to the strength of Level II con breastfeeding reasons. Thus, for continuing to breastfeed to 9 months, personal barriers like returning to work appeared to be the only significant reasons to stop, whereas evidence-based Level I reasons were related to stronger intentions to continue.

**Figure 14. Path Model for Reasons at 1 Month Postpartum Predicting Strength of Intentions to Breastfeed to 9 Months (N=190)**

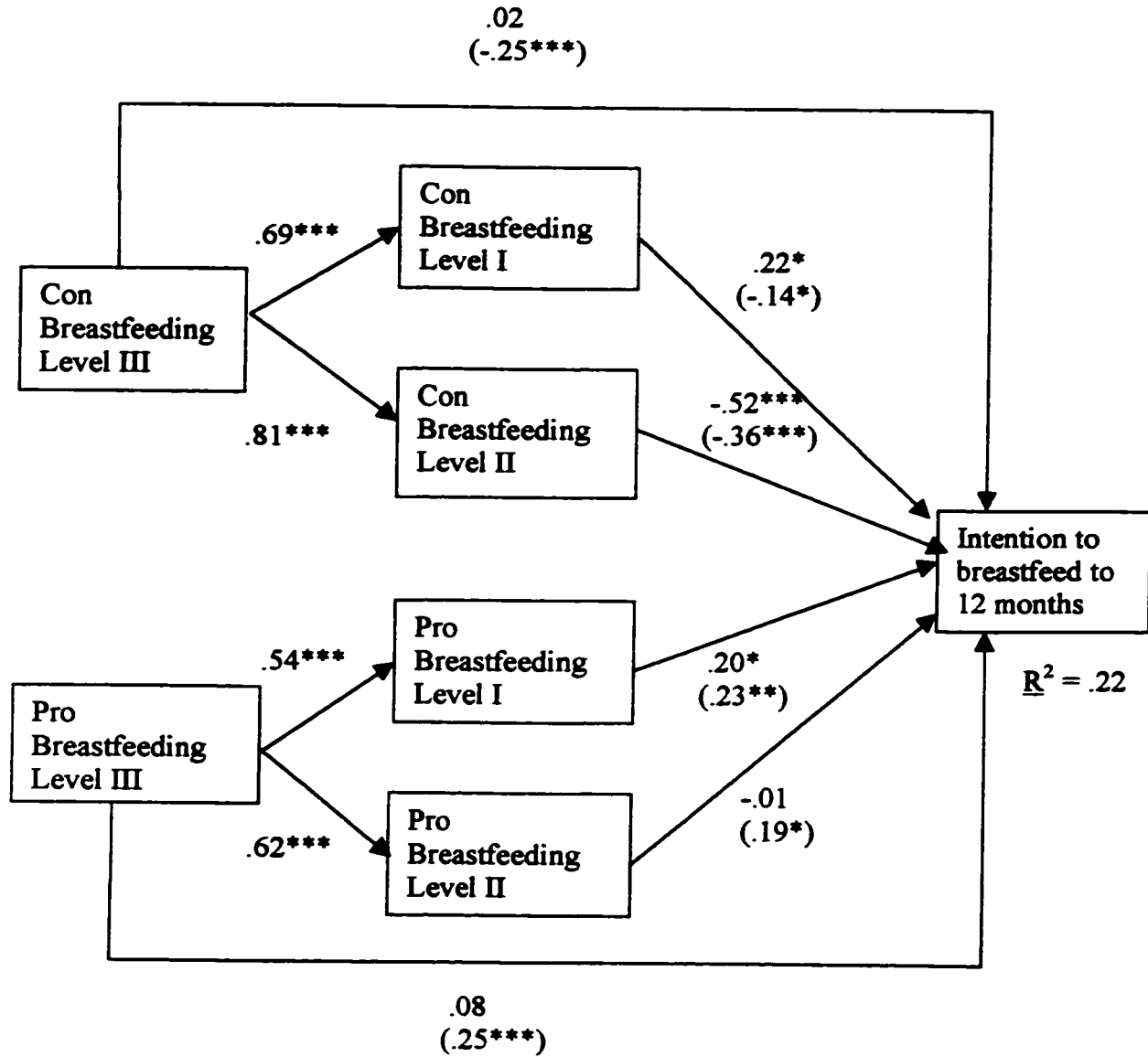


†  $p < .1$ . \*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

Note. Brackets contain zero order correlations.

1-Month Intentions to Breastfeed to 12 Months. The path model for reasons assessed in the first month predicting intentions to breastfeed to 12 months is very similar to the previous model. This model is shown in Figure 15. Again, only Level I and Level II reasons were significant in hierarchical regressions. Level I reasons were significant predictors at Step 1,  $R^2 = .08$ ,  $F(2, 187) = 8.14$ ,  $p < 0.001$ , and Level II reasons were significant predictors of intentions to still be breastfeeding at 12 months at Step 2,  $R^2\Delta = .14$ ,  $F\Delta(4, 185) = 16.08$ ,  $p < .001$ . Again, Level II con breastfeeding reasons were significant negative predictors of intentions,  $\beta = -.53$ ,  $p < .001$  and Level I pro breastfeeding reasons were significant positive predictors of intentions,  $\beta = .20$ ,  $p = .028$ . The suppressor effect on Level I con breastfeeding reasons is evident in this model as well. Thus, intentions to breastfeed to 12 months also appear to be a direct function of personal barriers to breastfeeding and the evidence for breastfeeding.

**Figure 15. Path Model for Reasons at 1 Month Postpartum Predicting Strength of Intentions to Breastfeed to 12 Months (N=190)**



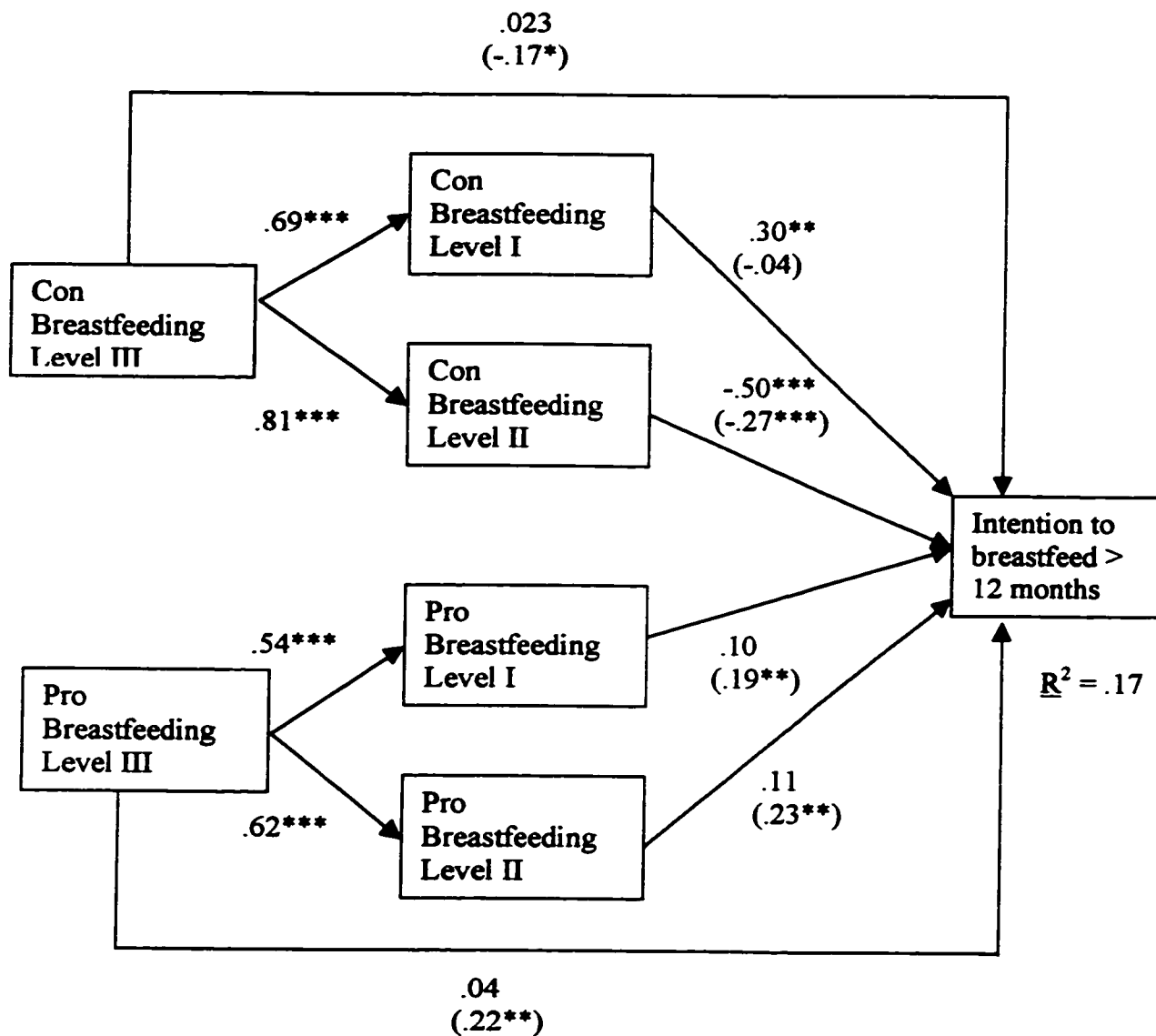
\*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

Note. Brackets contain zero order correlations.

**1-Month Intentions to Breastfeed Longer than 12 Months.** The final path model for reasons assessed in the first month postpartum is the model for reasons predicting intentions to breastfeed longer than 12 months. This model is shown in Figure 16. As in the previous models, only Level I and Level II reasons predicted breastfeeding intentions in the hierarchical regressions, Step 1  $R^2 = .04$ ,  $F(2, 187) = 4.01$ ,  $p = .020$ , and Step 2  $R^2\Delta = .13$ ,  $F\Delta(4, 185) = 14.76$ ,  $p < .001$ , respectively. The only significant path in this model (except for the suppressor effect on Level I con breastfeeding reasons) was the path from Level II con breastfeeding reasons to intentions to breastfeed longer than 12 months,  $\beta = -.50$ ,  $p < .001$ . This continues the strong trend evident in the models predicting intentions to continue breastfeeding from 6 months on. The more important self-consequential reasons were as reasons to consider stopping, the lower the intentions to breastfeed babies 6 months of age or older.



**Figure 16.** Path Model for Reasons at 1 Month Postpartum Predicting Strength of Intentions to Breastfeed Longer than 12 Months (N=190)



\*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

Note. Brackets contain zero order correlations.

### Path Models for Reasons at 2 Months Postpartum Predicting Breastfeeding Intentions

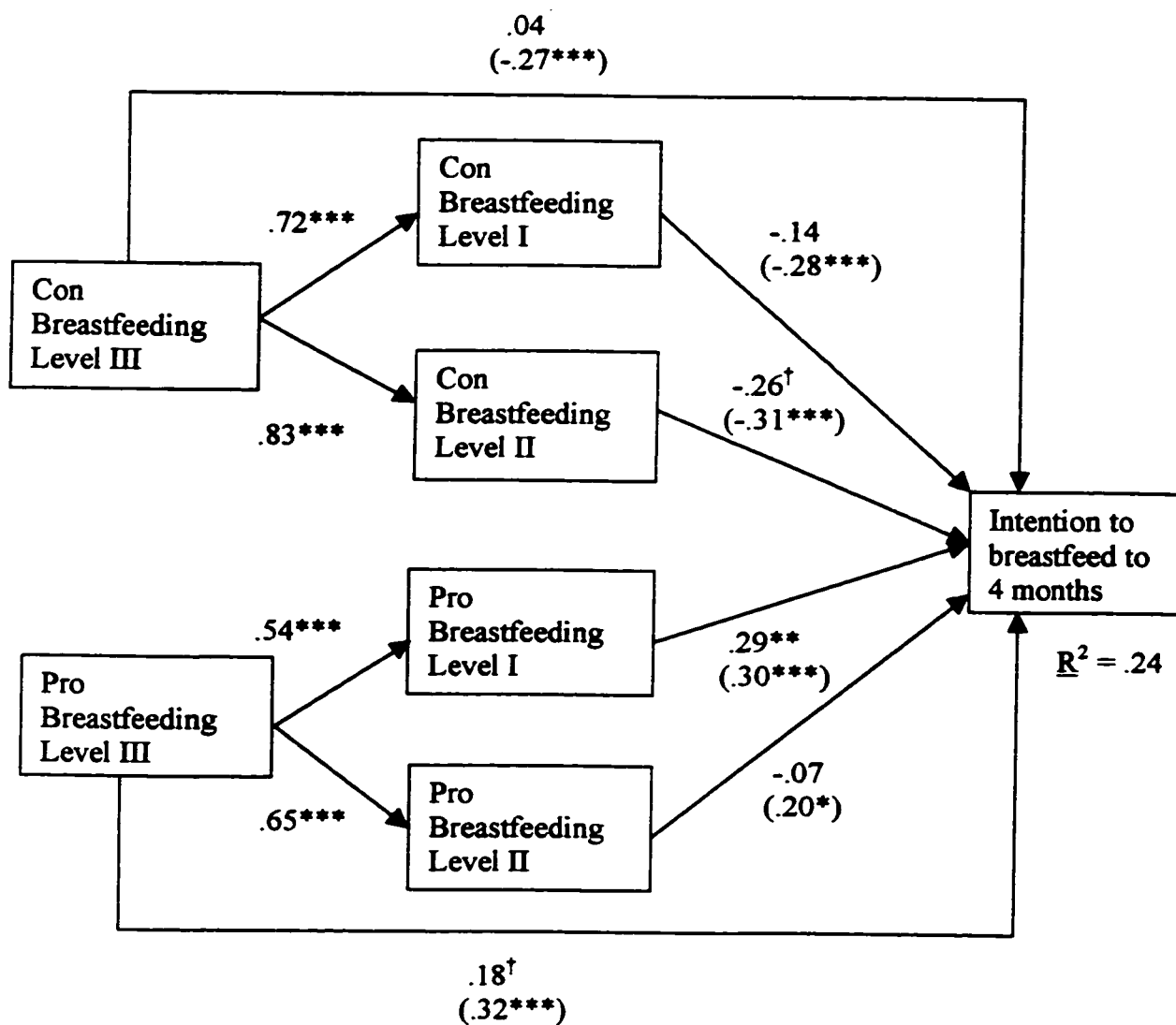
Reasons for and against breastfeeding and intentions to continue breastfeeding were also assessed for 152 mothers who were still breastfeeding at 6 or 8 weeks postpartum.

These models can be found in Figures 17 through 21. The paths from Level III reasons to Level I and II reasons remained highly significant in these models. The path coefficient from Level III con breastfeeding reasons to Level I con breastfeeding reasons was .72 and the path coefficient from Level III con breastfeeding to Level II con breastfeeding reasons was .83. The path coefficient from Level III to Level I pro breastfeeding reasons was .53 and the path coefficient from Level III to Level II pro breastfeeding reasons was .65.

2-Month Intentions to Breastfeed to 4 Months. The path model for reasons assessed during the second month postpartum predicting intentions to breastfeed to 4 months is shown in Figure 17. As was the case for the latter models predicting intentions from reasons assessed during the first month postpartum, Level III reasons did not add significantly to the prediction of intentions. In this model, Level I reasons were significant predictors of intentions to breastfeed to 4 months,  $R^2 = .19$ ,  $F(2, 149) = 17.70$ ,  $p < .001$ , but Level II reasons only added marginally to the prediction of intentions,  $R^2\Delta = .03$ ,  $F\Delta(4, 147) = 2.69$ ,  $p = .071$ . Pro breastfeeding Level I reasons were the only significant predictor of intentions to breastfeed to 4 months,  $\beta = .29$ ,  $p = .004$ . Level III pro breastfeeding reasons were marginally significant predictors of intentions,  $\beta = .18$ ,  $p = .065$ , as were con breastfeeding Level II reasons,  $\beta = -.26$ ,  $p = .068$ . It appears that the negative, affective, schema-related reasons were no longer predictive for women who had continued to breastfeed into the second month. The only really significant reasons dealt with whether breastfeeding was seen as beneficial. The more that was true for mothers, and, to some extent, the more they

identified with affective, schema-related pro breastfeeding reasons, the more likely they were to intend to continue for another 2 months. In addition, the borderline Level II con breastfeeding reasons foreshadowed the strength with which they would predict intentions to breastfeed for 6 months or longer.

**Figure 17.** Path Model for Reasons at 2 months Postpartum Predicting Strength of Intentions to Breastfeed to 4 Months (N=152)

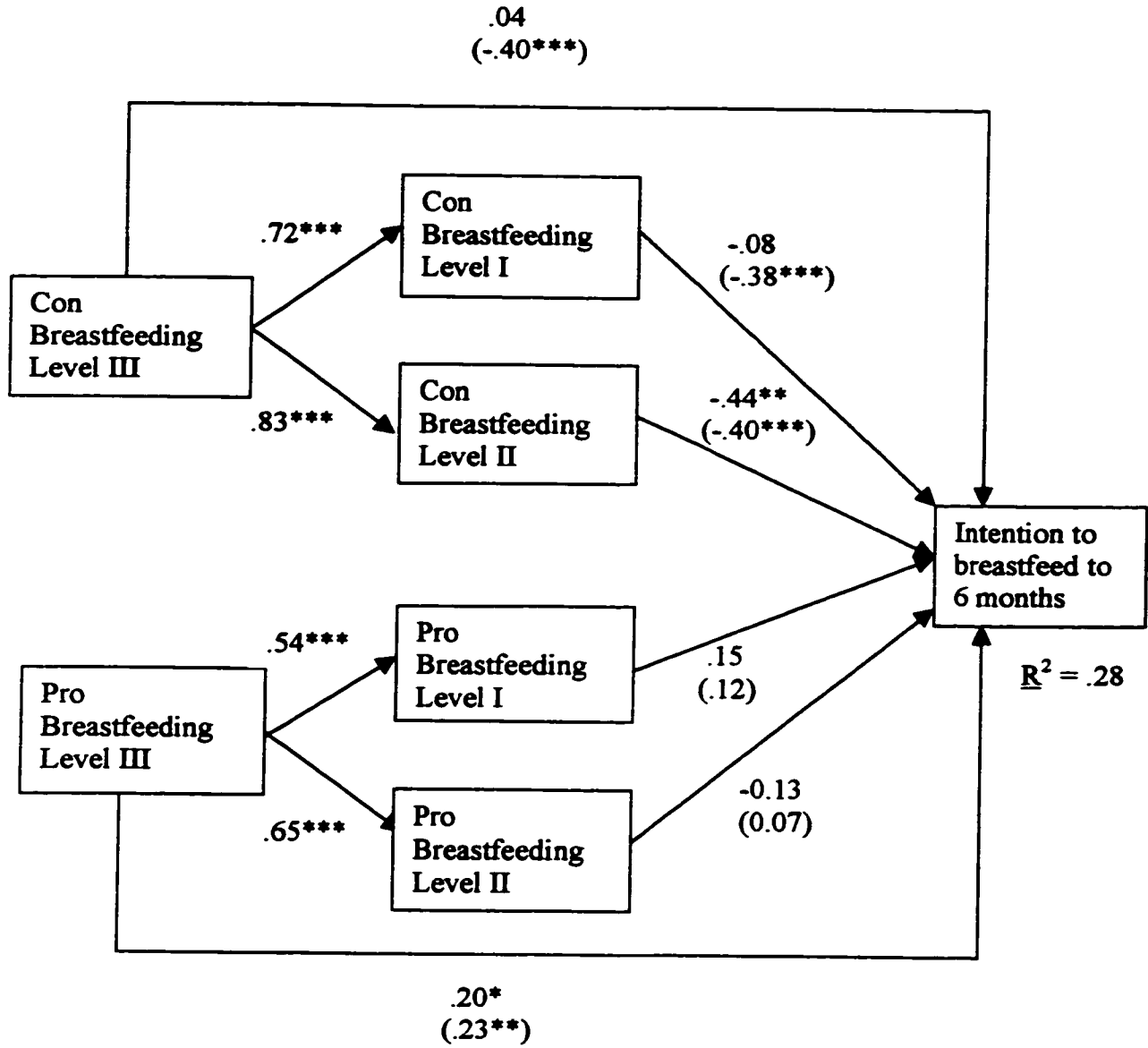


$^{\dagger} p < .1$ .  $^{*} p < .05$ .  $^{**} p < .01$ .  $^{***} p < .001$ .

Note. Brackets contain zero order correlations.

**2-Month Intentions to Breastfeed to 6 Months.** The path model for reasons assessed during the second month predicting intentions to breastfeed to 6 months is shown in Figure 18. In hierarchical regressions, Level I reasons were significant predictors at Step 1,  $R^2 = .17$ ,  $F(2, 149) = 15.46$ ,  $p < .001$ , and Level II reasons added significantly to the prediction of intentions to breastfeed to 6 months at Step 2,  $R^2\Delta = .09$ ,  $F\Delta(4, 147) = 8.52$ ,  $p < .001$ . Affective, schema-related pro and con breastfeeding reasons did not add to the prediction of intentions to breastfeed when added together,  $R^2\Delta = .02$ ,  $F\Delta(6, 145) = 2.11$ ,  $p = .13$ , although the affective, schema-related pro breastfeeding reasons were significant independent predictors of intentions,  $\beta = .20$ ,  $p = .042$ . However, the strongest predictors were Level II con breastfeeding reasons,  $\beta = -.44$ ,  $p = .002$ . These results indicate that pro breastfeeding values did increase intentions to breastfeed to 6 months, but self-consequential reasons were, again, the strongest predictors of lowered intentions to continue breastfeeding for 6 months.

**Figure 18.** Path Model for Reasons at 2 Months Postpartum Predicting Strength of Intentions to Breastfeed to 6 Months (N=152)



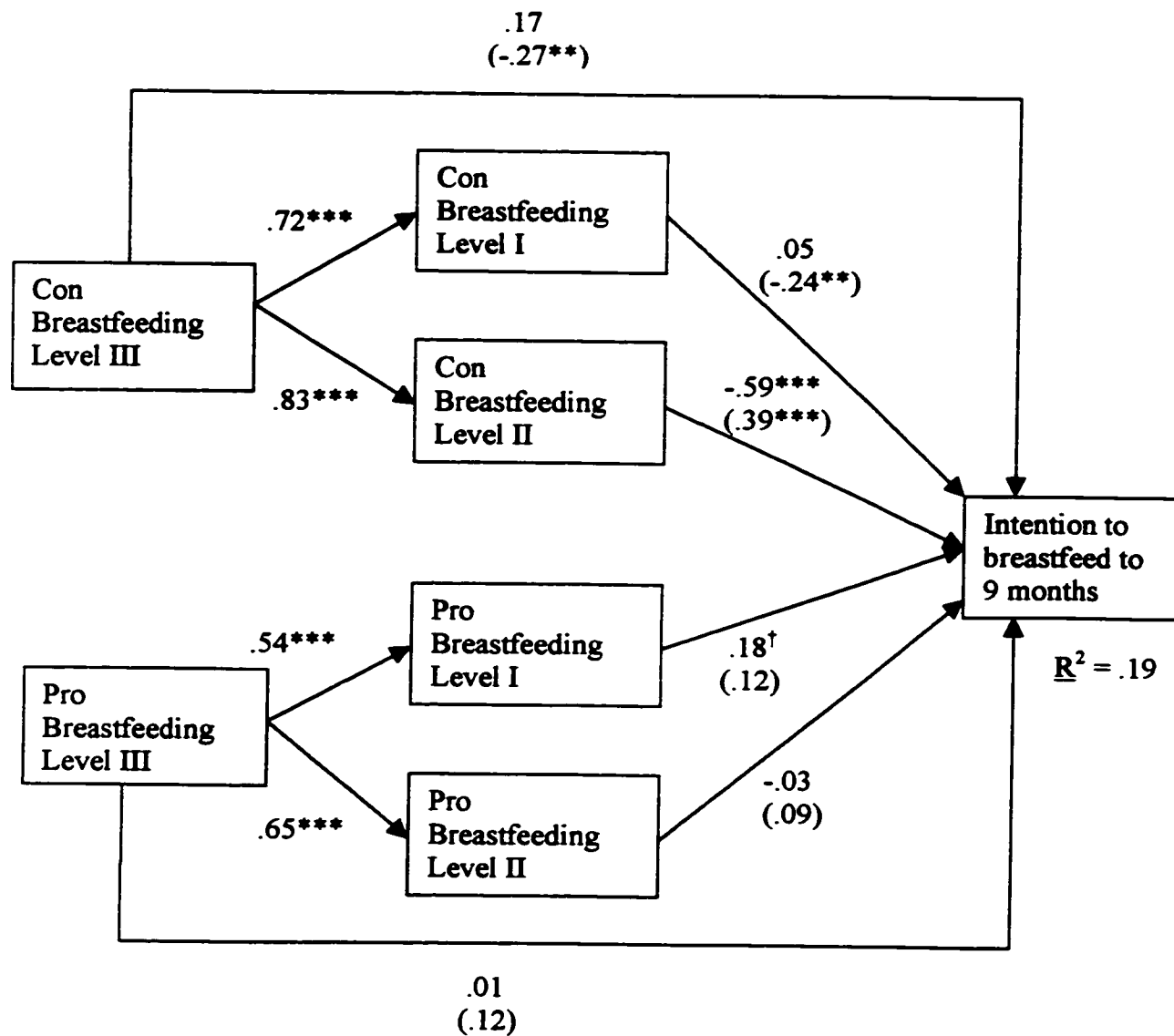
\*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

Note. Brackets contain zero order correlations.

**2-Month Intentions to Breastfeed to 9 Months and Longer.** As was the case for reasons assessed during the first month postpartum, Level II con breastfeeding reasons continued to be the dominant reasons predicting intentions to breastfeed to 9 and 12 months and longer. The path for intentions to breastfeed to 9 months is shown in Figure 19. Again, both Level I and Level II reasons predicted intentions to breastfeed in hierarchical regressions, Step 1  $R^2 = .08$ ,  $F(2, 149) = 6.53$ ,  $p = .002$ , and Step 2  $R^2\Delta = .11$ ,  $F\Delta(4, 147) = 9.59$ ,  $p < .001$ , respectively. However, for intentions to breastfeed to 12 months and longer, only Level II reasons were significant predictors of intentions in the hierarchical regressions. Level I pro breastfeeding reasons were marginally significant predictors of intentions to breastfeed to breastfeed to 9 months,  $\beta = .18$ ,  $p = .074$ , but did not predict intentions to breastfeed for 12 months or longer. As indicated, Level II con breastfeeding reasons were the only significant path predicting intentions to breastfeed to 9 months,  $\beta = -.59$ ,  $p < .001$ .

As shown in Figure 20, con breastfeeding Level II reasons were also the only significant predictor of intentions to breastfeed to 12 months,  $\beta = -.63$ ,  $p < .001$ . Similarly, as shown in Figure 21, con breastfeeding Level II reasons were the only significant predictor of intentions to breastfeed for longer than 12 months,  $\beta = -.38$ ,  $p = .015$ . These path models show the strength of self-consequential reasons in predicting intentions to breastfeed for 6 months and longer. Mothers who considered stopping for reasons such as returning to work, wanting to get out of the house, or fear that their baby might bite them had lower intentions to continue breastfeeding for 6 months or longer than women who considered self-consequential reasons to be less important.

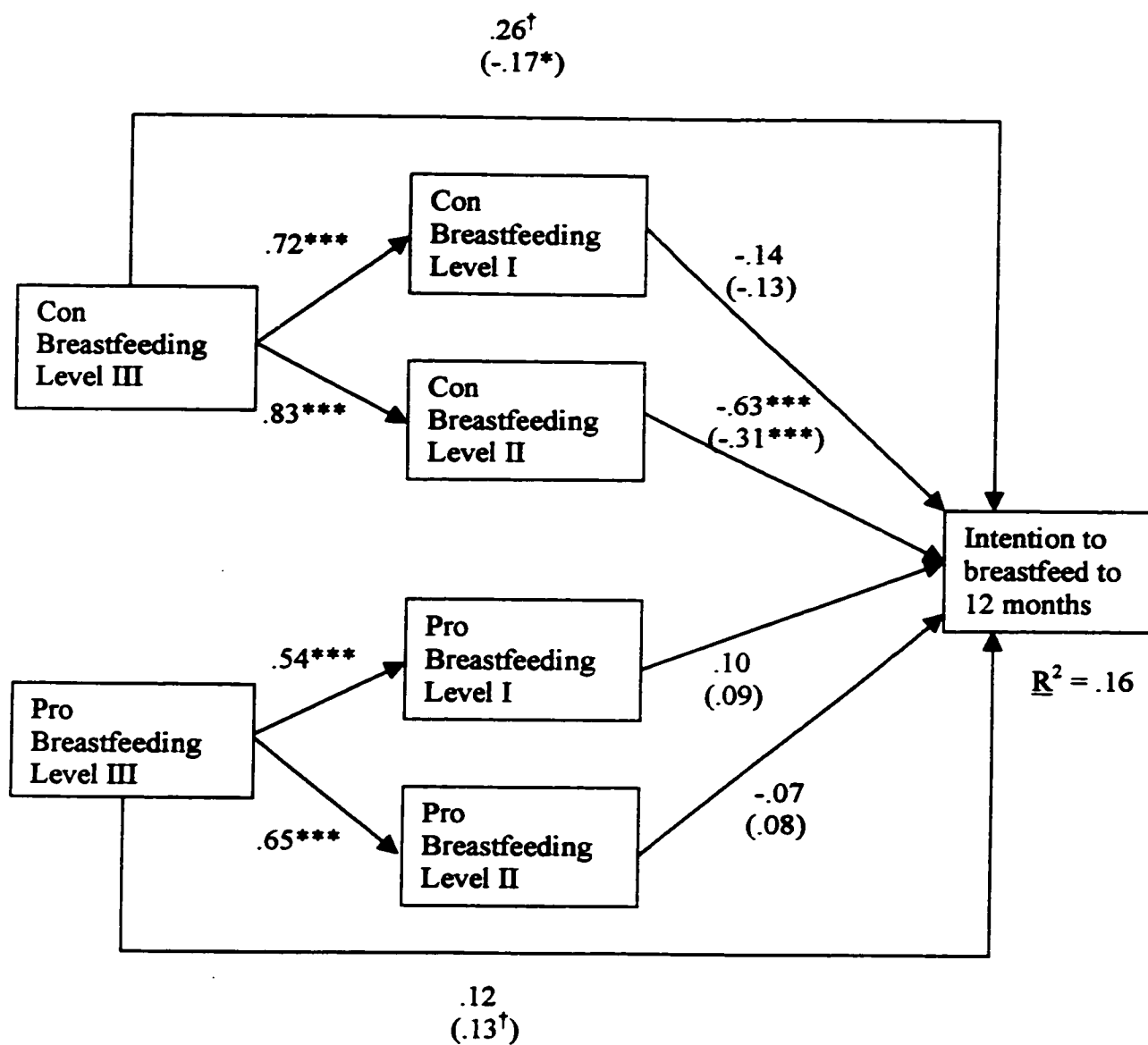
**Figure 19. Path Model for Reasons at 2 Months Postpartum Predicting Strength of Intentions to Breastfeed to 9 Months (N=152)**



†  $p < .1$ . \*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

Note. Brackets contain zero order correlations.

**Figure 20. Path Model for Reasons at 2 Months Postpartum Predicting Strength of Intentions to Breastfeed to 12 Months (N=152)**

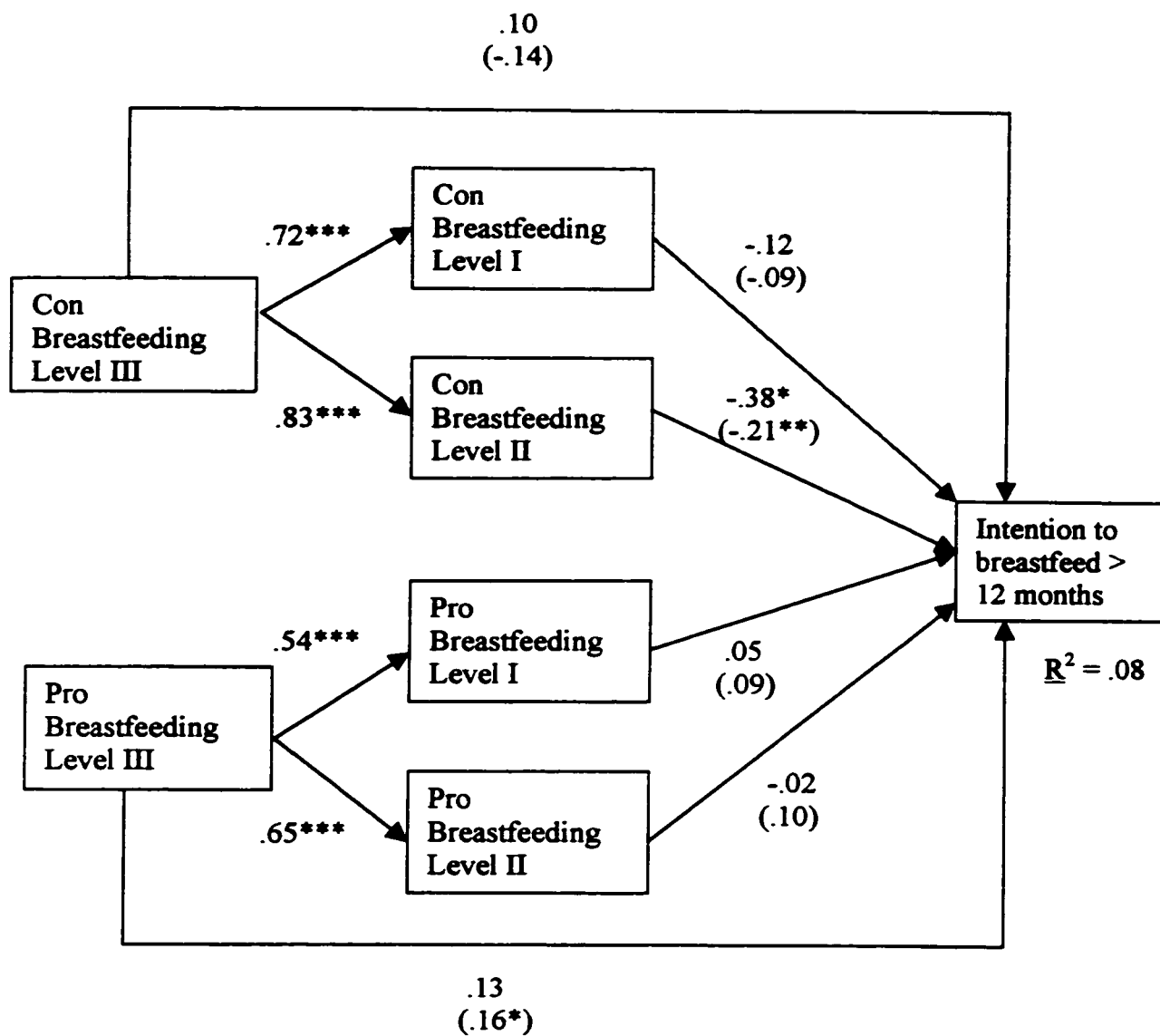


$^{\dagger} p < .1$ .  $^* p < .05$ .  $^{**} p < .01$ .  $^{***} p < .001$ .

Note. Brackets contain zero order correlations.



**Figure 21. Path Model for Reasons at 2 Months Postpartum Predicting Strength of Intentions to Breastfeed Longer than 12 Months (N=152)**



\*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

Note. Brackets contain zero order correlations.

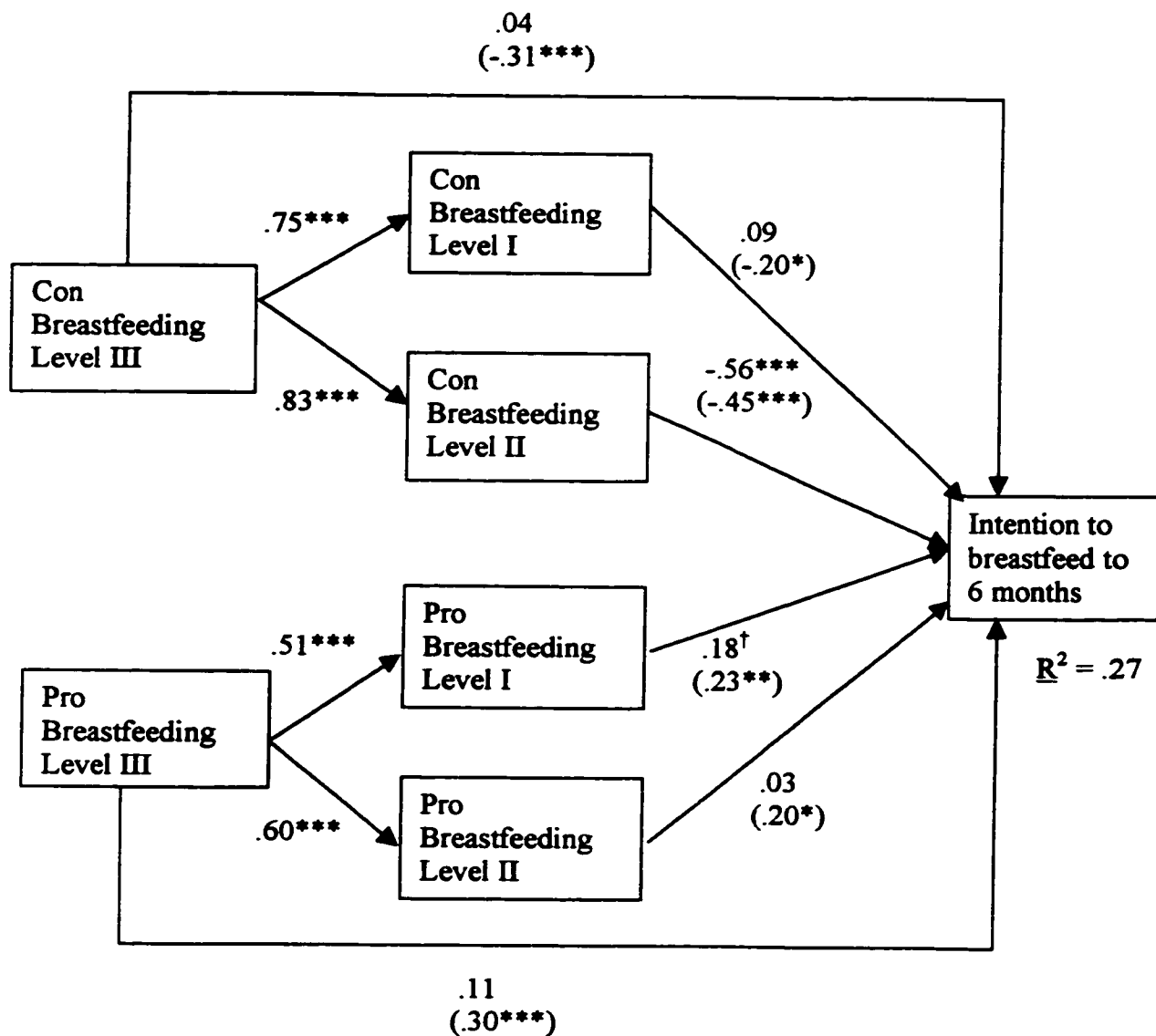
### Path Models for Reasons at 4 Months Postpartum Predicting Breastfeeding Intentions

Breastfeeding reasons and intentions were again assessed for 140 mothers who were still breastfeeding at 4 months postpartum. The path models for reasons assessed at 4 months predicting breastfeeding intentions are shown in Figures 22 through 25. As can be seen in the path models, the path coefficients between Level III reasons and Levels I and II reasons continued to range between .51 and .83. Level III reasons did not add significantly to the prediction of intentions to breastfeed over and above Levels I and II in any of the models at 4 months. Level II con breastfeeding reasons continued to be the dominant path predicting intentions to breastfeed to 6 months and longer. The path coefficient for Level II con breastfeeding reasons predicting intentions to breastfeed to 6 months, shown in Figure 22, was  $-.56, p < .001$ . The path coefficient for Level II con breastfeeding reasons predicting intentions to breastfeed to 9 months, shown in Figure 23, was  $-.58, p < .001$ . The path coefficient for Level II con breastfeeding reasons predicting intentions to breastfeed to 12 months, shown in Figure 24, was  $-.49, p < .001$ , and the path coefficient for Level II con breastfeeding reasons predicting intentions to breastfeed longer than 12 months, shown in Figure 25, was  $-.36, p = .015$ .

In addition to these highly significant paths, pro breastfeeding reasons showed a slight trend as positive predictors of continuing to breastfeed for women who were still breastfeeding at 4 months. In particular, Level I pro breastfeeding reasons became marginally significant predictors of intentions to breastfeed to 6 months,  $\beta = .18, p = .056$ , and Level II pro breastfeeding reasons were significant predictors of intentions to breastfeed for longer than 12 months,  $\beta = .243, p = .021$ . These effects entirely mediated any Level III pro breastfeeding effects on intentions to continue breastfeeding assessed at 4 months. In

addition, it should be noted that the strength of con breastfeeding Level II reasons resulted in a significant suppressor effect on Level III con breastfeeding reasons when predicting intentions to breastfeed to 12 months.

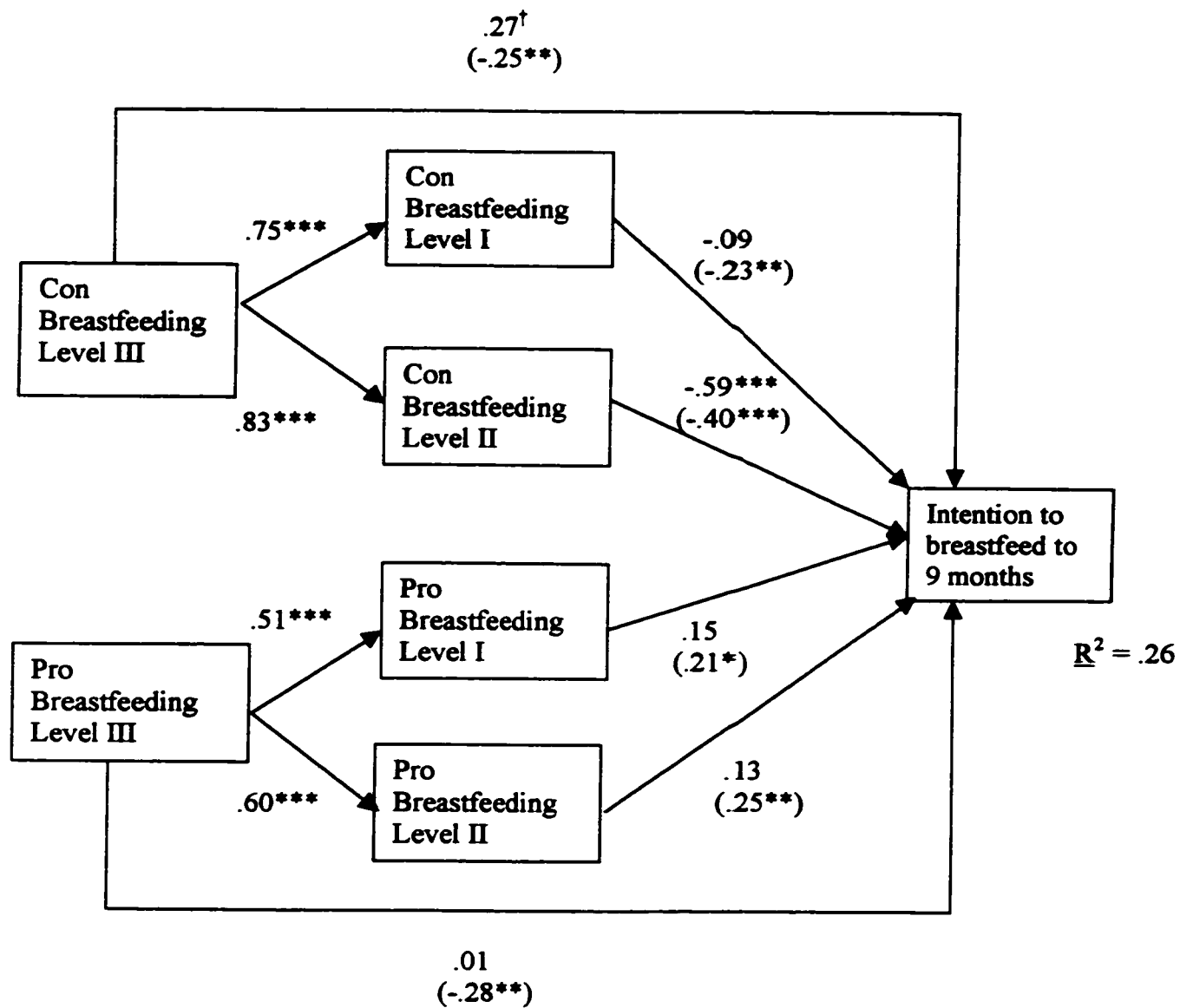
**Figure 22.** Path Model for Reasons at 4 Months Postpartum Predicting Strength of Intentions to Breastfeed to 6 Months (N=140)



†  $p < .1$ . \*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

Note. Brackets contain zero order correlations.

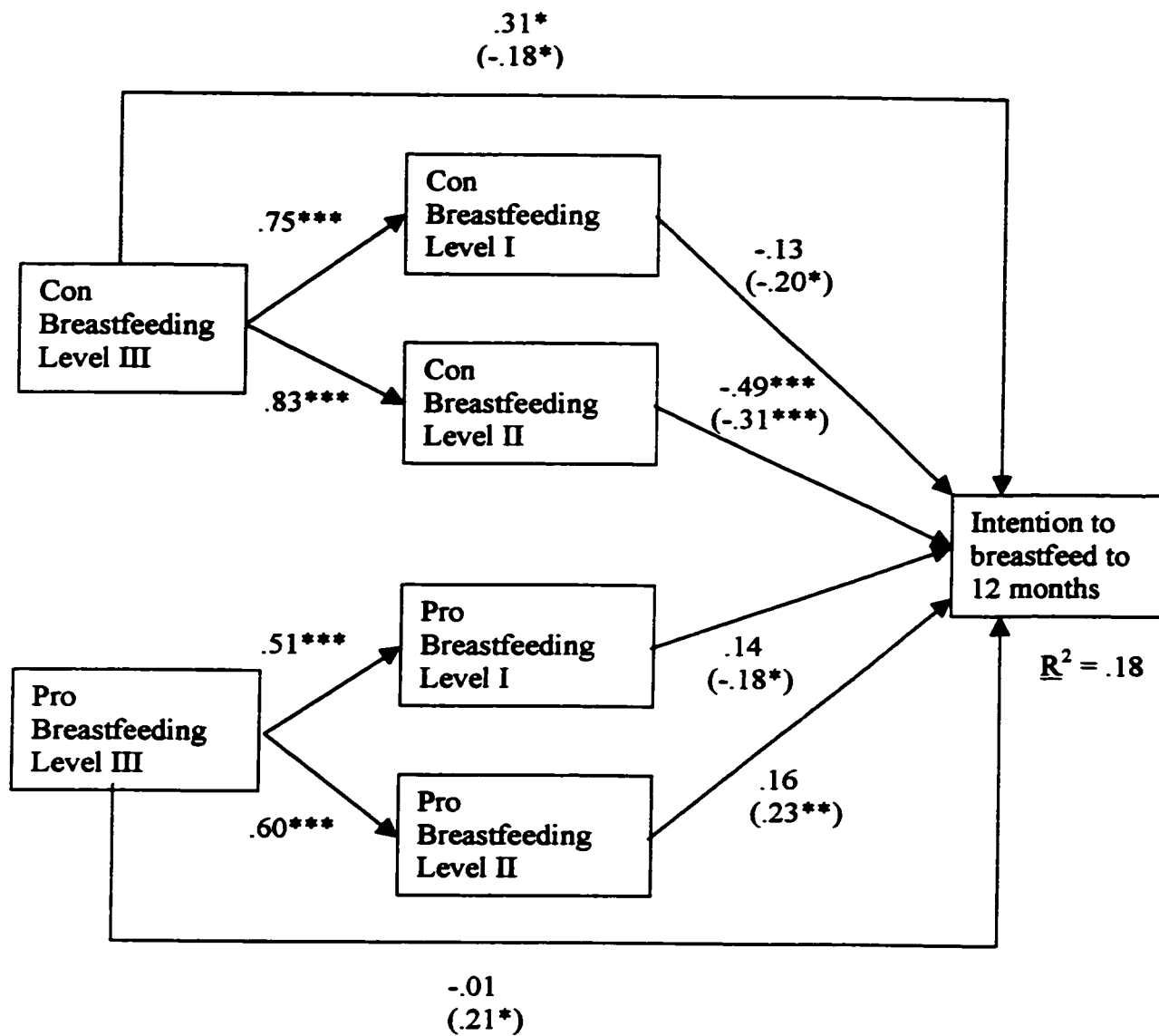
**Figure 23.** Path Model for Reasons at 4 Months Postpartum Predicting Strength of Intentions to Breastfeed to 9 Months (N=140)



†  $p < .1$ . \*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

Note. Brackets contain zero order correlations.

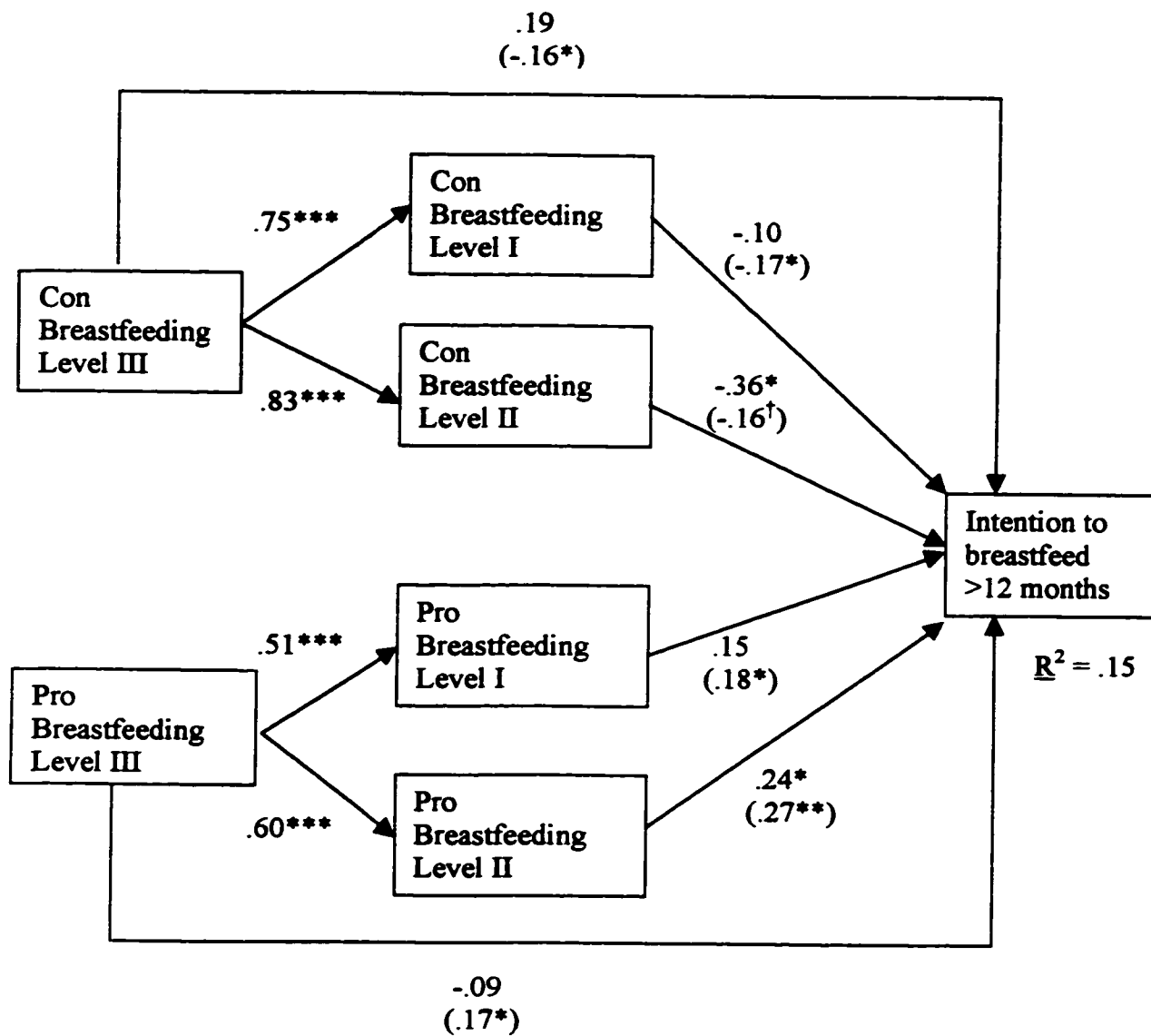
**Figure 24.** Path Model for Reasons at 4 Months Postpartum Predicting Strength of Intentions to Breastfeed to 12 Months (N=140)



\*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

Note. Brackets contain zero order correlations.

**Figure 25.** Path Model for Reasons at 4 Months Postpartum Predicting Strength of Intentions to Breastfeed Longer than 12 Months (N=140)



†  $p < .1$ . \*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

Note. Brackets contain zero order correlations.

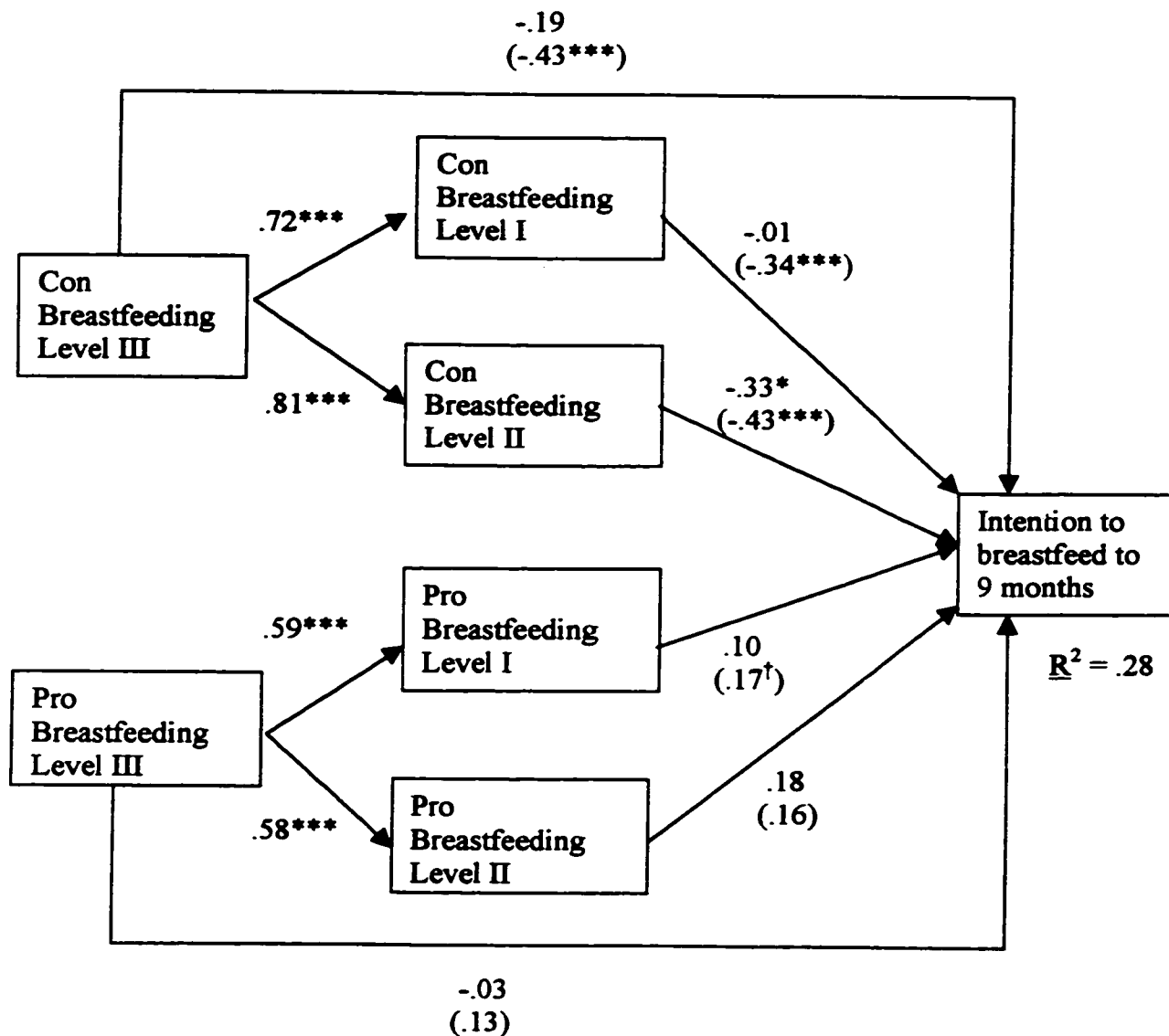
### Path Models for Reasons at 6 Months Postpartum Predicting Breastfeeding Intentions

The final set of path models represents the breastfeeding reasons and intentions of 100 women who were still breastfeeding at 6 months postpartum. These models, which are very similar to the path models for breastfeeding reasons at 4 months predicting intentions to breastfeed to 9 months, 12 months, and longer, are shown in Figures 26 to 28. Hierarchical regressions for intentions to breastfeed to 9 and 12 months were similar to the previous path models, with Level III reasons not adding significantly to the prediction of intentions over and above Levels I and II reasons. Again, con breastfeeding Level II reasons were the only significant predictors of intentions to breastfeed to 9 months,  $\beta = -.33$ ,  $p = .045$ , and of intentions to breastfeed to 12 months,  $\beta = -.48$ ,  $p = .007$ .

The last path model is the model for reasons assessed at 6 months predicting intentions to breastfeed longer than 12 months. Although hierarchical regressions show that Level I and Level II reasons were significant predictors of intentions, Step 1  $R^2 = .07$ ,  $F(4, 95) = 3.55$ ,  $p = .033$  and Step 2  $R^2\Delta = .07$ ,  $F\Delta(6, 93) = 3.73$ ,  $p = .028$ , respectively, the final model does not have any significant paths. Level I and II reasons appear to be sharing variance in such a way that no level uniquely explains variation in intentions.

Thus, these path models for reasons assessed at 6 months predicting breastfeeding intentions confirm the strength of con breastfeeding Level II reasons for lowering mothers' intentions to breastfeed longer than 6 months.

**Figure 26.** Path Model for Reasons at 6 Months Postpartum Predicting Strength of Intentions to Breastfeed to 9 Months (N=100)

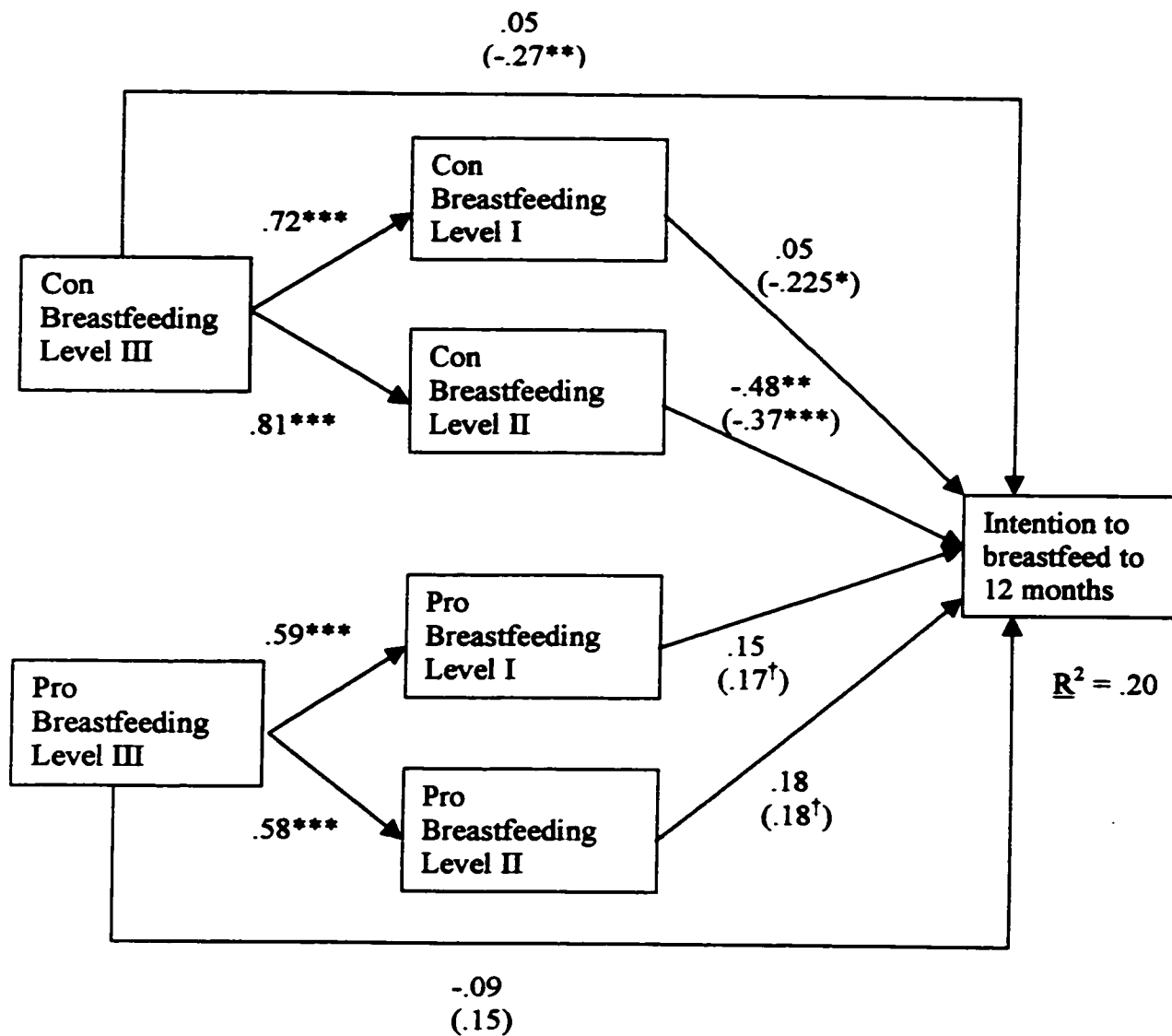


†  $p < .1$ . \*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

Note. Brackets contain zero order correlations.



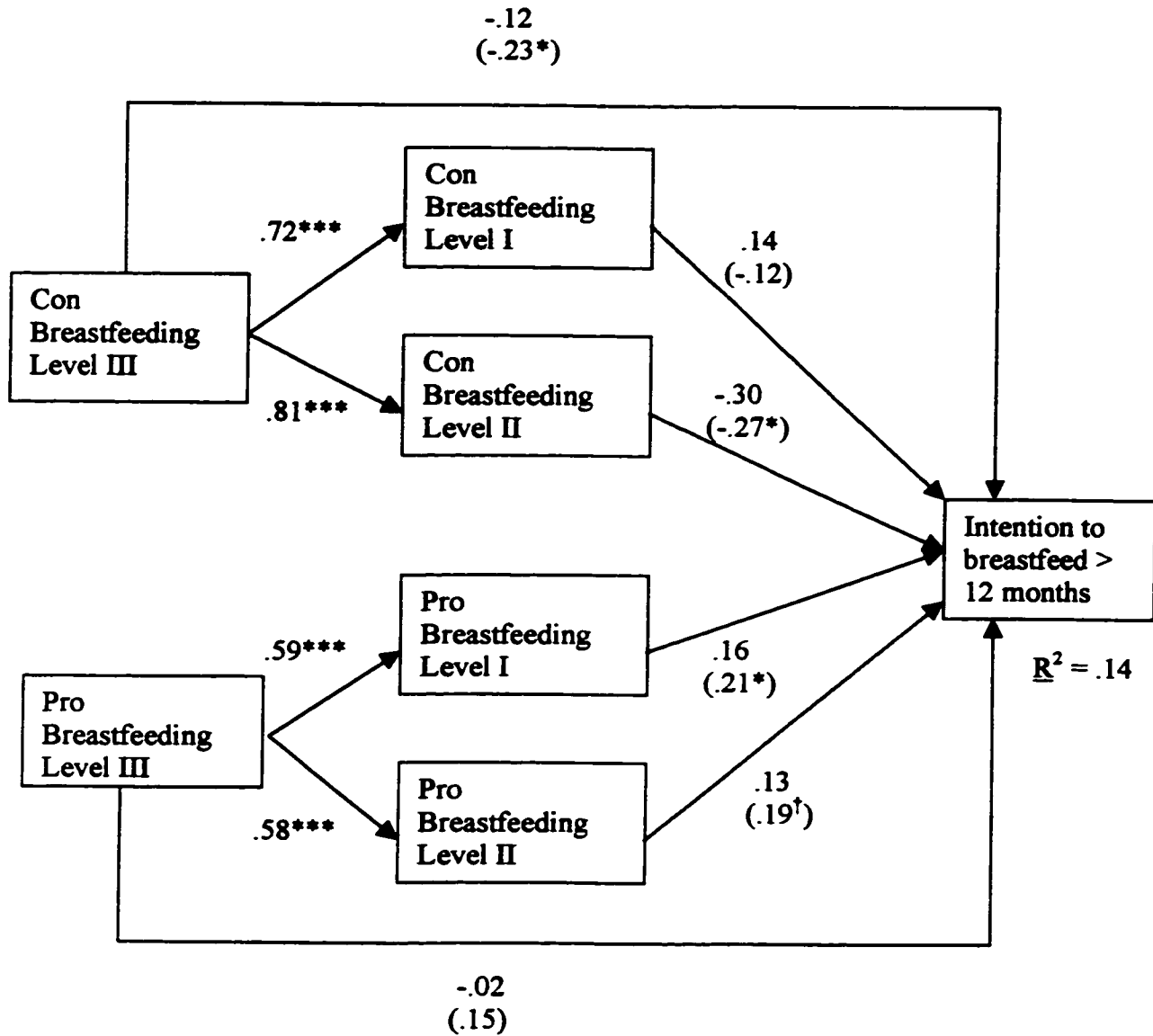
**Figure 27.** Path Model for Reasons at 6 Months Postpartum Predicting Strength of Intentions to Breastfeed to 12 Months (N=100)



†  $p < .1$ . \*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

Note. Brackets contain zero order correlations.

**Figure 28.** Path Model for Reasons at 6 Months Postpartum Predicting Strength of Intentions to Breastfeed Longer than 12 Months (N=100)



†  $p < .1$ . \*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

Note. Brackets contain zero order correlations.

### Predicting behaviour from intentions

The previous analyses have shown that the reasons model predicts intentions to breastfeed at all time points. The next step in demonstrating the usefulness of the reasons model must be to demonstrate that reasons can predict breastfeeding behaviour itself. In this study, the behaviours of interest were whether breastfeeding was initiated and how long breastfeeding was maintained.

Given that this study demonstrated the expected variance in breastfeeding continuation, does the reasons model predict breastfeeding duration? The ability of reasons levels to predict breastfeeding duration was assessed using Cox hazard analysis. This technique tests the probability that whether or not a dichotomous event has occurred over time varies significantly with a predictor variable. A positive regression coefficient ( $\beta$ ) indicates that the higher the level of a continuous predictor variable, such as reasons, the longer women breastfed, whereas a negative regression coefficient indicates that the higher the level of a continuous variable, the shorter the duration.

When entered singly, prenatal reasons variables were significant univariate predictors of breastfeeding duration over 6 months. All con breastfeeding reasons were significant risk factors, with all  $\beta$ 's being negative, meaning that they increased the probability of early breastfeeding cessation. Specifically, the regression coefficient for prenatal Level I con breastfeeding reasons predicting duration over the first 6 months postpartum was  $-.74$ ,  $p < .001$ . The regression coefficient for Level II con breastfeeding reasons was  $-.51$ ,  $p = .002$ , and the coefficient for Level III con breastfeeding reasons predicting duration was  $-.35$ ,  $p = .004$ .

Turning to the pro breastfeeding reasons, prenatal Level I and Level III pro breastfeeding reasons were significantly protective of breastfeeding duration, decreasing the risk of early breastfeeding cessation,  $\beta = .20$ ,  $p = .011$ , and  $\beta = .17$ ,  $p = .032$ . Only Level II pro breastfeeding reasons did not vary significantly with duration over 6 months. Thus, when considered univariately, analogous to zero order correlations, it appears that reasons are predictive of breastfeeding duration.

It is useful to know that reasons are correlated with behaviour, however, it was expected that the reasons model would actually affect behaviour through the prediction of intentions. Intentions to breastfeed were measured for each time point that would be assessed in the study. How well did intentions predict breastfeeding at each corresponding time point? This was assessed using logistic regression. Logistic regression tests the degree to which the probability of the occurrence of a dichotomous outcome such as having stopped breastfeeding or not, varies with one or more predictor variables. A positive regression coefficient ( $\beta$ ) indicates that the higher the level of a continuous predictor variable, such as strength of intentions, the lower the probability of having stopped breastfeeding. A negative  $\beta$  indicates that the higher the level of a predictor variable, the higher the probability of having stopped breastfeeding. In these equations, whether or not mothers had stopped breastfeeding at each time point was regressed on the corresponding intentions to breastfeed to that time point.

The strength of prenatal intentions to breastfeed at all was a significant predictor of whether or not mothers started to breastfeed,  $\beta = .56$ ,  $p < .001$ . This indicates that the probability of mothers not having breastfed at all was lower if they had higher intentions to breastfeed at all. Similarly, the strength of prenatal intentions to still be breastfeeding at 1

month was a significant predictor of whether or not mothers were still breastfeeding at 2 or 4 weeks postpartum,  $\beta = .25$ ,  $p = .039$ . The strength of intentions to breastfeed to 2 months was predictive of whether or not mothers were still breastfeeding at 6 or 8 weeks postpartum,  $\beta = .34$ ,  $p = .010$ . Prenatal intentions to breastfeed to 4 and 6 months were predictive of whether or not mothers were actually breastfeeding at 4 and 6 months, 4 month  $\beta = .35$ ,  $p < .001$  and 6 month  $\beta = .29$ ,  $p < .001$ , respectively. These results indicate that prenatal breastfeeding intentions were, generally predictive of breastfeeding behaviour in the first 6 months postpartum and that women who had higher prenatal intentions to breastfeed were more likely to continue breastfeeding.

Intentions to continue breastfeeding assessed in the first month postpartum were also significant predictors of behaviour. Intentions to still be breastfeeding at 2 months were strongly predictive of breastfeeding status at 6 or 8 weeks postpartum,  $\beta = .57$ ,  $p < .001$ . Intentions to still be breastfeeding at 4 months were predictive of whether or not mothers were still breastfeeding at 4 months,  $\beta = .35$ ,  $p < .001$ , and intentions to still be breastfeeding at 6 months assessed during the first month postpartum were predictive of breastfeeding status at 6 months,  $\beta = .33$ ,  $p < .001$ .

The same pattern of results was found for intentions to continue breastfeeding assessed during the second month postpartum. Intentions to breastfeed to the next assessment point, 4 months, were strongly predictive of whether or not mothers were still breastfeeding at 4 months,  $\beta = .47$ ,  $p < .001$ , and intentions to still be breastfeeding at 6 months were predictive of breastfeeding status at 6 months postpartum,  $\beta = .39$ ,  $p < .001$ . Finally, intentions to still be breastfeeding at 6 months were predictive of breastfeeding

status at 6 months,  $\beta = .50$ ,  $p < .001$ . These results, then, demonstrate that participants' breastfeeding intentions did predict their actual behaviour.

### Con Breastfeeding Reasons Predicting Reasons to Stop Breastfeeding

In addition to predicting whether or not mothers stop breastfeeding at various time points, it was also expected that con breastfeeding reasons should be predictive of reasons to stop breastfeeding. Pregnant and breastfeeding participants were asked to indicate how important these con breastfeeding reasons could be to their decisions to stop breastfeeding. Were women able to predict their reasons to stop breastfeeding? What were the reasons that women considered most important to their decisions to stop breastfeeding at some point during the first 6 months postpartum?

Reasons for stopping breastfeeding and the mean importance of individual reasons can be found in Table 12. The most important reasons to stop breastfeeding were the Level II reasons "I did not have enough milk for my baby," ( $M = 2.23$ ) and "Breastfeeding was difficult," ( $M = 2.09$ ). Other somewhat important reasons for stopping included the Level III reasons "Breastfeeding made me feel frustrated and unhappy," ( $M = 1.61$ ) and "I was not able to handle having a breastfeeding problem," ( $M = 1.47$ ). One Level I reason to stop was, "I couldn't tell how much my baby drank when I breastfed" ( $M = 1.29$ ). Other Level II reasons to stop included "Breastfeeding gave me sore breasts or sore nipples," ( $M = 1.17$ ), "I am going back to work or school outside my home," ( $M = 1.12$ ), and "Breastfeeding was tiring for me," ( $M = 1.11$ ). In addition to the reasons that paralleled the original BRQ items, two additional items were added to the reasons to stop questionnaire. These items were also given some importance as reasons to stop breastfeeding. "My baby seemed to be ready to

wean,” received a mean importance of 1.17, and “I felt that I had breastfed long enough for my baby to get the benefits of breastfeeding,” received a mean importance rating of 1.04.

Table 12

**Reasons to Stop Breastfeeding by Level**

Level I reasons	<b>M (SD)</b>
I couldn't tell how much my baby drank when I breastfed.	1.29 (1.74)
Formula is pretty much as good for a baby as breastmilk.	0.75 (1.30)
Breastmilk can contain substances that might hurt a baby.	0.25 (0.94)
I was not getting support from my doctor to breastfeed any longer.	0.20 (0.75)
I did not know enough other mothers who were breastfeeding.	0.20 (0.59)
People do not like to see a woman breastfeed.	0.18 (1.64)
I don't know anyone who has been able to breastfeed for long.	0.08 (0.39)
Level II reasons	
I did not have enough milk for my baby.	2.23 (2.11)
Breastfeeding was difficult.	2.09 (2.15)
Breastfeeding gave me sore breasts or sore nipples.	1.17 (1.80)
I am going back to work or school outside my home.	1.12 (1.76)
Breastfeeding was tiring for me.	1.11 (1.58)
My baby wanted to breastfeed all the time.	0.78 (1.52)
I found it hard to get out of the house when I was breastfeeding.	0.77 (1.33)
I did not always like the way my body felt when I was breastfeeding.	0.54 (1.29)
My partner wanted to be able to feed the baby.	0.47 (1.11)
I was afraid that my baby would bite me.	0.44 (1.05)

Table 12 continues

Table 12, continued

Reasons to Stop Breastfeeding by Level

Level II reasons (continued)	<u>M (SD)</u>
I did not have a support person who could give me breastfeeding advice or encourage me when things didn't go well.	0.43 (1.20)
My partner didn't really support me breastfeeding any longer.	0.26 (0.90)
Breastfeeding did not allow me to go on a strict weight-loss diet.	0.21 (0.66)
I have family members or friends who don't really support breastfeeding.	0.13 (0.56)
I thought my breasts would look unattractive if I continued to breastfeed.	0.11 (0.44)
Breastfeeding did not allow me to drink alcohol or smoke as much as I want.	0.09 (0.39)
Sometimes it seemed like my partner didn't want to share my breasts with the baby.	0.09 (0.40)
Level III reasons	
Breastfeeding made me feel frustrated and unhappy.	1.61 (1.98)
I was not able to handle having a breastfeeding problem.	1.47 (1.98)
I sometimes find it hard to continue doing something that is difficult.	0.72 (1.26)
Breastfeeding made me feel awkward around some people who can't really understand what a breastfeeding mother goes through.	0.62 (1.26)
I felt embarrassed breastfeeding in front of other people.	0.55 (1.21)
Breastfeeding a newborn for a few months is was right, but it seemed strange to keep breastfeeding once my baby got older than that.	0.46 (0.96)
I'm not the kind of person who wanted to breastfeed so much that I would continue long after other people might think breastfeeding should stop.	0.29 (0.80)
I'm not the type to let a baby tie me down.	0.28 (0.90)

Table 12 continues



Table 12, continued

Reasons to Stop Breastfeeding by Level

Additional reasons	
My baby seemed to be ready to wean.	1.17 ( 1.79)
I felt that I had breastfed long enough for my baby to get the benefits of breastfeeding.	1.04 (1.59)
I had medical reasons that prevented me from continuing to breastfeed.	0.78 (1.52)

How well did mothers predict the strength of importance of their breastfeeding reasons? Tables 13 through 15 show hierarchical regressions in which reasons to stop were regressed on reasons at previous time points. Because hierarchical regressions delete participants who are missing data for any one data point, multiple regression analyses were conducted for subgroups of mothers in the closed-ended group who had stopped breastfeeding in the intervening time since the previous assessment point.

For the 42 women who stopped before the first prenatal assessment, their prenatal Level I and II con breastfeeding reasons did not predict their Level I or II reasons to stop breastfeeding, but their prenatal Level III reasons did predict their Level III reasons to stop breastfeeding,  $\beta = .40$ ,  $p = .009$ . Thus, women did not anticipate the strength of importance of the negative consequences of breastfeeding for themselves, but they did anticipate some of the frustration and negative affect that breastfeeding brought them.

Table 13 shows the hierarchical regression for reasons to stop regressed on prenatal and 1 month con breastfeeding reasons for the 23 women who stopped breastfeeding between 1 and 2 months postpartum. Again, the only prenatal con breastfeeding reasons

predictive of reasons to stop breastfeeding during the second month were Level III reasons. However, reasons assessed at the 1-month interview were highly predictive of their corresponding Level I, Level II, and Level III reasons to stop breastfeeding before 2 months.

Table 13

**Hierarchical Regressions for Previous Time Point Corresponding Con Breastfeeding Reasons Predicting Reasons to Stop Between 1 and 2 Months Postpartum (N=23)**

Variable	Level I		Level II		Level III	
	$\beta$	$\Delta R^2$	$\beta$	$\Delta R^2$	$\beta$	$\Delta R^2$
Step 1						
Prenatal	-.17	.03	.27	.07	.58	.33**
Step 2						
Prenatal	-.07	.55***	-.18	.48***	-.05	.39***
1 month			.82***		.88***	

\*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

Similarly, Table 14 shows the regressions for reasons to stop breastfeeding regressed on prenatal, 1 month, and 2 month con breastfeeding reasons for the 20 women who stopped breastfeeding between 2 and 4 months postpartum. For these women, their prenatal Level I and Level III con breastfeeding reasons significantly predicted their Level I and Level III reasons to stop breastfeeding. In addition, Level II and Level III reasons assessed in the first month significantly predicted their Level II and III reasons to stop breastfeeding. When reasons assessed in the second month were included, only 2-month Level III con

breastfeeding reasons significantly added to the prediction of Level III reasons to stop over and above prenatal and 1-month con breastfeeding reasons.

Table 14

**Hierarchical Regressions for Previous Time Point Corresponding Con Breastfeeding Reasons Predicting Reasons to Stop Between 2 and 4 Months Postpartum (N=20)**

Variable	Level I		Level II		Level III	
	$\beta$	$\Delta R^2$	$\beta$	$\Delta R^2$	$\beta$	$\Delta R^2$
Step 1						
Prenatal	.48*	.23*	.38	0.14 <sup>†</sup>	.52*	.27*
Step 2						
Prenatal	.37	.04	-.07	0.28*	.08	.19*
1 month	.23		.69*		.62*	
Step 3						
Prenatal	.30	.02	-.10	0.01	-.08	.09 <sup>†</sup>
1 month	.09		.59		.31	
2 months	.23		.14		.54 <sup>†</sup>	

<sup>†</sup> $p < .1$ . \*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

Finally, for the 35 mothers who stopped breastfeeding between 4 and 6 months postpartum, the hierarchical regressions for reasons to stop breastfeeding regressed on prenatal, 1 month, 2 month, and 4 month con breastfeeding reasons can be found in Table 15. Again, only Level III reasons to stop were predicted by prenatal con breastfeeding Level III reasons. Reasons assessed in the first month added significantly to the prediction of all

three levels of reasons to stop breastfeeding. Reasons assessed at 2 months added significantly to the prediction of Level II and III reasons to stop breastfeeding, and reasons assessed at 4 months added further to the prediction of Level I and Level III reasons to stop breastfeeding.

Table 15  
Hierarchical Regressions for Previous Time Point Corresponding Con Breastfeeding  
Reasons Predicting Reasons to Stop Between 4 and 6 Months Postpartum (N=35)

Variable	Level I		Level II		Level III	
	$\beta$	$\Delta R^2$	$\beta$	$\Delta R^2$	$\beta$	$\Delta R^2$
Step 1						
Prenatal	.20	.04	.27	.07	.35*	.12*
Step 2						
Prenatal	.07	.17*	-.12	.34***	-.01	.25**
1 month	.43*		.70***		.61	
Step 3						
Prenatal	.01	.06	-.25	.10*	-.12	.09*
1 month	.18		.41*		.38 <sup>†</sup>	
2 months	.38		.50*		.43*	
Step 4						
Prenatal	-.29	.09 <sup>†</sup>	-.25	.01	-.23	.08*
1 month	.11		.43*		.45*	
2 months	.27		.56*		.16	
4 months	.49 <sup>†</sup>		-.10		.41*	

<sup>†</sup>  $p < .1$ . \*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$

These results indicate that women were somewhat able to predict their reasons to stop breastfeeding prenatally, before the onset of any breastfeeding experience. This is particularly true for the prediction of their Level III reasons for stopping. This lends support for the stability of the value-laden, affective, schema-related reasons. Level I and II reasons are likely to change as a result of experience, but the underlying Level III reasons maintain a significant degree of their former importance. How people feel about themselves does not change greatly. Thus, knowing the kind of Level III reasons for stopping that mothers hold before birth provides important information about the way in which they will respond to the difficulties of their breastfeeding experience.

This is especially true because, of the three levels of reasons for stopping, only Level III reasons were significantly negatively related to duration over the first 6 months,  $r(126) = -.33, p < .001$ . This indicates that mothers who gave higher importance to Level III reasons for stopping such as unhappiness and frustration had breastfed for the shortest length of time. It again highlights the importance of Level III reasons. Strongly negative affective reactions to a difficult experience do increase the risk of discontinuing that behaviour.

These analyses also show that con breastfeeding reasons reported by breastfeeding mothers after they have had breastfeeding experience, especially in the first month postpartum, are especially predictive of eventual reasons to stop breastfeeding. This suggests that, once they have had experience with breastfeeding, women who are going to discontinue breastfeeding during the first 6 months have a good idea of the reasons that will get them to stop.

### Partners' Reasons

The results presented thus far have shown that the reasons model was able to predict the breastfeeding intentions and behaviour of participants in the study. However, the breastfeeding intentions and behaviour of new mothers are not created in a vacuum. Although the reasons model successfully predicted breastfeeding intentions, they accounted for less than a third of the variance in intentions. There are many other factors that could predict breastfeeding intentions, and one potentially significant source of influence in the decisions of an expectant mother is her partner.

I expected that the degree to which male partners thought participants should breastfeed would be related to participants' breastfeeding reasons. In particular, because Level III reasons are hypothesized to be the exogenous variables in the reasons model, it should follow that whether or not male partners think participants should breastfeed at various time points should be related to participants' Level III reasons. The reasons model suggests that participants should develop reasons for or against breastfeeding based what they believe their partners think about breastfeeding and how that perception fits with participants' own Level III schemas and values. Male partners' thoughts about whether participants should breastfeed should also be related to Level II reasons because Level II reasons include reasons related to social support and the maintenance and enhancement of relationships. I also expected that male partners would hold reasons that were somewhat similar to the reasons of participants, but that those reasons might be different enough to cause partners to have an effect on participants' decisions over and above participants' own reasons for and against breastfeeding. Partners' reasons for and against breastfeeding should predict their own decisions regarding whether or not participants should breastfeed at all and

should still be breastfeeding at each of the relevant time points in this study. Their judgements regarding whether or not participants should breastfeed should then affect the participants' reasons for and against breastfeeding and may also affect participants' breastfeeding intentions directly.

#### Means for Partner Breastfeeding Reasons.

In order to examine these questions, this study assessed male partners' reasons for and against thinking that participants should breastfeed and the degree to which partners thought participants should breastfeed. Male partners were asked to rate the importance of reasons for and against breastfeeding as reasons why they thought participants should breastfeed or should not breastfeed or stop breastfeeding. The individual reasons and means for partners' pro breastfeeding reasons can be found in Table 16. Individual item means for con breastfeeding reasons can be found in Table 17.

Partners' pro and con breastfeeding reasons were ranked very similarly to participants' pro breastfeeding reasons. For example, partners rated "Breastfeeding keeps babies healthy" ( $M = 4.18$ ), and "It is important for me to do anything that is good for my baby and that includes my partner breastfeeding" ( $M = 3.88$ ) as the two most important reasons for breastfeeding. They rated "My partner plans to go back to work or school outside my home" ( $M = 1.26$ ) as the most important reason for thinking that she should stop breastfeeding or not breastfeed. The most notable difference in ranking is that partners ranked the Level III items regarding participants' potential negative affective reactions to breastfeeding more highly than did participants. Partners' two most important Level III reasons were "Breastfeeding may make my partner feel frustrated and unhappy" ( $M = 0.75$ ), and "My partner may not be able to handle it if she has a breastfeeding problem" ( $M =$

0.96). The importance they gave these reasons indicate their concern for the possible affective consequences of breastfeeding for their pregnant partners and their thoughts that their partners perhaps should not continue if those consequences were to occur.

Table 16

Partner Pro Breastfeeding Reasons by Level

Level I reasons	<u>M (SD)</u>
Breastfeeding keeps babies healthy.	4.18 (1.34)
Breastfed babies have less chance of getting diseases like cancer or diabetes when they get older.	3.26 ( 2.00)
Breastfed babies are less likely to get allergies.	3.14 (1.97)
Mothers who breastfeed have less risk of getting breast and ovarian cancer.	3.02 (2.13)
The more months a mother breastfeeds, the better it is for the mother and the baby.	2.86 (1.90)
Breastfed babies are less likely to get ear infections.	2.30 (2.19)
Breastfed babies have better speech and language development.	1.73 (2.12)
Doctors, nurses, midwives, and prenatal teachers say you should breastfeed.	1.67 (1.82)
I've seen family members and friends breastfeed successfully.	1.59 (1.84)
My partner's doctor or midwife supports breastfeeding.	1.25 (1.82)

Table 16 continues



Table 16, continued

Partner Pro Breastfeeding Reasons by Level

Level II reasons	
Breastfeeding will be convenient for me and my partner.	1.63 (1.73)
Breastfeeding will save me money because it is cheaper than formula feeding.	1.56 (1.69)
I have family and friends who think that breastfeeding is a good idea.	1.40 (1.77)
Breastfeeding will help my partner get her figure back more quickly.	1.38 (1.82)
Breastfeeding will let my partner sleep better.	1.21 (1.82)
Breastfeeding will make it easier for my partner to get out of the house.	0.77 (1.42)
My partner's breasts will be more attractive when she breastfeeds.	0.53 (1.37)
Level III reasons	
	<u>M (SD)</u>
It is important for me to do anything that is good for my baby and that includes my partner breastfeeding.	3.88 (1.54)
Breastfeeding is a natural way to feed a baby.	3.60 (1.58)
My partner will feel very close to our baby when she breastfeeds.	3.55 (1.54)
Breastfeeding will make my baby feel secure and loved.	3.46 (1.74)
Breastfeeding will make my partner feel happy.	2.75 (1.84)
My partner will feel great about herself when she breastfeeds.	2.22 (1.87)
I have always thought that my partner would breastfeed when she became a mother.	1.81 (1.94)
Breastfeeding is part of being a woman.	1.66 (1.83)

Table 17

**Partner Con Breastfeeding Reasons by Level**

Level I reasons	<b><u>M (SD)</u></b>
You can't tell how much a breastfed baby drinks.	0.34 (0.87)
Breastmilk can contain substances that might hurt a baby.	0.29 (1.00)
Formula is pretty much as good for a baby as breastmilk.	0.20 (0.69)
People do not like to see a woman breastfeed.	0.18 (0.66)
My partner's doctor doesn't really support breastfeeding.	0.20 (0.75)
We don't have many friends or acquaintances who breastfeed.	0.20 (0.59)
We don't know anyone who has been able to breastfeed for long.	0.08 (0.39)
Level II reasons	
My partner plans to go back to work or school outside my home.	1.26 (1.53)
My partner may not be able to make enough milk for my baby.	1.04 (1.57)
Breastfeeding may be difficult.	0.93 (1.25)
Breastfeeding gave my partner sore breasts or sore nipples.	0.88 (1.18)
Breastfeeding may be tiring for my partner.	0.82 (1.19)
My partner wants to be able to get out of the house and that is hard to do when you are breastfeeding.	0.71 (1.10)
I'm afraid that my baby would bite my partner when the baby gets teeth.	0.56 (1.17)
My partner has no support person who can give her breastfeeding advice or encourage her if things don't go well.	0.24 (0.74)
I'm afraid that my baby might want to breastfeed all the time.	0.23 (0.65)
I want to be able to feed the baby.	0.21 (0.73)
Breastfeeding would not allow my partner to drink alcohol or smoke as much as she wants.	0.16 (0.58)

Table 17, continued

Partner Con Breastfeeding Reasons by Level

Level II reasons (continued)	<u>M (SD)</u>
I might not like it if my partner's breasts leaked during lovemaking.	0.12 (0.59)
Breastfeeding would not allow my partner to go on a strict weight-loss diet.	0.12 (0.52)
My partner's breasts would look unattractive if she breastfeeds.	0.08 (0.39)
Sometimes I don't want to share my partner's breasts with the baby.	0.02 (0.14)
I have family members or friends who don't really support breastfeeding.	0.01 (0.11)
Level III reasons	
Breastfeeding may make my partner feel frustrated and unhappy.	0.75 (1.27)
My partner may not be able to handle it if she had a breastfeeding problem.	0.69 (1.19)
My partner sometimes finds it hard to continue doing something that is difficult.	0.44 (0.98)
I'm not the kind of person who wants my partner to breastfeed so much that I would want her to continue long after other people might think breastfeeding should stop.	0.36 (0.91)
I would feel embarrassed if my partner was to breastfeed in front of other people.	0.35 (0.88)
Breastfeeding a newborn for a few months is right, but it would seem strange for my partner to keep breastfeeding once my baby got older than that.	0.35 (0.94)
Breastfeeding may make my partner feel awkward around some people who can't really understand what a breastfeeding mother goes through.	0.30 (0.87)
My partner is not the type to let a baby tie her down.	0.19 (0.69)

As I did with participants' reasons, I created partner reasons variables for pro and con Level I, Level II, and Level III breastfeeding reasons. These variables were created using items that corresponded with participants' parallel reasons at each level. As expected,

partners' reasons were somewhat similar to participants' pro and con breastfeeding reasons. The correlations between partners' reasons and participants' reasons can be found in Table 18. Partners' pro breastfeeding reasons were moderately correlated with participants' pro breastfeeding reasons,  $r(161) = .29$  to  $r(161) = .43$ , and partners' con breastfeeding reasons were moderately correlated with participants' con breastfeeding reasons,  $r(161) = .23$  to  $r(161) = .41$ . This suggests that these significant others placed somewhat similar, but not highly similar, importance on parallel reasons for and against breastfeeding.

Table 18

Correlations between Partners' and Participants' Pro and Con Breastfeeding Reasons (N = 161)

Partners' Breastfeeding Reasons	Participants' Breastfeeding Reasons					
	Con I	Con II	Con III	Pro I	Pro II	Pro III
Con I	.41***	.23**	.25**	-.08	-.09	-.12
Con II	.30***	.28***	.28***	-.12	-.11	-.18*
Con III	.29***	.23**	.31***	-.02	-.03	-.16*
Pro I	-.02	-.08	-.02	.34***	.29***	.37***
Pro II	.11	.03	.09	.35***	.39***	.37***
Pro III	-.10	-.13	-.10	.37***	.34***	.43***

\*  $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$

### **Partners' Prescriptive Beliefs about Participants Breastfeeding.**

This study also assessed male partners' beliefs about: (a) whether or not participants should breastfeed at all and (b) whether or not they should still be breastfeeding when their babies were 1 month, 2 months, 4 months, 6 months, 9 months, 12 months, and older than 12 months of age. I refer to these latter beliefs as prescriptive duration beliefs. The mean levels of these beliefs can be found in Table 19. Partners were similar to participants in that they strongly believed that participants should breastfeed. The mean strength of their beliefs that participants should breastfeed in the first 2 months ranged from 9.64 to 9.75. They also strongly believed that participants should breastfeed to 4 months ( $\underline{M} = 9.13$ ) but, on average, were less strong about their beliefs that partners should breastfeed longer than that (6 month  $\underline{M} = 7.88$ ; longer than 12 months  $\underline{M} = 2.27$ ).

Table 19

**Partners' Prescriptive Duration Beliefs: Means and Correlations with Participants' Breastfeeding Reasons**

Participant should:	<u>M (SD)</u>	Correlations with Participants' Breastfeeding Reasons					
		Con I	Con II	Con III	Pro I	Pro II	Pro III
Breastfeed at all (N = 147)	9.64 (0.81)	-.20*	-.17*	-.23**	-.04	-.03	-.05
Breastfeed at 1 month (N = 156)	9.75 (0.72)	-.19*	-.10	-.15 <sup>†</sup>	-.08	-.03	-.02
Breastfeed at 2 months (N= 165)	9.66 (1.00)	-.10	-.07	-.09	-.02	.05	.12
Breastfeed at 4 months (N = 156)	9.13 (1.52)	-.14 <sup>†</sup>	-.14	-.13	-.16*	.21**	.29***
Breastfeed at 6 months (N = 156)	7.88 (2.63)	-.25**	-.24**	-.20*	.15 <sup>†</sup>	.16*	.27**
Breastfeed at 9 months (N= 156)	5.66 (3.21)	-.19*	-.20*	-.14 <sup>†</sup>	.16*	.17*	.31***
Breastfeed at 12 months (N= 156)	3.76 (3.48)	-.15 <sup>†</sup>	-.14 <sup>†</sup>	-.13	.14 <sup>†</sup>	.15	.23**
Breastfeed > 12 months (N = 155)	2.27 (2.91)	-.13	-.18*	-.16 <sup>†</sup>	.10	.11	.18*

<sup>†</sup>p .01. \* p < .05. \*\*p < .01. \*\*\*p < .001.

**Note.** N changes because some participants did not provide a response for all prescriptive duration measures.

### Path Models for Partners' Reasons.

To assess whether partners' pro and con breastfeeding reasons were predictive of the degree to which they thought participants should breastfeed, the strength of partners' beliefs that participants should breastfeed were regressed on their own pro and con breastfeeding reasons. I tested the reasons model path model in the same way that I did with participants' reasons. These path models can be found in Figures 29 through 33.

Surprisingly, no partner reasons levels predicted the degree to which partners thought participants should breastfeed at all. The final  $R^2$  for this model was only .07. Thus, this model is not illustrated in the figures. The same is true for the degree to which partners thought participants should breastfeed to 1 month,  $R^2 = .08$ , and for the degree to which partners thought participants should breastfeed to 2 months,  $R^2 = .06$ . This finding may be related to the lower variances in those three measures. The standard deviations for these measures ranged from 0.72 to 1.00, which was lower than the standard deviations of the remaining measures ( $SD = 1.52$  to  $SD = 3.48$ ). Almost all partners who participated in the study strongly believed that participants should breastfeed in the first months, and it appears that there was no systematic covariance of reasons with the degree to which those beliefs varied.

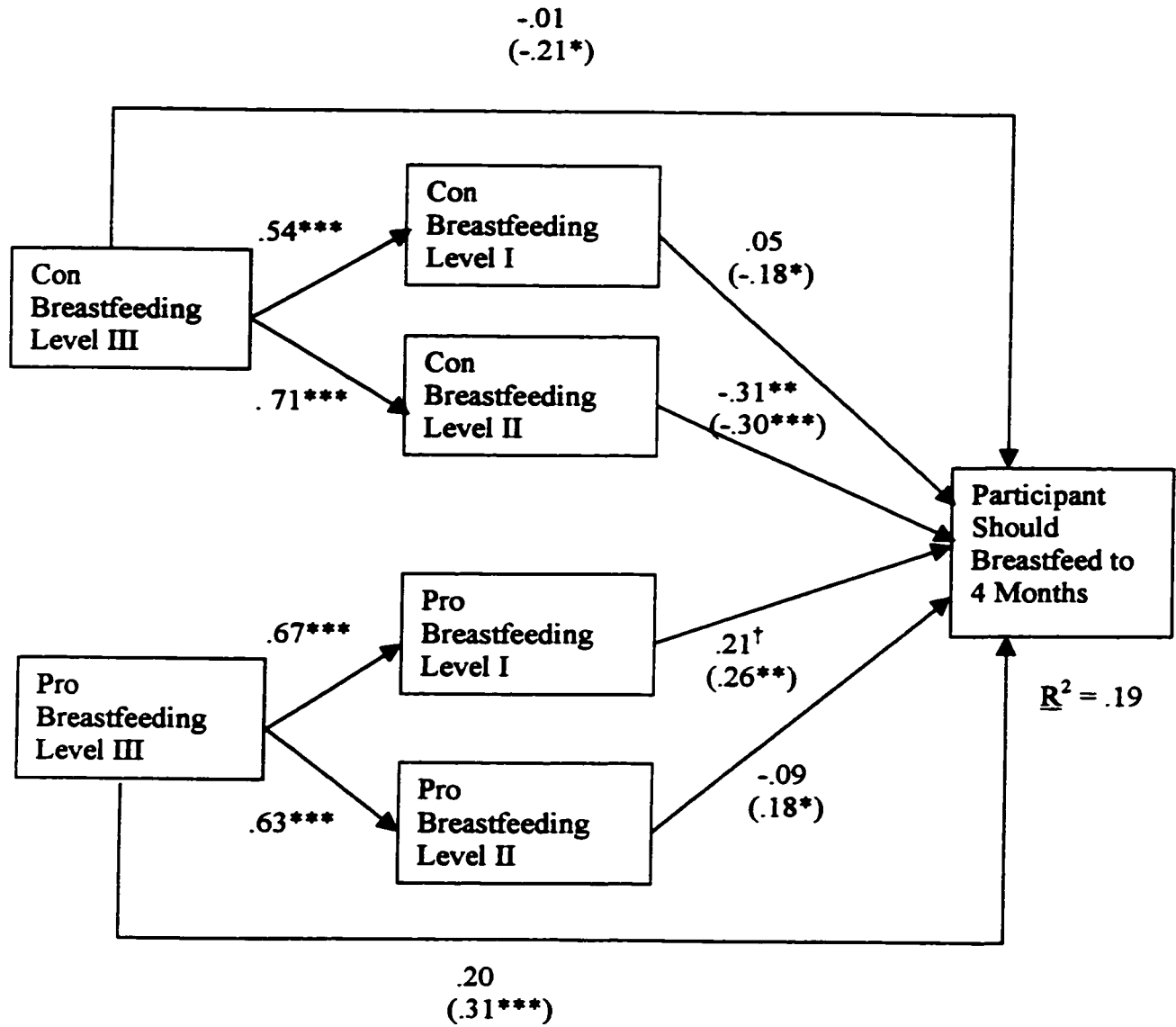
Prescriptive Beliefs that Participants Should Breastfeed to 4 Months. In contrast, partners' pro and con breastfeeding reasons did predict the degree to which partners thought participants should breastfeed to 4 months and beyond. The path model for partners' reasons predicting how strongly they thought participants should breastfeed until 4 months is found in Figure 29. Hierarchical regressions indicated that Level I reasons significantly predicted the strength with which partners believed participants should breastfeed,  $R^2 = .10$ ,

$F(2, 152) = 8.20, p < .001$ , and that Level II reasons added significantly to the prediction of partners decisions regarding breastfeeding to 4 months,  $R^2\Delta = .07, F\Delta(4, 150) = 6.36, p = .002$ . Level III reasons did not add significantly to the prediction of partners' beliefs. The strong paths between Level III pro breastfeeding reasons and Level I and II pro breastfeeding reasons,  $\beta = .67$  and  $\beta = .63$ , respectively, and between Level III con breastfeeding reasons and Level I and II con breastfeeding reasons,  $\beta = .54$  and  $\beta = .71$ , respectively, indicates that, as hypothesized by the reasons model, Level I and II reasons mediated the relationship between Level III reasons and male partners' beliefs about participants breastfeeding to 4 months.

In the final model, Level II con breastfeeding reasons were significant negative predictors of the strength with which partners thought participants should breastfeed to 4 months,  $\beta = -.31, p = .008$ . Level I pro breastfeeding reasons were marginally significant predictors of partners' beliefs,  $\beta = .21, p = .072$ . In addition, though pro and con Level III reasons did not account for a significant increase in the prediction of partners' prescriptive beliefs regarding breastfeeding to 4 months, Level III pro breastfeeding reasons were marginally significant positive predictors of those beliefs,  $\beta = .20, p = .059$ .



**Figure 29. Path Model for Partner's Reasons Predicting How Strongly they Think Participants Should Breastfeed to 4 months (N=155)**

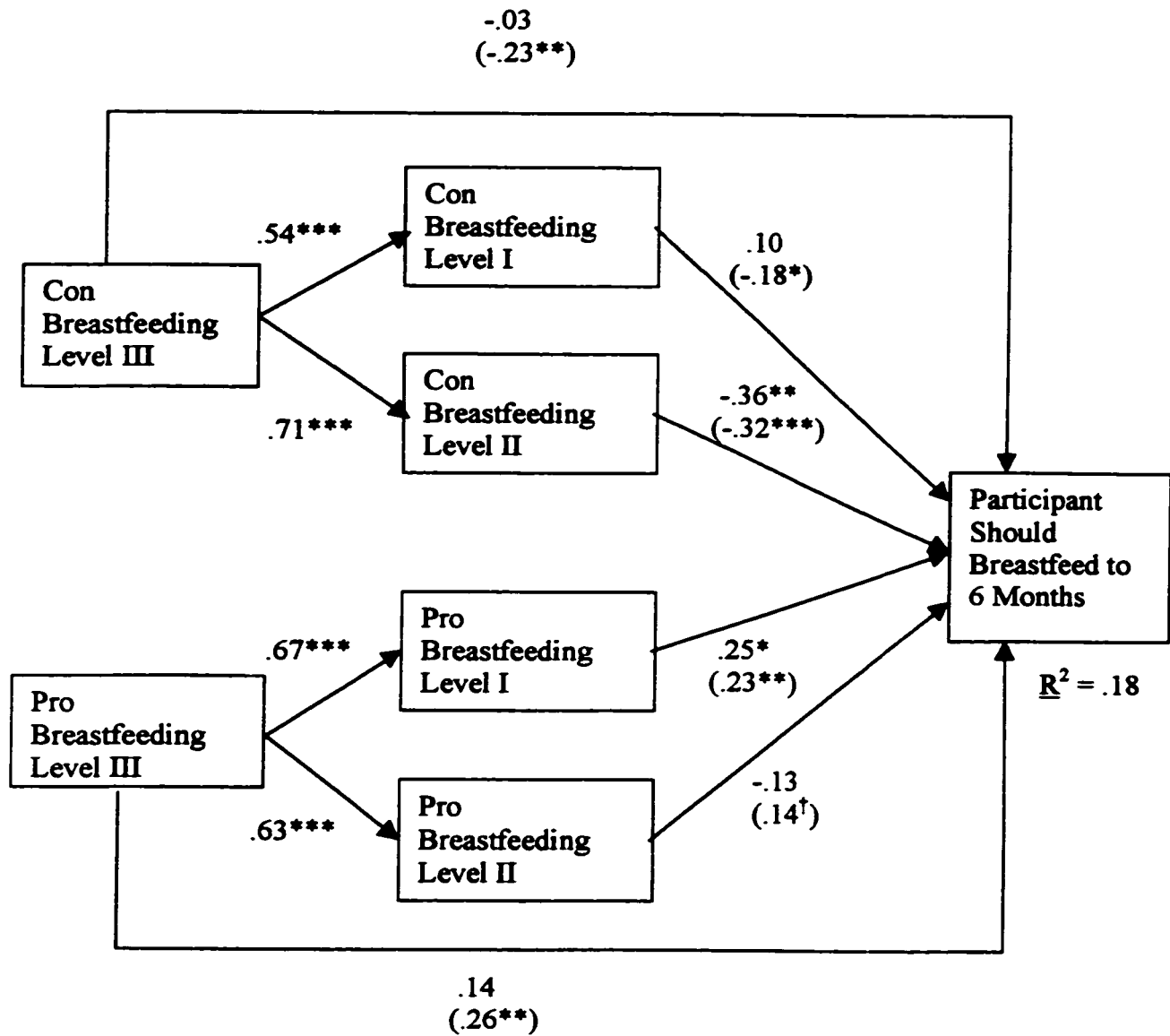


† p < .1. \* p < .05. \*\* p < .01. \*\*\* p < .001.

Note. Brackets contain zero order correlations.

**Prescriptive Beliefs that Participants Should Breastfeed to 6 Months.** The path model for partners' reasons predicting how strongly they thought participants should breastfeed to 6 months can be seen in Figure 30. Again, only Level I and II reasons were predictive in hierarchical regressions, Step 1  $R^2 = .08$ ,  $F(2, 152) = 6.60$ ,  $p = .002$  and Step 2  $R^2\Delta = .09$ ,  $F\Delta(4, 150) = 8.26$ ,  $p < .001$ , respectively. Level III reasons were, again, mediated by Level I and II reasons. Level II con breastfeeding reasons were, again, significant negative predictors of male partners prescriptive beliefs regarding breastfeeding to 6 months,  $\beta = -.36$ ,  $p = .002$ . In this model, pro breastfeeding Level I reasons were significant positive predictors of partners' beliefs about breastfeeding,  $\beta = .25$ ,  $p = .035$ .

**Figure 30.** Path Model for Partner's Reasons Predicting How Strongly they Think Participants Should Breastfeed to 6 months (N=155)

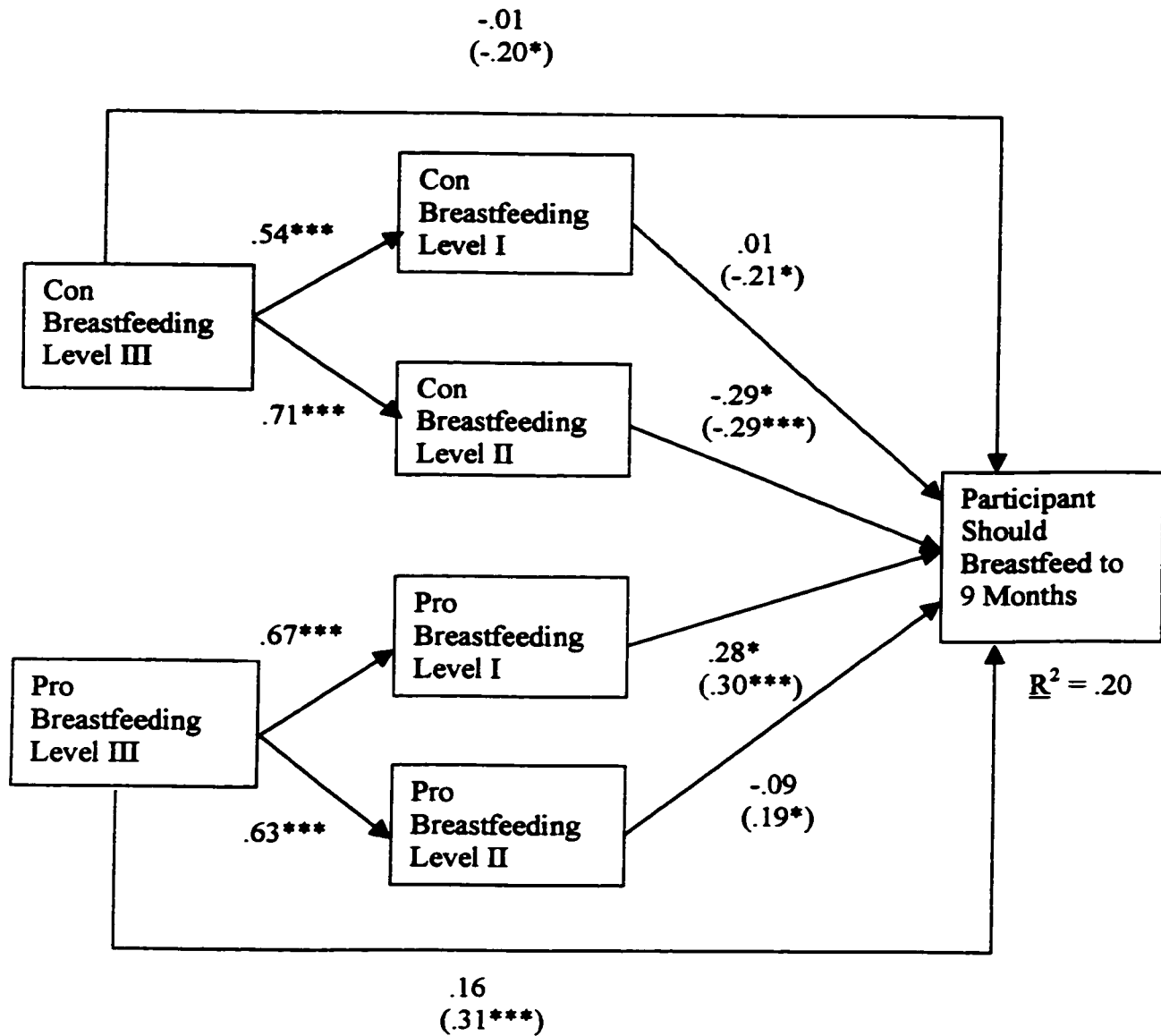


†  $p < .1$ . \*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

Note. Brackets contain zero order correlations.

**Prescriptive Beliefs that Participants Should Breastfeed to 9 Months.** The same results were found in the model predicting how strongly partners believed participants should breastfeed to 9 months. This path model can be seen in Figure 31. In hierarchical regressions, Level I and Level II reasons were significant predictors of the variance in what partners thought participants should do, Step 1  $R^2 = .13$ ,  $F(2, 151) = 10.94$ ,  $p < .001$  and Step 2  $R^2\Delta = .06$ ,  $F\Delta(4, 149) = 5.30$ ,  $p = .006$ , respectively. Level II con breastfeeding reasons were significant negative predictors of how strongly partners thought participants should breastfeed to 9 months,  $\beta = -.29$ ,  $p = .014$ , and Level II pro breastfeeding reasons were significant positive predictors,  $\beta = .28$ ,  $p = .020$ .

**Figure 31. Path Model for Partner's Reasons Predicting How Strongly they Think Participants Should Breastfeed to 9 months (N=154)**

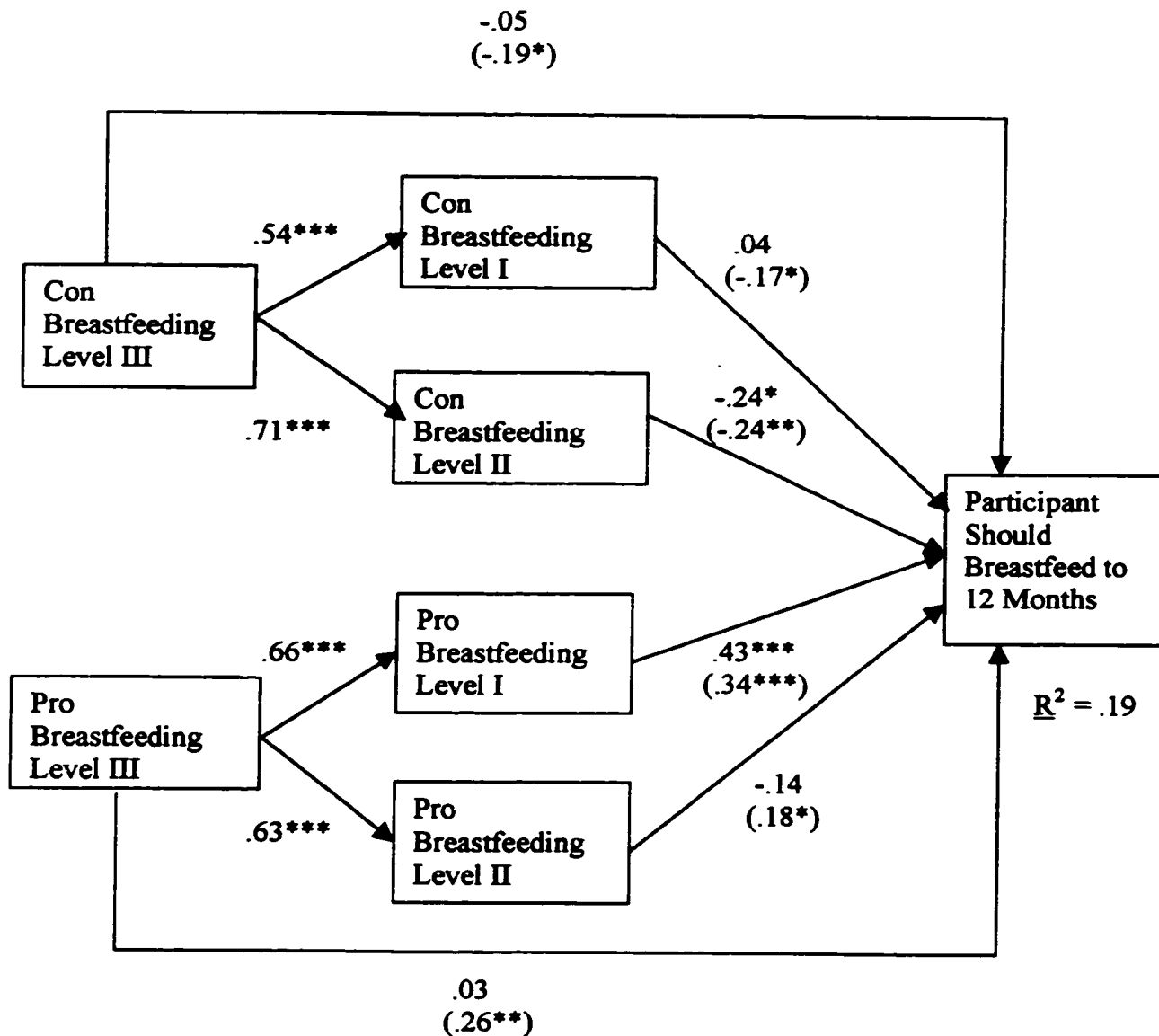


\*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

Note. Brackets contain zero order correlations.

**Prescriptive Beliefs that Participants Should Breastfeed to 12 Months.** The only difference in the path model for partners' reasons predicting how strongly they thought participants should breastfeed to 12 months was the strength of the Level I pro breastfeeding path coefficient. This model can be seen in Figure 32. Again, both Level I and Level II reasons were significant predictors of how strongly partners thought participants should breastfeed to 12 months, Step 1  $R^2 = .14$ ,  $F(2, 149) = 11.76$ ,  $p < .001$  and Step 2  $R^2\Delta = .05$ ,  $F\Delta(4, 147) = 4.34$ ,  $p = .015$ , respectively. Level II con breastfeeding reasons were significant negative predictors of what partners thought,  $\beta = -.24$ ,  $p = .042$  and Level I pro breastfeeding reasons were significant positive predictors of what partners thought,  $\beta = .43$ ,  $p < .001$ .

**Figure 32. Path Model for Partner's Reasons Predicting How Strongly they Think Participants Should Breastfeed to 12 months (N=152)**



\*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

Note. Brackets contain zero order correlations.

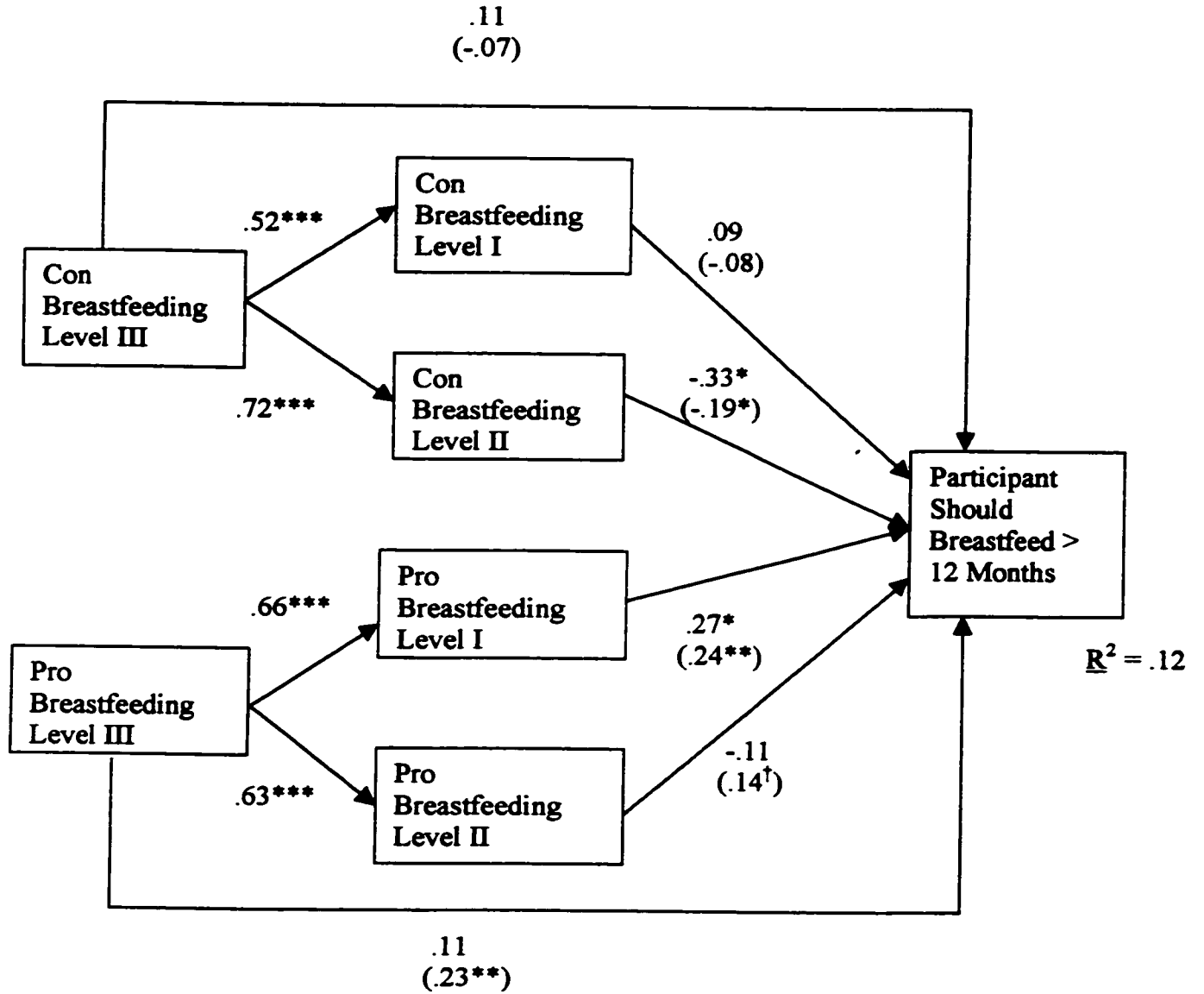
**Prescriptive Beliefs that Participants Should Breastfeed Longer than 12 Months.**

This pattern of significant path coefficients occurred again in the final path model for partners' reasons predicting the strength of their thoughts that participants should breastfeed longer than 12 months. This model can be seen in Figure 33. The path coefficient for Level II con breastfeeding reasons was  $-.33$ ,  $p = .010$ , and the path coefficient for pro breastfeeding Level I reasons was  $.27$ ,  $p = .033$ .

Although the data for the partner reasons path models were collected before the birth of their babies, these prenatal path models for partners are not at all similar to the prenatal path models for participants. They are actually more similar to the postpartum models for reasons predicting breastfeeding for more than 6 months (e.g. Figure 13). Male partners seem to be less focused on breastfeeding values than participants, and more on general pro breastfeeding evidence and the negative consequences of breastfeeding for their female partners.



**Figure 33. Path Model for Partner's Reasons Predicting How Strongly they Think Participants Should Breastfeed Longer than 12 Months (N=149)**



† p < .1. \* p < .05. \*\* p < .01. \*\*\* p < .001.

Note. Brackets contain zero order correlations.

### **Relationship of Male Partners' Prescriptive Duration Beliefs to Participants' Reasons**

I have shown that male partners generally rank the importance of breastfeeding reasons in similar ways to female participants and that their reasons correlate moderately with participants' breastfeeding reasons. I have also shown that male partners' reasons predict the degree to which they think participants should breastfeed from 4 months on. The next step is to demonstrate the ways in which partners' thoughts about their pregnant partner breastfeeding relate to participants' own reasons and intentions to breastfeed.

I hypothesized that the degree to which partners thought participants should breastfeed should be related to participants' Level III pro and con breastfeeding reasons. This appeared to be true for most measures of what partners believed participants should do regarding breastfeeding. The correlations between what partners believed participants should do and participants' breastfeeding reasons are found in Table 19. As can be seen, the strongest pattern of correlations was between measures of how strongly partners thought participants should breastfeed from 4 months on and participants' Level III pro breastfeeding reasons. In addition, how strongly partners thought participants should breastfeed at all and should breastfeed to 6 months were significantly correlated with participants' Level III con breastfeeding reasons. Male partners' prescriptive duration beliefs were also significantly correlated with participants' Level I and Level II reasons, but these correlations did not demonstrate strong patterns. Thus, it appears that, at least on the pro breastfeeding side, what partners believed about breastfeeding duration was most closely related to Level III reasons and did not consistently lead directly to Level II reasons. Level III reasons did seem to be the strongest link from partners' prescriptive breastfeeding beliefs to the participants' reasons model.

### **Partners' Prescriptive Duration Beliefs Predicting Participants' Breastfeeding Intentions.**

The previous analyses indicated that male partners' beliefs about participants' breastfeeding duration were related to participants' breastfeeding reasons. But do partners' beliefs about breastfeeding only affect participants' breastfeeding intentions by being interpreted and formed into participants' reasons? The reasons model suggests that partners' contribution to participants' decisions should be mediated by the participants' reasons. However, this may be true only to the extent that women are willing to admit that their partners' opinions matter for what is often considered a very personal decision. Additionally, it is possible that women may be more affected by their partners' opinions than they realize. The breastfeeding intentions of pregnant women are not entirely predicted by the reasons they hold. People cannot adequately articulate all of the factors that induce them to make a particular decision. Thus, the importance of the relationship between pregnant women and their male partners may make women more likely to intend to behave in accordance with their partners' opinions than women realize. Thus, I wondered if partners' reasons or prescriptive duration beliefs could have a direct effect on participants' decisions over and above their relationship to participants' reasons.

I tested the ability of partners' reasons to predict the breastfeeding intentions of pregnant women over and above their own reasons in two ways. First, I conducted hierarchical regressions that entered participants' pro and con reasons at all levels at Step 1 and then all six partner reasons variables at Step 2. Partners' reasons did not add to the prediction of intentions at any time point, over and above all participants' reasons. I also tested whether partners' reasons at each level would add to the prediction of intentions over and above participants' reasons at that level. I regressed participants' prenatal intentions to

breastfeed to each time point on participants' Level I reasons at Step 1, partners' Level I reasons at Step 2, participants' Level II reasons at Step 3, partners' Level II reasons at Step 4, participants' Level III reasons at Step 5, and partners' Level III reasons at Step 6.

Partners' reasons only added significantly to the prediction of intentions at 4 out of the total of 24 steps in which partner reasons were added; moreover, the pattern of relationships were not clear. Thus, it appears that, as predicted by the reasons model, the effect that male partners' pro and con breastfeeding reasons had on pregnant participants' breastfeeding intentions were mediated by participants' breastfeeding reasons.

However, I also wondered whether partners' prescriptive breastfeeding duration beliefs might be predictive of participants' breastfeeding intentions over and above participants' own reasons. To answer this question, I conducted hierarchical regressions that regressed intentions at each time point on all 6 participant reasons variables at Step 1 and regressed what partners believed about participants breastfeeding to that time point at Step 2.

Just as partner reasons did not predict how strongly partners thought participants should breastfeed at all or breastfeed to 1 or 2 months, their prescriptive duration beliefs at these time points also did not predict participants' breastfeeding intentions over and above participants' own breastfeeding reasons. However, from 4 months on, partners' prescriptive breastfeeding duration beliefs did significantly enhance the prediction of participants' intentions, over and above participants' own breastfeeding reasons. Specifically, how strongly partners thought participants should breastfeed to 4 months added significantly to the prediction of participants' own intentions to breastfeed to 4 months,  $R^2\Delta = .03$ ,  $F\Delta(7, 147) = 7.21$ ,  $p = .008$ . How strongly partners thought participants should breastfeed to 6

months strongly predicted participants' own intentions to breastfeed to 6 months  $R^2\Delta = .06$ ,  $F\Delta(7, 146) = 14.34$ ,  $p < .001$ . The same was true for intentions to breastfeed to 9 months,  $R^2\Delta = .10$ ,  $F\Delta(7, 144) = 21.54$ ,  $p < .001$ , 12 months,  $R^2\Delta = .09$ ,  $F\Delta(7, 142) = 19.02$ ,  $p < .001$ , and longer than 12 months,  $R^2\Delta = .05$ ,  $F\Delta(7, 139) = 9.22$ ,  $p = .003$ . Thus, partners' opinions about how long expectant mothers should breastfeed appear to have a profound effect on the breastfeeding intentions of expectant mothers that cannot be completely accounted for by the reasons expectant mothers themselves generate.

#### Relationship of Happiness and Stress to the Reasons Model

I have shown that all three levels of reasons are predictive of intentions to breastfeed, and that Level III reasons are particularly important predictors of prenatal breastfeeding intentions. These affective, schema-related Level III reasons should include reasons based on such affect-related constructs as the participants' general level of happiness and their level of stress. I chose to examine the relationship of these two constructs to assess the ability of the reasons model to account for the affects on intentions of affect-related constructs that are not measured as reasons for or against breastfeeding. Participants' general level of happiness was measured with the Short Happiness and Affect Research Protocol (SHARP) at the prenatal interview. Higher SHARP scores indicate greater happiness. Participants' stress levels were measured using the Perceived Stress Scale (PSS) at the prenatal interview and, because I expected that stress levels may change after the birth of the baby, at 1 month, 2 months, and 4 months postpartum. Higher PSS scores indicate greater levels of stress.

Both the SHARP and PSS were somewhat related to prenatal measures of intentions. Table 20 provides the correlations among the SHARP, the PSS, and breastfeeding

intentions. PSS was significantly negatively correlated to prenatal intentions to breastfeed to 1 month,  $r(291) = -.126$ ,  $p = .03$ , to 4 months,  $r(291) = -.14$ ,  $p = .021$ , and to 6 months,  $r(290) = -.16$ ,  $p = .008$ . This indicates that more highly stressed women had somewhat lower intentions to breastfeed than did less stressed participants. The SHARP was significantly positively correlated with intentions to breastfeed at 1, 2, 4, and 6 months, 1-month  $r(291) = .17$ ,  $p = .003$ , 2-month  $r(291) = .15$ ,  $p = .010$ , 4-month  $r(291) = .17$ ,  $p = .003$ , and 6-month  $r(290) = .16$ ,  $p = .006$ , respectively. This indicates that happier women are more likely to intend to breastfeed for the first 6 months after the birth of their babies. Thus, both low prenatal stress levels and happiness are related to greater breastfeeding intentions.

Table 20

Correlations: Prenatal Perceived Stress Scale (PSS) and Short Happiness and Affect Research Protocol (SHARP) with Breastfeeding Intentions (N = 291)

	PSS	SHARP
<b>Prenatal Intentions</b>		
Intention to Breastfeed at all	-.08	.10
Intentions to Breastfeed 1 month	-.13*	.17**
Intention to Breastfeed 2 months	-.11	.15*
Intentions to Breastfeed 4 months	-.14*	.17**
Intentions to Breastfeed 6 months	-.16**	.16**
Intentions to Breastfeed 9 months	-.06	.08
Intentions to Breastfeed 12 months	-.01	.02
Intentions to Breastfeed > 12 months	-.03	-.01

\*  $p < .05$ . \*\*  $p < .01$ .

How do happiness and stress relate to the pro and con breastfeeding reasons? Table 20 provides the correlations between breastfeeding reasons and the PSS and SHARP. Both PSS and SHARP scores were generally only correlated with con breastfeeding reasons. PSS scores were significantly positively correlated with con breastfeeding reasons at all three levels: Level I,  $r(238) = .17, p = .008$ ; Level II,  $r(238) = .26, p < .001$ ; and Level III,  $r(238) = .22, p < .001$ . This indicates that women who were more highly stressed were more likely to endorse reasons for not breastfeeding as important than were women who were less stressed. SHARP scores were negatively correlated with con breastfeeding reasons at all three levels: Level I  $r(238) = -.18, p = .006$ ; Level II  $r(238) = -.25$ ; and Level II  $r(238) = -.29, p < .001$ , which indicates that happier participants were less likely to endorse con breastfeeding reasons as important than were women who were less happy. In addition, SHARP scores were also negatively correlated with pro breastfeeding level II reasons,  $r(239) = -.16, p = .013$ , indicating that happier participants were less likely to think of the personal benefits of breastfeeding as important reasons for breastfeeding.

Table 21

**Correlations: Prenatal Perceived Stress Scale (PSS) and Short Happiness and Affect Research Protocol (SHARP) with Breastfeeding Reasons (N = 239)**

Reasons Variables	PSS	SHARP
Con Breastfeeding Level I	.17**	-.18**
Con Breastfeeding Level II	.26***	-.25**
Con Breastfeeding Level III	.22***	-.29**
Pro Breastfeeding Level I	.01	.15
Pro Breastfeeding Level II	.12	-.16*
Pro Breastfeeding Level III	.05	-.02

\*  $p < .05$ . \*\*  $p < .01$ . \*\*\* $p < .001$ .

Given that stress and happiness correlate with intentions and breastfeeding reasons, does the reasons model mediate the relationship between these affect-related variables and intentions? To examine this question, I conducted hierarchical regressions that regressed the six reasons variables on intentions at Step 1 and either the SHARP or PSS on reasons at Step 2. PSS did not add significantly to the prediction of intentions at any time point, a result consistent with the hypothesis that the reasons model should mediate the effects of prenatal stress levels on intentions. The SHARP did add significantly to the prediction of intentions over and above reasons in only one model: predicting intentions to breastfeed to 1 month. The SHARP increased the  $R^2$  from .18 to .19,  $F\Delta(7, 225) = 5.04$ ,  $p = .026$ . However, these results indicate that, in general, the effect of these affect-related variables on prenatal intentions was mediated by the reasons model.



Although the effect of prenatal PSS on intentions was mediated by the reasons model, it was not clear whether or not postnatal PSS would function in the same way. Giving birth and caring for a new baby may result in changes in stress levels that are not analogous to prenatal levels of stress. The nature of stress and the meaning of stress may change after the birth of a baby. Significant sources of stress in the first months postpartum include the uncertainty and constant demands of caring for an infant. These are quite unlike the sources of stress that are important prenatally—issues such as job stress or relationship stress. Thus, postpartum stress is likely to be different from prenatal stress—both qualitatively and quantitatively—and, as a result, could differ from prenatal stress in its effect on the reasons model and on intentions.

Mean stress levels did rise significantly after birth,  $t(274) = 4.74, p < .001$ . The mean prenatal PSS score was 1.50 ( $SD = .56$ ) and the mean PSS score in the first month after birth was 1.67 ( $SD = .61$ ). Mean PSS scores for mothers who were still breastfeeding at the first month interview then decreased significantly by the second month postpartum to 1.35 ( $SD = 0.55$ ),  $t(222) = 9.72, p < .001$ . However, despite the absolute changes in PSS scores, prenatal stress levels did correlate somewhat strongly with postpartum stress levels. Table 22 shows the inter-correlations between stress levels assessed prenatally, and at 1, 2, and 4 months postpartum. Correlations of .39 to .45 indicate that relative stress levels were fairly stable, especially given the potential effect of the intervening event of childbirth. Postpartum stress levels were even more stable. The correlation between stress levels in the first and second month was .64, and between the second and fourth month it was .70.

Table 22

Postpartum Perceived Stress Scale (PSS) Inter-correlations

PSS	PSS			
	Prenatal	1 month	2 month	4 month
Prenatal	--	.45*** (275) <sup>1</sup>	.42*** (218)	.39*** (200)
1 month		--	.64*** (223)	.50*** (206)
2 month			--	.70*** (194)
4 month				--

<sup>1</sup> Brackets contain N for each correlation. N changes because mothers have discontinued breastfeeding.

\*\*\*  $p < .001$ .

So, do postpartum stress levels relate to intentions in the same way as prenatal stress? In terms of zero order relationships with intentions to continue breastfeeding at 2 months, PSS scores correlated significantly to a greater number of intentions measures than did prenatal PSS scores. The correlations between postpartum PSS scores and intentions can also be found in Table 23. PSS assessed in the first month postpartum significantly and negatively correlated with all intentions measures taken in the first month, with the exception of intentions to breastfeed for longer than 12 months. PSS assessed during the second month significantly and negatively correlated with intentions to breastfeed to 4 and 6 months assessed at the same time, and PSS assessed at 4 months correlated negatively with intentions to breastfeed to 6 months. When each intentions measure was regressed onto PSS, following the entry of the reasons variables, the only time that PSS added significantly to the prediction of intentions was when intentions to breastfeed to 4 months were regressed

on PSS assessed at 2 months. PSS added to the prediction of intentions, over and above reasons assessed at 2 months, increasing the  $R^2$  from .24 to .27,  $F\Delta(7, 144) = 6.50$ ,  $p = .012$ . Thus, it appears that, although mean stress levels were affected by the birth of a baby and the experience of breastfeeding, in general, the relationship between stress levels and breastfeeding was mediated by the reasons model.

Table 23

Correlations between Postpartum Perceived Stress Scale (PSS) and Postpartum Intentions to Breastfeed

	PSS		
	1 month	2 month	4 month
<b>Postpartum Intentions <sup>1</sup></b>			
Intentions to Breastfeed 2 months	-.18** (236) <sup>2</sup>	--	--
Intentions to Breastfeed 4 months	-.21** (237)	-.25*** (199)	--
Intentions to Breastfeed 6 months	-.21** (238)	-.25*** (199)	-.18* (175)
Intentions to Breastfeed 9 months	-.15* (238)	-.10 (199)	-.14 (175)
Intentions to Breastfeed 12 months	-.17** (238)	-.02 (199)	-.06 (175)
Intentions to Breastfeed > 12 months	-.12 (238)	.01 (199)	-.07 (175)

<sup>1</sup> Intentions measured at the same time as each PSS variable.

<sup>2</sup> Brackets contain N for each correlation. N changes because mothers have discontinued breastfeeding.

\*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

### Relationship of Demographic Variables to the Reasons Model

The one other set of variables that I examined in relation to the reasons model were some of the demographic factors that have been identified as being related to breastfeeding initiation and duration in previous breastfeeding research. The measures that I will discuss are maternal age and maternal education. Family income, which has been cited as a predictor of breastfeeding outcomes, was not related to breastfeeding intentions or behavior in this study.

Maternal age was also not correlated with breastfeeding intentions in this study, but was a univariate predictor of breastfeeding duration using Cox regression,  $\beta = .12$ ,  $p < .001$ . These results suggest, in accordance with findings from other studies (Agnew, 1994), that older women were more likely to continue breastfeeding longer. However, this relationship was reduced to non-significance when controlling for years of education,  $\beta = .02$ ,  $p = .085$ . The number of years of education that the mother had reported was significantly related to duration, controlling for age,  $\beta = .11$ ,  $p < .001$ .

The number of years of education reported by participants was the only demographic variable in this study that was correlated with breastfeeding intentions. Education correlated significantly with intentions to breastfeed at all,  $r(283) = .18$ ,  $p = .002$ , intentions to breastfeed to 1 month,  $r(292) = .15$ ,  $p < .010$ , intentions to breastfeed to 2 months,  $r(292) = .19$ ,  $p = .001$ , and intentions to breastfeed to 4 months,  $r(292) = .13$ ,  $p = .027$ .

Years of education was significantly negatively correlated to con breastfeeding reasons at all three levels, and to Level II pro breastfeeding reasons. The correlation with Level I con breastfeeding reasons was  $-.14$ ,  $p = .030$ , the correlation with Level II con breastfeeding reasons was  $-.21$ ,  $p = .001$ , and the correlation with Level III con

breastfeeding reasons was  $-.20$ ,  $p = .002$ . This indicates that the more years of education that a participant reported, the less likely she was to endorse any reasons for not breastfeeding. In addition, participants with higher education levels were also somewhat less likely to endorse Level II pro breastfeeding reasons as important,  $r(240) = -.13$ ,  $p = .049$ . When intentions to breastfeed were regressed on years of education, after Step 1 entry of the prenatal reasons variables, only years of education remained a significant predictor of intentions to breastfeed to 2 months. In that equation, the  $R^2$  changed from  $.26$  to  $.28$ ,  $F\Delta(7, 226) = 7.26$ ,  $p = .008$ , and the regression coefficient for education predicting intentions was  $.16$ . Thus, it appears that education may reduce the importance of the less socially desirable reasons for breastfeeding, which results in increased intentions to breastfeed. Moreover, a greater level of education appears to have a limited effect in increasing intentions to breastfeed in the early months over and above the effect mediated by the reasons model.

Years of education has also been linked to longer breastfeeding duration in previous studies (Agnew, 1994). As mentioned above, years of education was a significant predictor of duration in this study, controlling for the effect of maternal age. The reasons model suggests that years of education should not be significant predictors of duration after controlling for breastfeeding intentions. However, years of education did add significantly to the prediction of duration analyzed with Cox regression. After duration to 6 months was regressed on all prenatal intentions variables, years of education still added significantly to the prediction of duration,  $\chi^2\Delta(1, 253) = 14.18$ ,  $p < .001$ . Years of education was protective of continued breastfeeding,  $\beta = .11$ , indicating that the more years of education that participants reported, the less likely they were to have stopped breastfeeding in the first 6 months postpartum. Therefore, the effect of years of education on breastfeeding behaviour

does not appear to be entirely subsumed by the reasons model. Years of education were fairly weakly correlated with intentions and, although the relationship to intentions was partially mediated by the reasons model, this one demographic variable had a strong effect on breastfeeding behavior that cannot be accounted for by prenatal breastfeeding intentions.

### Testing the Reasons Model Against Theory of Reasoned Action and Theory of Planned Behavior

The preceding analyses have demonstrated that the reasons model predicts breastfeeding intentions and behaviour and can account for some, if not all, of the predictive value of other factors that have been related to breastfeeding in previous research. However, as mentioned in the introduction, there are several theories of health behavior decision making that might also be useful in predicting breastfeeding intentions. In order to make a strong claim for the inclusion of the reasons model as a useful health behavioural model, it was necessary to test the model against extant theoretical models (Weinstein, 1993). In this present study I chose to test the reasons model against Fishbein and Ajzen's (1975) theory of reasoned action (TRA) and Ajzen's (1991) expanded model, the theory of planned behavior (TPB).

TRA suggests that intentions to breastfeed will be entirely predicted by attitudes towards breastfeeding and subjective norms of significant referents regarding breastfeeding (SN). Subjective norms are theoretically comprised of the normative beliefs of these referents and individuals' motivation to comply with each of these referent beliefs. TPB hypothesizes that one additional factor, perceived behavioural control (PBC), is also necessary to predict breastfeeding intentions. Ajzen has suggested that TRA is sufficient to explain intentions for behaviours that are completely under voluntary control, such as voting

behaviour. However, behaviours such as breastfeeding are inherently influenced by factors over which individuals do not have complete control, such as the behaviour of the infant or the physical experience of pain or breastfeeding complications. In those situations, Ajzen identified the importance of self-efficacy—that is, the individual's perception of her ability to engage in the behaviour in the face of potential difficulties—as an additional predictor of intentions. The addition of perceived behavioural control has made TPB popular for explaining health behavioural intentions and behaviour.

It is clear that TRA and TPB should be predictive of breastfeeding intentions and behaviour, and previous breastfeeding research has used both to understand and predict breastfeeding decisions. However, I believed that these three constructs may not be sufficient to predict intentions and that the reasons model would add significant variance to the prediction of breastfeeding intentions over and above that predicted by both TRA and TPB. In order to test this hypothesis, I conducted a final series of hierarchical regressions. These regressions tested the ability of TRA to predict breastfeeding intentions and then tested whether PBC, as hypothesized by TPB, would add to the prediction of breastfeeding intentions. The final steps tested whether the three reasons levels would add further to the prediction of breastfeeding intentions over and above TRA and TPB. The results of these regressions can be found in Tables 24 through 31.

Table 24a shows the results of hierarchical regressions in which prenatal intentions to breastfeed at all were regressed on the TRA and TPB variables. In the first step, intentions to breastfeed at all were regressed on attitudes towards breastfeeding and subjective norms. The normative beliefs (NB) of each referent were included because of the potential importance of individual referents such as partners. The importance of each

referent's opinion about breastfeeding was included in order to test the hypothesized interaction between normative beliefs and participants' motivation to comply (MC) with those beliefs. In order to properly test the interaction between NB and MC, it is necessary to enter the main effects of NB and MC in a regression equation first. Then the multiplicative term should be added to test whether there is any increase in the prediction of intentions that is due to the interaction between NB and MC (Fong & Smith, 1999). Therefore, in the second step, interaction terms that multiplied each normative belief by the participants' motivation to comply with the corresponding referent were added to the regressions.

In the first step, attitudes was a significant predictor of intentions to breastfeed at all,  $\beta = .34$ ,  $p < .001$ , but subjective norms were not significant predictors of intentions. This indicates that women with more positive attitudes toward breastfeeding were more likely to intend to breastfeed. The  $R^2$  for attitudes and subjective norms predicting intentions to breastfeed at all was .25,  $F(9, 160) = 5.94$ ,  $p < .001$ . In Step 2, the interaction between SN and MC added marginally to the prediction of intentions to breastfeed at all,  $R^2\Delta = .04$ ,  $F\Delta(13, 156) = 2.19$ ,  $p = .072$ . Specifically, the effect of their partners' subjective norms on participants' breastfeeding intentions depended on how important their partners' opinions about breastfeeding were to participants. The significance of attitudes and the interaction between SN and MC supports the hypothesis that TRA should be predictive of breastfeeding intentions.

The third step of these hierarchical regressions added PBC to test the need for the additional path hypothesized by TPB. PBC did add significantly to the prediction of intentions,  $R^2\Delta = .03$ ,  $F\Delta(14, 155) = 7.04$ ,  $p = .009$ . PBC was a significant positive predictor of intentions,  $\beta = .20$ , indicating that the stronger the participants' beliefs that they



would be able to breastfeed, the more likely they were to intend to breastfeed. Thus, TPB was supported.

Table 24b reports the results of the regressions in which the reasons variables were added to the models. Level I con and pro breastfeeding reasons were added at Step 4 and did add significantly to the prediction of intentions to breastfeed at all,  $R^2\Delta = .109$ ,  $F\Delta(16, 153) = 14.61$ ,  $p < .001$ . Level I con breastfeeding reasons were significant negative predictors of intentions,  $\beta = -.36$ ,  $p < .001$ . Level II con and pro breastfeeding reasons, added at Step 5, did not add significantly to the prediction of intentions to breastfeed at all, although Level II con breastfeeding reasons were marginally significant negative predictors,  $\beta = -.15$ ,  $p = .081$ . Level III reasons, added at Step 6, did not add significantly to the prediction of intentions to breastfeed at all. These results are somewhat similar to those found in the prenatal model for reasons, alone, predicting intentions to breastfeed. Although Level III pro breastfeeding reasons were significant final predictors of intentions to breastfeed at all in the original path model, they were not significant predictors over and above the variables included in TRA and TPB as well as the reasons variables. However, in this model, Level I and II con breastfeeding reasons were significant predictors of intentions to breastfeed at all, as they were in the original path model.

Table 24a

**Hierarchical Regressions: Model Test of Reasons Model over Theory of Planned Behavior**  
**Predicting Prenatal Intentions To Breastfeed At all (TRA and TPB Steps) (N = 170)**

Variable	Step 1		Step 2		Step 3	
	$\beta$	$\Delta R^2$	$\beta$	$\Delta R^2$	$\beta$	$\Delta R^2$
		$R^2 = .25$		$R^2 = .29$		$R^2 = .32$
Attitude	.34***	.25***	.33***	.04 <sup>†</sup>	.27***	.03**
Normative Beliefs:						
Partner	-.11		-.42*		-.42*	
Mother	.15		-.05		-.09	
Mother-in-law	.13		.04		.05	
Friends	-.04		-.01		-.01	
Importance:						
Partner	.25**		-.96		-.96	
Mother	-.04		-.67		-.71	
Mother-in-law	-.19 <sup>†</sup>		-.39		-.29	
Friends	.08		.14		.18	
Normative Beliefs x Importance:						
Partner			1.43*		1.36*	
Mother			.73		.83	
Mother-in-law			.24		.12	
Friends			-.07		-.11	
Perceived Behavioural Control					.20**	
Reasons:						
Level I Con						
Level I Pro						
Level II Con						
Level II Pro						
Level III Con						
Level III Pro						

<sup>†</sup> $p < .1$ . \*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

Table 24 continues

Table 24b

**Hierarchical Regressions: Model Test of Reasons Model over Theory of Planned Behavior**  
**Predicting Prenatal Intentions To Breastfeed At all (Reasons Model Steps) (N = 170)**

Variable	Step 4 $R^2 = .43$		Step 5 $R^2 = .44$		Step 6 $R^2 = .45$	
	$\beta$	$\Delta R^2$	$\beta$	$\Delta R^2$	$\beta$	$\Delta R^2$
Attitude	.16*	.11***	.14 <sup>†</sup>	.01	.13 <sup>†</sup>	.01
Normative Beliefs:						
Partner	-.38*		-.37*		-.37*	
Mother	-.09		-.01		-.05	
Mother-in-law	.06		.07		.09	
Friends	.01		-.03		-.03	
Importance:						
Partner	-.90 <sup>†</sup>		-.81		-.84	
Mother	-.55		-.32		-.41	
Mother-in-law	-.39		-.44		-.37	
Friends	.26		.23		.19	
Normative Beliefs x Importance:						
Partner	1.25*		1.14 <sup>†</sup>		1.17 <sup>†</sup>	
Mother	.66		.41		.51	
Mother-in-law	.26		.29		.20	
Friends	-.20		-.14		-.10	
Perceived Behavioural Control	.12 <sup>†</sup>		.08		.08	
Reasons:						
Level I Con	-.36***		-.31***		-.31***	
Level I Pro	.11		.12		.09	
Level II Con			-.15		-.18	
Level II Pro			.02		-.02	
Level III Con					.08	
Level III Pro					.08	

<sup>†</sup> $p < .1$ . \*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

The power of the reasons model to predict prenatal intentions to breastfeed to each of the time periods in the study over and above TRA and TPB was also tested. Table 25a shows the results of the analyses regressing participants' prenatal intentions to breastfeed to 1 month on the TRA and TPB variables. Attitudes were, again, the only significant predictor in Step 1,  $\beta = .33$   $p < .001$ . The  $R^2$  for Step 1, including attitudes and the main effects for SN, was .13,  $F(9, 167) = 2.87$ ,  $p = .004$ . The inclusion of the interaction terms for subjective norms did not add significantly to the equation. PBC, added at Step 3, did not add significant variance to the prediction of intentions to breastfeed to 1 month, either. Table 25b shows the results of the addition of the reasons variables. Reasons did not add significant variance to the prediction of intentions to breastfeed to 1 month, although Level I pro breastfeeding reasons were marginally predictive of intentions at Step 4,  $\beta = .15$ ,  $p = .077$ . This is not altogether surprising, given the path model for reasons predicting intentions to breastfeed to 1 month. In that model, no con breastfeeding reasons were significant. Only Level III pro breastfeeding reasons were significant predictors of intentions to breastfeed to 1 month in the initial reasons path model.

Table 25a

**Hierarchical Regressions: Model Test of Reasons Model over Theory of Planned Behavior**  
**Predicting Prenatal Intentions To Breastfeed to 1 Month (TRA and TPB Steps) (N = 177)**

Variable	Step 1		Step 2		Step 3	
	$\beta$	$\Delta R^2$	$\beta$	$\Delta R^2$	$\beta$	$\Delta R^2$
		$R^2 = .13$		$R^2 = .16$		$R^2 = .17$
Attitude	.33***	.13**	.31***	.03	.28**	.01
Normative Beliefs:						
Partner	.10		-.06		-.06	
Mother	-.08		.14		.12	
Mother-in-law	-.01		.05		.05	
Friends	-.01		.23		.23	
Importance:						
Partner	.08		-.48		-.46	
Mother	.02		.73		.70	
Mother-in-law	.03		.20		.25	
Friends	-.03		.75		.78	
Normative Beliefs x						
Importance:						
Partner			.63		.61	
Mother			-.82		-.76	
Mother-in-law			-.19		-.25	
Friends			-.88		-.90	
Perceived					.11	
Behavioural						
Control						
Reasons:						
Level I Con						
Level I Pro						
Level II Con						
Level II Pro						
Level III Con						
Level III Pro						

\*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

Table 25 continues

Table 25b

**Hierarchical Regressions: Model Test of Reasons Model over Theory of Planned Behavior**  
**Predicting Prenatal Intentions To Breastfeed to 1 Month (Reasons Model Steps) (N = 177)**

Variable	Step 4 $R^2 = .19$		Step 5 $R^2 = .20$		Step 6 $R^2 = .20$	
	$\beta$	$\Delta R^2$	$\beta$	$\Delta R^2$	$\beta$	$\Delta R^2$
Attitude	.251**	.02	.23*	.01	.22*	< .01
Normative Beliefs:						
Partner	-.05		-.05		-.06	
Mother	.05		.11		.07	
Mother-in-law	.09		.08		.10	
Friends	.24		.21		.22	
Importance:						
Partner	-.40		-.36		-.40	
Mother	.54		.74		.65	
Mother-in-law	.30		.21		.30	
Friends	.77		.73		.70	
Normative Beliefs x Importance:						
Partner	.51		.47		.50	
Mother	-.61		-.82		-.72	
Mother-in-law	-.32		-.24		-.34	
Friends	-.91		-.86		-.84	
Perceived Behavioural Control	.08		.04		.04	
Reasons:						
Level I Con	-.04		.01		.01	
Level I Pro	.15 <sup>†</sup>		.22 <sup>†</sup>		.19	
Level II Con			-.13		-.16	
Level II Pro			-.08		-.11	
Level III Con					.08	
Level III Pro					.08	

<sup>†</sup> $p < .1$ . \*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

The hierarchical regressions for TRA, TPB, and the reasons model predicting intentions to breastfeed to 2 months can be found in Tables 26a and 26b. The results of the first three steps were similar to the results for TRA and TPB predicting intentions to breastfeed to 1 month. Attitude was, again, the only significant TRA or TPB predictor of intentions to breastfeed to 2 months,  $\beta = .29$ ,  $p < .001$ . The  $R^2$  for Step 1, including attitudes and SN, was .29,  $F(9, 167) = 7.43$ ,  $p < .001$ .  $R^2$  only increased .006 and .002 for Steps 2 and 3 respectively. However, Level I reasons accounted for a significant increase in the  $R^2$  of .15,  $F\Delta(16, 160) = 22.24$ ,  $p < .001$ . Level I con breastfeeding reasons were significant negative predictors of intentions to breastfeed to 2 months,  $\beta = -.43$ ,  $p < .001$ . This indicates that, over and above the effect of attitudes on their intentions, women who considered evidence against breastfeeding to be somewhat important to their breastfeeding decisions had lower intentions to breastfeed to 2 months than did women who consider con breastfeeding evidence to be less important. Level II and Level III reasons did not further account for the variance in intentions over that accounted for by Level I reasons. Comparing these results to the reasons path model found in Figure 5 shows that the significant path from Level I con breastfeeding reasons was maintained in these current results, whereas the significant path from Level III pro breastfeeding reasons was no longer significant.

Table 26a

**Hierarchical Regressions: Model Test of Reasons Model over Theory of Planned Behavior**  
**Predicting Prenatal Intentions To Breastfeed to 2 Months (TRA and TPB Steps) (N = 177)**

Variable	Step 1		Step 2		Step 3	
	$\beta$	$\Delta R^2$	$\beta$	$\Delta R^2$	$\beta$	$\Delta R^2$
		$R^2 = .29$		$R^2 = .29$		$R^2 = .29$
Attitude	.49***	.29***	.48***	< .01	.50***	< .01
Normative Beliefs:						
Partner	.19*		.06		.06	
Mother	.14		-.24		-.23	
Mother-in-law	-.12		.11		.12	
Friends	.05		.09		.09	
Importance:						
Partner	.01		-.34		-.35	
Mother	.04		-.33		-.32	
Mother-in-law	.05		.16		.13	
Friends	-.09		.24		.23	
Normative Beliefs x Importance:						
Partner			.45		.46	
Mother			.44		.41	
Mother-in-law			-.28		-.25	
Friends			-.24		-.22	
Perceived Behavioural Control					-.05	
Reasons:						
Level I Con						
Level I Pro						
Level II Con						
Level II Pro						
Level III Con						
Level III Pro						

\*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

Table 26 continues



Table 26b

**Hierarchical Regressions: Model Test of Reasons Model over Theory of Planned Behavior**  
**Predicting Prenatal Intentions To Breastfeed to 2 Months (Reasons Model Steps) (N = 177)**

Variable	Step 4 $R^2 = .45$		Step 5 $R^2 = .45$		Step 6 $R^2 = .45$	
	$\beta$	$\Delta R^2$	$\beta$	$\Delta R^2$	$\beta$	$\Delta R^2$
Attitude	.35***	.15***	.34***	< .01	.33***	< .01
Normative Beliefs:						
Partner	.07		.09		.08	
Mother	-.20		-.16		-.17	
Mother-in-law	.12		.14		.14	
Friends	.08		.06		.06	
Importance:						
Partner	-.39		-.31		-.35	
Mother	-.07		.07		.06	
Mother-in-law	.02		.01		.03	
Friends	.30		.28		.30	
Normative Beliefs x Importance:						
Partner	.42		.34		.38	
Mother	.15		-.01		.01	
Mother-in-law	-.10		-.11		-.13	
Friends	-.30		-.27		-.24	
Perceived Behavioural Control	-.14*		-.10*		-.17	
Reasons:						
Level I Con	-.43***		-.40***		-.40***	
Level I Pro	.11		.09		.07	
Level II Con			-.09		-.09	
Level II Pro			.04		.01	
Level III Con					.01	
Level III Pro					.06	

\*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

Table 27a shows the regressions for prenatal intentions to breastfeed to 4 months regressed on the TRA and TPB variables. Again, attitudes were the only significant predictor of intentions in the first step,  $\beta = .40$ ,  $p < .001$ . The  $R^2$  for Step 1 was .19,  $F = 4.28$ ,  $p < .001$ . The SN interaction terms, added in Step 2, added marginally to the prediction of intentions,  $R^2\Delta = .04$ ,  $F\Delta(13, 163) = 2.20$ ,  $p = .07$ . The interaction between partner norms and the importance of partners' opinions about breastfeeding was significant. This suggests that the extent to which participants think their partners agree that they should breastfeed was related to their intentions to breastfeed to 4 months only to the extent that their partners' opinions were deemed important to them. The addition of PBC, in Step 3, did not add significantly to the prediction of intentions to breastfeed to 4 months.

Again, as is shown in Table 27b, the reasons model added significantly to the prediction of intentions to breastfeed to 4 months over and above that predicted by TRA. Level I reasons added an additional  $R^2$  of .06,  $F\Delta(16, 160) = 7.43$ ,  $p < .001$ , and both Level I con and pro breastfeeding reasons were significant predictors. Level I con breastfeeding reasons were significant negative predictors,  $\beta = -.24$ ,  $p = .001$ , reducing the strength of participants intentions to breastfeed, and Level I pro breastfeeding reasons were significant positive predictors,  $\beta = .18$ ,  $p = .025$ , increasing the strength of intentions to breastfeed to 4 months. As was the case in previous models, Levels II and III reasons did not add significantly to the prediction of intentions to breastfeed to 4 months, although Level II con breastfeeding reasons were marginally significant negative predictors of intentions at Step 5,  $\beta = -.18$ ,  $p = .056$ .

Table 27a

**Hierarchical Regressions: Model Test of Reasons Model over Theory of Planned Behavior**  
**Predicting Prenatal Intentions To Breastfeed to 4 Months (TRA and TPB Steps) (N = 177)**

Variable	Step 1		Step 2		Step 3	
	$\beta$	$\Delta R^2$	$\beta$	$\Delta R^2$	$\beta$	$\Delta R^2$
		$R^2 = .19$		$R^2 = .23$		$R^2 = .24$
Attitude	.40***	.19***	.36***	.04 <sup>†</sup>	.33***	.01
Normative Beliefs:						
Partner	.08		-.36		-.34	
Mother	.01		-.17		-.19	
Mother-in-law	.02		.12		.12	
Friends	-.03		.21		.21	
Importance:						
Partner	.07		-1.29		-1.27*	
Mother	-.12		-.67		-.70	
Mother-in-law	.02		.41		.46	
Friends	.05		.79 <sup>†</sup>		.81 <sup>†</sup>	
Normative Beliefs x Importance:						
Partner			1.58*		1.55*	
Mother			.64		.70	
Mother-in-law			-.44		-.50	
Friends			-.83		-.86	
Perceived Behavioural Control					.11	
Reasons:						
Level I Con						
Level I Pro						
Level II Con						
Level II Pro						
Level III Con						
Level III Pro						

<sup>†</sup>p < .1. \* p < .05. \*\* p < .01. \*\*\* p < .001.

Table 27 continues

Table 27b

**Hierarchical Regressions: Model Test of Reasons Model over Theory of Planned Behavior  
Predicting Prenatal Intentions To Breastfeed to 4 Months (Reasons Model Steps) (N = 177)**

Variable	Step 4 $R^2 = .30$		Step 5 $R^2 = .32$		Step 6 $R^2 = .33$	
	$\beta$	$\Delta R^2$	$\beta$	$\Delta R^2$	$\beta$	$\Delta R^2$
Attitude	.24**	.06***	.22**	.02	.18*	.01
Normative Beliefs:						
Partner	-.34 <sup>†</sup>		-.33 <sup>†</sup>		-.40 <sup>†</sup>	
Mother	-.53		-.15		-.15	
Mother-in-law	.15		.16		.14	
Friends	.21		.17		.16	
Importance:						
Partner	-1.26*		-1.13 <sup>†</sup>		-1.22*	
Mother	-.71		-.44		-.32	
Mother-in-law	.45		.39		.32	
Friends	.84 <sup>†</sup>		.80		.74	
Normative Beliefs x Importance:						
Partner	1.45*		1.33 <sup>†</sup>		1.42*	
Mother	.67		.40		.29	
Mother-in-law	-.48		-.46		-.39	
Friends	-.90 <sup>†</sup>		-.84 <sup>†</sup>		-.79	
Perceived Behavioural Control	.04		-.01		-.03	
Reasons:						
Level I Con	-.24**		-.18*		-.18*	
Level I Pro	.18*		.18 <sup>†</sup>		.16	
Level II Con			-.18 <sup>†</sup>		-.11	
Level II Pro			.02		-.03	
Level III Con					-.10	
Level III Pro					.12	

<sup>†</sup> $p < .1$ . \*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

The results for intentions to breastfeed to 6 months regressed on the TRA and TPB variables are shown in Table 28a. In this analyses as well, attitudes toward breastfeeding were the only significant predictor of intentions,  $\beta = .39$ ,  $p < .001$ . The  $R^2$  for the first step was .20,  $F(9, 167) = 4.58$ ,  $p < .001$ . The SN interaction terms did not add significantly to the prediction of intentions, but PBC did make a significant additional contribution to the prediction of intentions to breastfeed to 6 months,  $R^2\Delta = .05$ ,  $F\Delta(14, 162) = 10.09$ ,  $p = .002$ . PBC was a significant positive predictor of intentions,  $\beta = .24$ , indicating that women with more confidence in their ability to breastfeed were more likely to intend to breastfeed to 6 months than were women who were less confident.

Over and above the ability of TPB to predict intentions to breastfeed to 6 months, Table 28b shows that the reasons model added significantly to the prediction of those intentions. However, unlike the two previous models, and similar to the results of the path model for reasons predicting intentions to breastfeed to 6 months found on Figure 7, Level I reasons did not predict intentions to breastfeed in this current analysis. Level II reasons added marginally to the prediction of intentions to breastfeed to 6 months,  $R^2\Delta = .02$ ,  $F\Delta(18, 158) = 2.79$ ,  $p = .064$ . Level II con breastfeeding reasons were significant negative predictors of intentions,  $\beta = .22$ ,  $p = .02$ . Finally, Level III reasons added significantly more to the prediction of intentions to breastfeed to 6 months,  $R^2\Delta = .04$ ,  $F\Delta(20, 156) = 4.43$ ,  $p = .016$ . As was the case in the path model on Figure 5, Level III con breastfeeding reasons were significant negative predictors of intentions,  $\beta = .29$ ,  $p = .004$ . Level III pro breastfeeding reasons still did not predict intentions to breastfeed over and above that predicted by TPB variables and Level I and II reasons as it did in the original path model predicting intentions to breastfeed to 6 months.

Table 28a

**Hierarchical Regressions: Model Test of Reasons Model over Theory of Planned Behavior**  
**Predicting Prenatal Intentions To Breastfeed to 6 Months (TRA and TPB Steps) (N = 176)**

Variable	Step 1		Step 2		Step 3	
	$\beta$	$\Delta R^2$	$\beta$	$\Delta R^2$	$\beta$	$\Delta R^2$
		$R^2 = .20$		$R^2 = .22$		$R^2 = .26$
Attitude	.39***	.20***	.37***	.02	.30***	.05**
Normative Beliefs:						
Partner	.05		-.21		-.22	
Mother	.09		.02		-.04	
Mother-in-law	-.08		.03		.040	
Friends	-.10		.11		.11	
Importance:						
Partner	.01		-.82		-.78	
Mother	-.17		-.39		-.45	
Mother-in-law	.13		.55		.66	
Friends	.10		.77		.86 <sup>†</sup>	
Normative Beliefs x Importance:						
Partner			.93		.90	
Mother			.26		.39	
Mother-in-law			-.49		-.62	
Friends			-.75		-.81	
Perceived Behavioural Control					.24**	
Reasons:						
Level I Con						
Level I Pro						
Level II Con						
Level II Pro						
Level III Con						
Level III Pro						

<sup>†</sup>p < .1. \* p < .05. \*\* p < .01. \*\*\* p < .001.

Table 28 continues

Table 28b

**Hierarchical Regressions: Model Test of Reasons Model over Theory of Planned Behavior**  
**Predicting Prenatal Intentions To Breastfeed to 6 Months (Reasons Model Steps) (N = 176)**

Variable	Step 4		Step 5		Step 6	
	$\beta$	$\Delta R^2$	$\beta$	$\Delta R^2$	$\beta$	$\Delta R^2$
		$R^2 = .28$		$R^2 = .30$		$R^2 = .34$
Attitude	.27	.01	.24**	.02 <sup>†</sup>	.20	.04*
Normative Beliefs:						
Partner	-.21		-.20		-.20	
Mother	-.08		.02		.09	
Mother-in-law	.08		.07		-.01	
Friends	.12		.07		.04	
Importance:						
Partner	-.74		-.62		-.69	
Mother	-.54		-.21		.13	
Mother-in-law	.68		.60		.34	
Friends	.82 <sup>†</sup>		.77 <sup>†</sup>		.73	
Normative Beliefs x Importance:						
Partner	.83		.69		.76	
Mother	.47		.11		-.24	
Mother-in-law	-.65		-.60		-.32	
Friends	-.82		-.74		-.70	
Perceived Behavioural Control	.21**		.15 <sup>†</sup>		.11	
Reasons:						
Level I Con	-.06		.02		.03	
Level I Pro	.11		.14		.16	
Level II Con			-.22*		-.06	
Level II Pro			-.01		-.03	
Level III Con					-.29**	
Level III Pro					.04	

<sup>†</sup>p < .1. \* p < .05. \*\* p < .01. \*\*\* p < .001.

The results of the first three steps of the hierarchical regressions predicting intentions to breastfeed to 9 months can be found in Table 29a. In these regressions, not only were attitudes positive predictors of intentions in Step 1,  $\beta = .13$ ,  $p = .004$ , but the subjective norms of participants' mothers were also significant predictors of intentions,  $\beta = .21$ ,  $p = .042$ . This suggests that participants who believed that their mothers strongly agreed that the participant should breastfeed had stronger intentions to breastfeed to 9 months than did participants who thought their mothers were in less agreement that the participant should breastfeed. In addition, the subjective norms of mothers-in-law were marginal negative predictors of intentions,  $\beta = -.170$ ,  $p = .092$ , suggesting that participants whose mothers-in-law were less supportive of breastfeeding were slightly more likely to have strong intentions to breastfeed to 9 months. These results were not qualified by a significant interaction in the next step. In Step 3, PBC added significantly to the prediction of intentions to breastfeed to 9 months,  $R^2\Delta = .08$ ,  $F\Delta(4, 161) = 15.51$ ,  $p < 0.001$ . Again, PBC was a significant positive predictor of breastfeeding intentions,  $\beta = .31$ .

Variables from the reasons model also added significantly to the prediction of intentions to breastfeed to 9 months. Level I reasons, specifically Level I pro breastfeeding reasons, added significantly to the prediction of intentions at Step 4,  $R^2\Delta = .04$ ,  $F(16, 159) = 4.18$ ,  $p = .017$ . Level I pro breastfeeding reasons were significant positive predictors of intentions,  $\beta = .23$ ,  $p = 0.006$ . At Step 5, Level II reasons added further to the prediction of intentions,  $R^2\Delta = .03$ ,  $F\Delta(18, 157) = 3.22$ ,  $p = .043$ . Level II con breastfeeding reasons were the significant negative predictors at that step,  $\beta = -.24$ ,  $p = .012$ . Level III reasons did not add significantly at Step 6, but Level III con breastfeeding reasons were marginally significant predictors of intentions to breastfeed to 9 months,  $\beta = -.18$ ,  $p = .084$ .



Table 29a

**Hierarchical Regressions: Model Test of Reasons Model over Theory of Planned Behavior  
Predicting Prenatal Intentions To Breastfeed to 9 Months (TRA and TPB Steps) (N = 176)**

Variable	Step 1 $R^2 = .13$		Step 2 $R^2 = .14$		Step 3 $R^2 = .22$	
	$\beta$	$\Delta R^2$	$\beta$	$\Delta R^2$	$\beta$	$\Delta R^2$
Attitude	.23**	.13**	.22**	.01	.13	.08***
Normative Beliefs:						
Partner	-.04		-.23		-.24	
Mother	.21*		.26		.20	
Mother-in-law	-.17 <sup>†</sup>		-.15		-.14	
Friends	-.01		.18		.17	
Importance:						
Partner	.01		-.64		-.63	
Mother	-.23		-.06		-.10	
Mother-in-law	.17		.30		.41	
Friends	.14		.75		.81 <sup>†</sup>	
Normative Beliefs x Importance:						
Partner			.75		.71	
Mother			-.20		-.07	
Mother-in-law			-.14		-.29	
Friends			-.68		-.74	
Perceived Behavioural Control					.31***	
Reasons:						
Level I Con						
Level I Pro						
Level II Con						
Level II Pro						
Level III Con						
Level III Pro						

<sup>†</sup> $p < .1$ . \*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

Table 29 continues

Table 29b

**Hierarchical Regressions: Model Test of Reasons Model over Theory of Planned Behavior**  
**Predicting Prenatal Intentions To Breastfeed to 9 Months (Reasons Model Steps) (N = 176)**

Variable	Step 4 $R^2 = .26$		Step 5 $R^2 = .29$		Step 6 $R^2 = .30$	
	$\beta$	$\Delta R^2$	$\beta$	$\Delta R^2$	$\beta$	$\Delta R^2$
Attitude	.11	.04*	.08	.03*	.05	.01
Normative Beliefs:						
Partner	-.23		-.21		-.21	
Mother	.07		.18		.22	
Mother-in-law	-.07		-.06		-.11	
Friends	.19		.13		.12	
Importance:						
Partner	-.50		-.35		-.39	
Mother	-.44		-.09		.12	
Mother-in-law	.53		.45		.30	
Friends	.77		.72		.70	
Normative Beliefs x Importance:						
Partner	.55		.36		.40	
Mother	.27		-.12		-.33	
Mother-in-law	-.44		-.41		-.25	
Friends	-.74		-.66		-.64	
Perceived Behavioural Control	.28***		.21*		.18*	
Reasons:						
Level I Con	.03		.12		.12	
Level I Pro	.23**		.25*		.26*	
Level II Con			-.24*		-.14	
Level II Pro			.01		-.01	
Level III Con					-.18 <sup>†</sup>	
Level III Pro					.03	

<sup>†</sup> $p < .1$ . \*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

The results of the regressions for TRA, TPB, and reasons predicting intentions to breastfeed to 12 months were extremely similar to those just presented. These results can be found in Table 30. Attitudes were a significant predictor at Step 1,  $\beta = .22$ ,  $p = .007$ , and subjective norms for participants' mothers and mother-in-laws were marginally significant predictors in the same direction as the previous results,  $\beta = .17$ ,  $p = .091$ , and  $\beta = -.18$ ,  $p = .070$ , respectively. PBC added significantly to the prediction of intentions to breastfeed to 12 months,  $\beta = .27$ ,  $R^2\Delta = .06$ ,  $F\Delta(14, 161) = 11.92$ ,  $p < .001$ . In addition, Level I pro breastfeeding reasons added further to the prediction of intentions at Step 4,  $R^2\Delta = .03$ ,  $F\Delta(16, 159) = 2.97$ ,  $p = .054$ , and Level II con breastfeeding reasons added to the predictions of intentions at Step 5,  $R^2\Delta = .03$ ,  $F\Delta(18, 157) = 3.13$ ,  $p = .047$ . Level I pro breastfeeding reasons were significant positive predictors of intentions to breastfeed to 12 months at entry,  $\beta = .19$ ,  $p = .024$ , and Level II con breastfeeding reasons were significant negative predictors at entry into the regression equation,  $\beta = -.22$ ,  $p = .024$ . Level III reasons did not add significantly to the prediction of intentions.

Table 30a

**Hierarchical Regressions: Model Test of Reasons Model over Theory of Planned Behavior  
Predicting Prenatal Intentions To Breastfeed to 12 Months (TRA and TPB Steps) (N= 175)**

Variable	Step 1 $R^2 = .12$		Step 2 $R^2 = .14$		Step 3 $R^2 = .20$	
	$\beta$	$\Delta R^2$	$\beta$	$\Delta R^2$	$\beta$	$\Delta R^2$
Attitude	.22**	.12*	.20*	.02	.12	.06***
Normative Beliefs:						
Partner	-.07		-.20		-.21	
Mother	.17 <sup>†</sup>		.09		.04	
Mother-in-law	-.18 <sup>†</sup>		.05		.05	
Friends	-.02		.16		.15	
Importance:						
Partner	.02		-.35		-.35	
Mother	-.18		-.44		-.46	
Mother-in-law	.15		.91		1.01 <sup>†</sup>	
Friends	.16		.73		.78	
Normative Beliefs x Importance:						
Partner			.43		.400	
Mother			.30		.41	
Mother-in-law			-.88		-1.01	
Friends			-.64		-.69	
Perceived Behavioural Control					.27***	
Reasons:						
Level I Con						
Level I Pro						
Level II Con						
Level II Pro						
Level III Con						
Level III Pro						

<sup>†</sup> $p < .1$ . \*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

Table 30 continues

Table 30b

**Hierarchical Regressions: Model Test of Reasons Model over Theory of Planned Behavior**  
**Predicting Prenatal Intentions To Breastfeed to 12 Months (Reasons Model Steps) (N= 175)**

Variable	Step 4 $R^2 = .23$		Step 5 $R^2 = .26$		Step 6 $R^2 = .26$	
	$\beta$	$\Delta R^2$	$\beta$	$\Delta R^2$	$\beta$	$\Delta R^2$
Attitude	.11	.03 <sup>†</sup>	.09	.03*	.06	< .01
Normative Beliefs:						
Partner	-.19		-.16		-.16	
Mother	-.08		.03		.03	
Mother-in-law	.11		.14		.12	
Friends	.16		.11		.10	
Importance:						
Partner	-.24		-.03		-.09	
Mother	-.78		-.44		-.34	
Mother-in-law	1.11*		1.09*		1.03 <sup>†</sup>	
Friends	.74		.71		.67	
Normative Beliefs x Importance:						
Partner	.27		.04		.10	
Mother	.71		.34		.24	
Mother-in-law	-1.15 <sup>†</sup>		-1.20*		-1.14 <sup>†</sup>	
Friends	-.69		-.62		-.58	
Perceived Behavioural Control	.25**		.19*		.17 <sup>†</sup>	
Reasons:						
Level I Con	.05		.12		.12	
Level I Pro	.19*		.12		.11	
Level II Con			-.22*		-.16	
Level II Pro			.13		.09	
Level III Con					-.09	
Level III Pro					.09	

<sup>†</sup> $p < .1$ . \*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

The last set of regression models that will be described are those regressing prenatal intentions to breastfeed longer than 12 months on TRA, TPB, and reasons variables. The results of these regressions can be found in Table 31. The results of Step 1 were different from previous results because attitudes were no longer significant predictors of intentions. In this model, breastfeeding intentions were significantly predicted by the subjective norms of mothers and mothers-in-law. As in previous results, mothers' norms were significantly positively related to intentions to breastfeed longer than 12 months,  $\beta = .24$ ,  $p = .021$  and the norms of mothers-in-law were significantly negatively related to intentions,  $\beta = -.27$ ,  $p = .008$ . PBC was, again, a significant positive predictor of intentions,  $\beta = .21$ ,  $\underline{R}^2\Delta = .04$ ,  $\underline{F}(14, 160) = 6.82$ ,  $p = .010$ . However, in this final analysis, the reasons model only added marginally to the prediction of intentions at Step 4,  $\underline{R}^2\Delta = .02$ ,  $\underline{F}\Delta = 2.43$ ,  $p = .091$ . Level I pro breastfeeding reasons were significant positive predictors of breastfeeding at that step,  $\beta = .18$ ,  $p = .040$ . Level II and Level III reasons did not add significantly to the prediction of intentions to breastfeed longer than 12 months.

Table 31a

**Hierarchical Regressions: Model Test of Reasons Model over Theory of Planned Behavior**  
**Predicting Prenatal Intentions To Breastfeed > 12 Months (TRA and TPB Steps) (N= 175)**

Variable	Step 1		Step 2		Step 3	
	$\beta$	$\Delta R^2$	$\beta$	$\Delta R^2$	$\beta$	$\Delta R^2$
		$R^2 = .11$		$R^2 = .14$		$R^2 = .17$
Attitude	.13	.11*	.10	.02	.04	.04**
Normative Beliefs:						
Partner	-.02		-.19		-.20	
Mother	.24*		.25		.20	
Mother-in-law	-.27**		-.07		-.06	
Friends	.01		.21		.210	
Importance:						
Partner	-.01		-.56		-.56	
Mother	-.09		-.07		-.09	
Mother-in-law	.18		.86		.930 <sup>†</sup>	
Friends	.13		.81		.84 <sup>†</sup>	
Normative Beliefs x						
Importance:						
Partner			.64		.62	
Mother			-.03		.01	
Mother-in-law			-.78		-.88	
Friends			-.76		-.80	
Perceived					.21**	
Behavioural						
Control						
Reasons:						
Level I Con						
Level I Pro						
Level II Con						
Level II Pro						
Level III Con						
Level III Pro						

<sup>†</sup> $p < .1$ . \*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

Table 31 continues

Table 31b

**Hierarchical Regressions: Model Test of Reasons Model over Theory of Planned Behavior  
Predicting Prenatal Intentions To Breastfeed > 12 Months (Reasons Model Steps) (N = 175)**

Variable	Step 4		Step 5		Step 6	
	$\beta$	$\Delta R^2$	$\beta$	$\Delta R^2$	$\beta$	$\Delta R^2$
		$R^2 = .20$		$R^2 = .21$		$R^2 = .21$
Attitude	.03	.02 <sup>†</sup>	.03	.01	.03	< .01
Normative Beliefs:						
Partner	-.19		-.16		-.16	
Mother	.10		.15		.15	
Mother-in-law	-.01		.02		.03	
Friends	.22		.19		.20	
Importance:						
Partner	-.46		-.31		-.30	
Mother	-.37		-.21		-.24	
Mother-in-law	1.03 <sup>†</sup>		1.06*		1.08 <sup>†</sup>	
Friends	.81 <sup>†</sup>		.81		.82	
Normative Beliefs x Importance:						
Partner	.49		.33		.32	
Mother	.33		.15		.18	
Mother-in-law	-1.01		-1.09 <sup>†</sup>		-1.11 <sup>†</sup>	
Friends	-.80		-.77		-.78	
Perceived Behavioural Control	.19*		.16 <sup>†</sup>		.17 <sup>†</sup>	
Reasons:						
Level I Con	.05		.07		.07	
Level I Pro	.18*		.09		.09	
Level II Con			-.11		-.12	
Level II Pro			.14		.15	
Level III Con					.03	
Level III Pro					-.02	

<sup>†</sup>p < .1. \* p < .05. \*\* p < .01. \*\*\* p < .001.



## CHAPTER IV

### Discussion

**Why breastfeed?** This is an important question that every pregnant woman faces before the birth of her baby. It continues to be an important question for women who choose to breastfeed their babies. Women know that breastfeeding is the infant feeding choice recommended by health professionals. Yet some women do not breastfeed and many women do not breastfeed as long as health professionals recommend. Why is that? What can be done to increase breastfeeding duration among new mothers? According to the results of this study, an important first step is to examine the ways in which women answer the question “Why breastfeed?”

This study has shown that the reasons model is a powerful tool to help explain how women make their decisions about whether or not they should breastfeed and how long to breastfeed. Breastfeeding is a profound experience for new mothers, encompassing extreme happiness and extreme frustration. These data have demonstrated how women think about breastfeeding and how they respond to their breastfeeding experiences. The results of this study have shown that the reasons model can organize the reasons that women give for and against breastfeeding in a way that is consistently predictive of breastfeeding intentions and behaviour. These data have shown that the reasons model can account for the predictive effect of demographic and affect-related variables on breastfeeding intentions. They have also shown that the reasons model can help explain the prescriptive breastfeeding beliefs held by the male partners of pregnant women.

Clearly, this study has demonstrated that this new model adds an important perspective to the study of health behavioural determinants. These data have shown the

predictive power of reasons at all levels and, in particular, the power of value-laden, affective, schema-related Level III reasons to predict intentions and behaviour. By demonstrating that the reasons model consistently predicted prenatal intentions to breastfeed over and above the commonly employed theory of planned behaviour, this study has shown that the reasons model is not redundant with extant theories of health behaviour. Thus, this application of the reasons model to the domain of breastfeeding has provided important practical information that can be used to inform future breastfeeding promotion interventions, as well as important theoretical information that supports the use of the reasons model as an excellent model of health behavioural determinants.

#### Sample Representativeness

The Infant Feeding Study sampled a large and fairly representative group of women in Waterloo region who were expecting their first babies. As is common with studies that recruit volunteer participants, the women and their partners who were willing to commit themselves to participation in a longitudinal study that could span more than a year tended to be fairly highly educated and have fairly high incomes. Comparisons with other studies conducted in and around Waterloo Region suggest that this sample was somewhat different from a random sample of expectant parents. Since women who are wealthier and more highly educated are more likely to intend to breastfeed, it is likely that the women in this study may have been more biased towards strong pro breastfeeding intentions than women in the general population of Waterloo Region. The pro breastfeeding bias limits the ability of this study to make strong inferences about breastfeeding prevalence in Waterloo Region. However, it could also be expected that more highly educated and wealthier women may be more homogeneous in terms of their breastfeeding intentions. Such a reduction in range

would reduce the likelihood of finding significant relationships between explanatory variables and breastfeeding decisions. Therefore, the ability of the reasons model to predict breastfeeding intentions and subsequent behavior in this study is impressive given the propensity toward breastfeeding demonstrated by the participants in the Infant Feeding Study.

In actuality, the women in this study were not uniformly strong in their intentions to breastfeed their newborn babies, and there was considerable variance in their decisions about how long breastfeeding should continue. Breastfeeding prevalence at 4 and 6 months was not significantly different from the prevalence that could be expected on the basis of previous findings in Waterloo Region and in neighbouring Perth County. Although the women in this study almost all felt that it was appropriate to breastfeed, they certainly differed in regard to how long breastfeeding should continue and they differed in their responses to breastfeeding difficulties in the first weeks postpartum.

### Breastfeeding Problems

Breastfeeding is often difficult, and many women who initiated breastfeeding reported having problems with breastfeeding. Many mothers experienced sore nipples especially in the first weeks when mothers and babies were learning how to achieve a good breastfeeding latch. Many new mothers also found it to be a considerable problem when their babies did not latch to the breast correctly or sucked too weakly or too vigorously. Mothers were concerned about their milk supply and about their babies' weight gain. Conversely, many mothers, especially those whose infants were suckling effectively, experienced sore breasts due to engorgement, and some mothers found that their milk was letting down so strongly that their babies were having trouble nursing.

The analyses conducted for this study did not examine the effect of specific breastfeeding difficulties on breastfeeding intentions and behavior. However, the decrease in breastfeeding intentions at the time of the first month assessment suggests that mothers who were still experiencing breastfeeding difficulties became less certain about their intentions to continue breastfeeding than they had been before they had given birth to their babies. This was also supported by the reasons for stopping that were ranked as most important by mothers who stopped breastfeeding in the first 6 months after the birth of their babies. Many women indicated that they had stopped because they did not have enough milk for their babies, because breastfeeding was difficult, because breastfeeding gave them sore breasts or nipples, and/or because breastfeeding was tiring. Thus, breastfeeding, particularly in the early weeks, can be a very difficult experience, raising barriers that can contribute to mothers' decisions to stop breastfeeding.

#### Assessing Reasons

Not all women stopped breastfeeding when they experienced breastfeeding difficulties. Many women experienced breastfeeding difficulties but did not consider them to be at all important as reasons to stop breastfeeding. This primary aim of this study was to determine the ability of the reasons model to explain how women make their decisions about whether to breastfeed and how long to continue by examining the importance of the reasons they hold for and against breastfeeding.

The Breastfeeding Reasons Questionnaire. The reasons model is based on the “constructive narratives” that people provide to explain their decisions. In this study, women and their partners were provided with a list of potential reasons for and against breastfeeding and were asked, essentially, to indicate how much each of those reasons were

consistent with their own narratives about why they might or might not breastfeed or why they would stop breastfeeding. In order to assess whether the list of reasons that were chosen was fairly representative of the types of reasons women might choose for their own narratives, the reasons in the Breastfeeding Reasons Questionnaire (BRQ) were compared to the list of reasons generated by pregnant women who were guided through a structured interview. The comparison indicated that the reasons presented in the BRQ were fairly representative of the domain of reasons that are considered by women when they make their pre-experience breastfeeding decisions. In other words, the closed-ended BRQ seemed to capture the universe of reasons that women would use to decide whether or not to breastfeed.

There were, however, some omissions in the BRQ. The greatest omission was that the BRQ did not include reasons to stop breastfeeding that relate to the health of babies or mothers. It does follow from the great emphasis placed on the health of the baby as reasons for breastfeeding that, if breastfeeding was considered to be detrimental to the health and well-being of the baby, this would certainly constitute a potentially important reason to stop breastfeeding. However, we did not include this reason in the BRQ. Another reason for stopping or for continuing breastfeeding that we did not include, but which may be relevant to breastfeeding duration, is whether or not the infant is perceived as wanting to continue breastfeeding. Several mothers, at various points in the study, mentioned being concerned that their babies were frustrated with breastfeeding or were refusing to breastfeed. This item was included as an additional item in the final questionnaire for women who had discontinued breastfeeding, but it may have been informative to have it included it as a regular breastfeeding reason. Future breastfeeding studies should include reasons

against breastfeeding that reflect health concerns, especially regarding the health of the baby, and the perceived responses of infants to breastfeeding in order to determine the degree to which additional reasons such as these might alter the findings of this present study.

The BRQ was designed to include pro and con breastfeeding reasons at all three levels. In order to validate the levels of the reasons in the BRQ, six individuals agreed to rate the reasons in the BRQ according to level. Categorizing reasons according the reasons model is not an easy task, because the reasons people give often contain elements of two or even three of the reasons levels. The individuals who rated the BRQ were given the task of identifying how much each reason appeared to fit the criteria of a Level I, Level II, or Level III reason. These raters were not mothers and they were not all female, so it is conceivable that they might have read these reasons somewhat differently than did women in the study. In the absence of data from closed-ended participants explaining how they understood each item, I chose to compare reasons from the BRQ with open-ended reasons generated during the structured interviews. On the basis of these open-ended responses, I disagreed with a very small proportion of the categorizations made on the basis of the raters' judgements. The final list of reasons at each level is our best judgement of how these reasons reflect the constructs of the reasons model, based on the information available to us in this study. In future studies, the reasons categorizations could be improved by asking pregnant, breastfeeding, and formerly breastfeeding mothers to describe what they think of when they hear each reason for and against breastfeeding. Such descriptive data would facilitate even more confidence in the coding of the reasons in the BRQ.

### Testing the Reasons Model

Validity of the Three Level Construct. The Level I, Level II, and Level III reasons in the BRQ were moderately intercorrelated within the pro and con domains. This is not surprising, given that all reasons were answering the same questions—that is, whether or not to breastfeed. In addition, reasons at one level may be an extension of reasons at another level. For example, if a mother values doing anything that is good for her baby and believes that breastfeeding is a way of accomplishing that, she is more likely to feel that the purported health benefits of breastfeeding are also important reasons to breastfeed. Conversely, she may find breastfeeding frustrating and reason that it is making her unhappy because breastfeeding has been difficult or she has not been able to make enough milk for her baby. It could be argued that these high intercorrelations indicate that pro and con breastfeeding reasons are single factor constructs. However, despite these high correlations, each of the reasons levels were independently predictive of breastfeeding intentions, and each level of reasons added information to breastfeeding decisions. These results argue for the validity of all three levels within the reasons model.

Support for Hypothesized Causal Direction. Level III reasons were hypothesized to cause Level I and Level II reasons and, therefore, the three levels should be highly related. The causal paths in the reasons model reflect the hypothesized relationship between Level III reasons and Level I and II reasons. It could be argued that people develop their affective, schema-related reasons on the basis of the evidence for breastfeeding, or as a result of considering the consequences of breastfeeding for themselves. However, we believe that the values and prior schemas that people bring to a health behavioral decision will lead them to seek out Level I and II reasons that are consonant with those underlying beliefs about

themselves. Cross-lag correlations between Level III reasons and Level I and II reasons lend some support to the hypothesized direction of the causal paths between the three levels of reasons.

Prenatal Breastfeeding Reasons Predict Breastfeeding Intentions. I hypothesized that Level III reasons, then, would affect breastfeeding intentions in two ways. I expected that some of the effect of Level III reasons on intentions would be mediated by the strength of Level I and II reasons for and against breastfeeding. In addition, I hypothesized that the prominence of values and self-concept related reasons would translate into a direct path predicting breastfeeding intentions. Our previous research in the domain of condom use also supported the expectation of a direct path from Level III reasons to intentions.

These data indicated that the significant paths from reasons to intentions were somewhat different depending on the time point that was being predicted. Moreover, for mothers who breastfed, there was a considerable shift in the patterns of significant paths predicting intentions that occurred after they had actually experienced breastfeeding. All three levels of reasons were predictive at some point, but the strength of their relationships with intentions differed depending on the time point being considered.

For pregnant women deciding how strongly they intended to breastfeed, Level III pro breastfeeding reasons were so strongly related to their breastfeeding intentions that Level III was the only significant pro breastfeeding path predicting intentions in all prenatal causal models. Although Level I and Level II pro breastfeeding reasons were significantly correlated with breastfeeding intentions, these reasons were never directly related to prenatal breastfeeding intentions. It was the women with the strongest value-laden, affective,



schema-related reasons who were consistently the ones to hold the strongest intentions to breastfeed.

Con breastfeeding reasons did not show such strong, consistent patterns as did the prenatal pro breastfeeding reasons. The women who held weaker intentions to breastfeed over the first 4 months held Level I and II con breastfeeding reasons that were consistent with their Level III breastfeeding reasons. These Level I and II reasons were the direct predictors of weaker intentions to breastfeed at all, at 2 months and at 4 months. Level I reasons based on the evidence for not breastfeeding predicted lower intentions to breastfeed in all three models. Level II reasons that reflected concerns about the negative consequences of breastfeeding predicted weaker intentions to attempt to breastfeed at all. It appears that women who are concerned about their ability to handle a tough situation or who think of breastfeeding as embarrassing or awkward may be translating those affective, schema-related concerns into reasons for not breastfeeding that question the evidence for the superiority of breastfeeding. These women may find it easier to express their affective discomfort with breastfeeding by reasoning that breastfeeding and breastmilk is not quite as great as breastfeeding advocates suggest. They are also worried that, because they've heard breastfeeding can be painful, difficult, and tiring, they may not be able to cope with the affective consequences of those difficulties. So, since they reason that breastfeeding isn't necessarily all it is purported to be and it might be really hard on them physically and emotionally, these women are less certain that they will start breastfeeding at all.

It should be remembered that very few women ascribed much importance to con breastfeeding reasons, especially Level I reasons. Currently, in Waterloo Region, as in many areas of the developed world, choosing not to breastfeed at all is not very socially

acceptable. People have the impression that breastmilk is the perfect food. Some women and men in the study actually scorned the idea that breastmilk could contain substances that are harmful to babies. Yet those women who were not entirely comfortable with the idea of breastfeeding were more likely to hold these less acceptable Level I and Level II con breastfeeding reasons and were less sure about whether or not they would breastfeed.

The pattern of significant results for con breastfeeding reasons changes dramatically for the models predicting prenatal intentions to breastfeed to 6 and 9 months. Women who had weaker intentions to breastfeed at these time points ascribed much stronger importance to Level III con breastfeeding reasons than did women who had strong intentions to continue breastfeeding. It seems that women whose discomfort with breastfeeding is more pervasive use Level I and II reasons to justify their weak intentions to breastfeed over the first 4 months. Women who are willing to breastfeed in the early months but still don't really see themselves as breastfeeders don't have as much motivation to justify their Level III reasons with concordant Level II reasons. As long as they intend to breastfeed for the first few months, they are fulfilling their socially proscribed role as new mothers. They do hold Level II reasons for stopping such as returning to work or the experience of breastfeeding problems. However, when these women consider breastfeeding for more than 4 months, the strength of their Level III con breastfeeding reasons become significant.

For these women, it is their affective, schema-related Level III reasons—their embarrassment and discomfort with the strangeness of breastfeeding a baby who is not longer a newborn—that sets them apart from women who are certain that they will continue breastfeeding to 6 and 9 months. Women who are not entirely comfortable with the idea of breastfeeding may be able to set aside that discomfort for the first 4 months or so while their

babies are helpless, small, and dependent. Newborns are incapable of sitting up and take the breast on their own. It is fairly easy for breastfeeding to be a relatively covert activity. However, this is less the case as infants grow and develop. As infants develop, their actions become more volitional and more independent. They begin to sit up and grasp things, including grasping the breast when they are hungry. At some point between 4 and 6 months, most babies begin to be fed infant cereal, a milestone that signals reduced dependence on breastmilk as a source of nutrition. Formula fed infants begin to hold their bottles on their own. In the second half of the first year, babies change from being helpless babies to being volitional little children. The thought of breastfeeding much longer than those first few months is too uncomfortable for some women: it is not consistent with their picture of themselves. The strength of their Level III reasons belies that discomfort and their weaker intentions to continue is the result.

The strength of con breastfeeding reasons changes again when predicting prenatal intentions to breastfeed to 12 months or longer. No con breastfeeding reasons are significant predictors of intentions to breastfeed a toddler. Even the zero order correlations become non-significant in the final model. The women who were uncomfortable with breastfeeding plan to have stopped by this point. There really are no reasons against breastfeeding that are considered important by women who are willing to consider breastfeeding for 12 months or longer. Only the Level III pro breastfeeding reasons predict prenatal intentions to breastfeed that long. Women who see themselves as breastfeeders, who think breastfeeding is natural and who place high value on the love and security that they believe breastfeeding will bring to their babies and themselves, are the ones who have strong intentions to continue breastfeeding for 12 months or longer. They are the ones who are most likely to continue.

**Predicting Reasons to Stop Breastfeeding.** The reasons model was predictive of prenatal intentions to breastfeed and these intentions were predictive of whether or not women actually were breastfeeding at corresponding times over the first 6 months. Moreover, breastfeeding intentions assessed after breastfeeding had been experienced were quite highly predictive of actual breastfeeding status at the next assessment point. Once they knew what breastfeeding was actually like for themselves, they were able to fairly accurately predict their behaviour in the immediate future. Mothers' intentions were also able to predict whether or not they continued breastfeeding at later time points but were not as accurate as they were at predicting the more immediate future.

A recent theoretical argument by Loewenstein (1996) suggests that these women were less accurately able to predict their behaviour in a "hot" state, experiencing the pain and frustration of a difficult start to breastfeeding, when in a "cold" state in which they could only imagine what that discomfort may be like. The degree to which mothers could predict their reasons to stop breastfeeding is also suggestive of a "hot" to "cold" empathy gap. Pregnant women who stopped in the first 2 months were not able to anticipate how important breastfeeding difficulties would be to their eventual decisions to stop breastfeeding. However, breastfeeding mothers were able to predict the importance of their actual Level I and II reasons to stop when assessed at the previous postpartum time point. They were more likely to know what could get them to stop when they were in a state most similar to the state they were in when they stopped.

Pregnant women were, however, able to predict their Level III reasons for stopping. They did anticipate some of the frustration and unhappiness that breastfeeding might cause them. Pregnant women who thought they would feel uncomfortable, awkward, or unhappy

with breastfeeding were more likely to stop because of their ongoing discomfort with themselves as breastfeeders. It seems that knowing themselves, knowing how they had seen themselves cope with problems in the past and knowing how well breastfeeding fit with their own picture of themselves, made them somewhat able to anticipate how stopping would fit with their self-concepts and their related affective responses. This is important, because Level III reasons for stopping were the only reasons that were significantly related to how long women who stopped breastfeeding during the first 6 months did breastfeed. However, the self-knowledge that motivated them to give importance to consonant Level I and II reasons before the birth of their babies, was not sufficient to allow them to accurately anticipate the potential importance of these Level I and II reasons. They required actual experience before that was possible.

Predicting Postpartum Breastfeeding Intentions. Women not only changed their intentions and their predictions of their reasons to stop on the basis of their breastfeeding experience, the relationship between reasons and intentions to continue breastfeeding was also changed. The relationships within the reasons model as assessed in the first month postpartum were similar to the prenatal findings in that reasons predicted intentions to breastfeed to 2 and 4 months differently than they predicted breastfeeding longer than 4 months. Level III con breastfeeding reasons were the most significant predictors of continuing to breastfeed their newborn babies. The women assessed in these models had managed to breastfeed to 2 or 4 weeks. However, many had experienced problems with breastfeeding. The importance that they placed on those problems was highly related to the frustration and unhappiness that they experienced during the first weeks of their breastfeeding experience. However, it was not the problems per se that weakened new

mothers' resolve to continue breastfeeding, but the importance of their frustration and unhappiness for themselves that predicted whether or not they intended to continue.

Mothers who gave higher importance to these and other Level III reasons to stop breastfeeding were less likely to intend to breastfeed and less likely to continue breastfeeding.

It is interesting that the effects of con breastfeeding reasons on intentions were so different from their prenatal effects. Prenatally, women who were uncomfortable with breastfeeding focussed on Level I and II reasons against breastfeeding. There did not appear to be an understanding of the profound effect that their affective reactions to breastfeeding could have on their later intentions and behavior. This is consistent with Loewenstein's (1996) theory regarding affective forecasting. He suggests that people are not very accurate at making predictions about their behavior in a potentially emotion-laden situation when those predictions are made at a time when they are not yet experiencing that emotion.

Pro breastfeeding reasons assessed at 2 or 4 weeks did not predict intentions to breastfeed for the next month. However, Level III pro breastfeeding reasons did significantly predict intentions to breastfeed to 4 months. This may demonstrate the conflict between pro and con breastfeeding values and identify the lingering strength of prenatal Level III pro breastfeeding reasons. The strength of a negative experience with breastfeeding may lead a new mother to seriously consider stopping breastfeeding. However, the pro breastfeeding values and schemas that she was so strongly convinced of before the birth of her baby—the values that got her started—pushes her to try a little harder and to continue a little longer.

The path models for predicting intentions to breastfeed again change dramatically from the models that predict breastfeeding to 2 and 4 months. This major shift is located in the con breastfeeding reasons. In predicting breastfeeding to 6 months and longer from reasons at all postpartum assessment points, the only significant path is the Level II con breastfeeding reasons. This path is so strong that, in combination with the correlations with the other predictors, it results in significant suppressor effects on Level I and Level III con breastfeeding reasons at some time points. Breastfeeding women who are considering continuing for 6 months or longer are not as directly concerned about the affective consequences of breastfeeding. It is the personal barriers to breastfeeding an older baby that determines the strength of their intentions to continue. These barriers are consistent with their prenatal reasoning that breastfeeding an older baby might seem strange. Women who hold stronger Level II reasons for stopping continue to endorse Level III con breastfeeding reasons more strongly. Now that they have breastfed, though, the belief that breastfeeding an older baby does not fit with their self image is more easily expressed as self-consequential reasons such as the baby biting, wanting to return to work, or wanting to get out of the house. The less comfortable they feel with breastfeeding, the more likely they are to ascribe importance to the ways that breastfeeding might affect them negatively or will not fit with their lifestyle. Thus, for women who have weaker intentions to continue breastfeeding, these Level II reasons may, in part, be a reflection of the ongoing Level III schemas that do not include them breastfeeding an older baby.

Pro breastfeeding reasons do not share the same consistency in terms of predicting intentions to continue breastfeeding that con breastfeeding reasons do. Level III pro breastfeeding reasons generally appear to have their effect on breastfeeding intentions by

causing Level I and II reasons. Level I pro breastfeeding reasons are consistently, although not always, the stronger pro breastfeeding predictors. Women who have strong breastfeeding schemas bolster their commitment with Level I reasons for continuing to breastfeed. They continue to cite the health benefits and recommendations of health professionals as reasons for breastfeeding more than do mothers who hold less important Level III pro breastfeeding reasons. They are also more comfortable ascribing more importance to Level II pro breastfeeding reasons. Although these Level II reasons had very little predictive value prenatally, they are marginally significant for breastfeeding mothers in postpartum assessments. During prenatal interviews, some women actually decried the presence of some Level II reasons such as the idea that breastfeeding would help get the mother's figure back more quickly. "It's not about me. It's all about the baby," one mother commented. After they have successfully started breastfeeding, however, mothers with strong breastfeeding schemas are more comfortable admitting that they are continuing to breastfeed because of the such personal benefits as convenience, the financial benefits of breastfeeding, or that breastfeeding could actually make it easier to get out of the house.

Another interesting note is that pro breastfeeding reasons assessed at 6 months were not consistently predictive of intentions to continue breastfeeding to 9 months or longer, even at the bivariate level. The mean level of their breastfeeding reasons did not change but, for mothers who were still breastfeeding at 6 months, the strength of their intentions to continue was less dependent on the importance of their pro breastfeeding reasons. Perhaps this is because breastfeeding is almost a habit for these mothers. The meaning of breastfeeding for these mothers has shifted from being an emotionally charged activity to an activity that is part of everyday life. Strong breastfeeding schemas and positive affective



consequences were, in part, responsible for getting mothers to 6 months, but women who are thinking about breastfeeding for 9 months or longer are less motivated to give strong pro breastfeeding reasons to justify their intentions to continue. They have already done what is required of breastfeeding mothers. They have breastfed for the minimum recommended 6 months. Some women have surprised themselves by continuing this long. The Level III pro breastfeeding reasons got them started and helped them continue to 6 months. By this point, then, how comfortable they are with themselves as breastfeeders per se appears to become less important than how uncomfortable they are as breastfeeders of toddlers. If breastfeeding older babies does not make them feel strange, they will probably continue to breastfeed. Future analyses of data still being collected on women with 9 and 12 month old infants will determine whether or not these 6 month intentions are, indeed, predictive of later breastfeeding status.

#### Strengths of the Reasons Model

Dynamic Role of Reasons Predicting Behaviour Over Time. The reasons model was able to predict breastfeeding intentions. However, it should be noted that there was not one single path model that could explain intentions to breastfeed at all stages. The levels of reasons that were important changed as the implications of breastfeeding for the identities of the women in the study changed. This changing pattern points to a strength of the reasons model for understanding health behavioural decision-making. Although pro and con reasons may look like they covary so closely that they can be examined as single constructs, the different levels of reasons take on differing importance depending on the implications of the behaviour for the self-concept of the person in the situation. This may not only be true for breastfeeding, but could also be relevant to other behaviors. In the domain of condom use,

for example, although Level III reasons are the strongest reasons predicting overall condom use in the next month, this pattern may be different for people in committed relationships as compared to people who are beginning new relationships.

The reasons model is, therefore, able to explain dynamic processes and aid our understanding of the ways in which the meaning of behaviours change over time. It helps us consider how the attributions that people make for their behaviour may change as they experience the behaviour itself. People may perceive barriers differently, depending on the ease of their experience with the behaviour. They may consider a behaviour to be more or less effective, depending on their own experiences with the consequences of the behaviour. They may even change their values and their working self-concept regarding the behaviour (Markus & Kunda, 1986) on the basis of having engaged in the behaviour itself. Thus, the reasons model is well-suited to facilitating an examination of the changes over time in the behavioural predictors that matter to individuals, themselves.

Intervention Suggestions. The more fine-tuned evaluation of pro and con reasons afforded by the reasons model could lead to interventions that are tailored to the different situations that individuals might encounter while engaging in a recommended behaviour. For example, the importance of Level III pro breastfeeding reasons prenatally suggests that, to encourage breastfeeding initiation or to increase the propensity of women to breastfeed for longer than 6 months, it may be helpful to engage women in a values clarification exercise. Women could be assisted to identify the ways in which breastfeeding fits with their own benevolent, caregiving values. In order to increase intended duration, it may be especially important to consider how breastfeeding for a year or longer continues to reflect those values. In addition, the importance of Level III con breastfeeding reasons for

intentions to breastfeed from 6 to 9 months suggests that women also need to examine the negative affective reactions they may experience to the idea of breastfeeding an increasingly independent baby. Perhaps they need to meet or be shown video images of mothers breastfeeding older children, in order to desensitize them to the strangeness of this behaviour for themselves.

Women and their partners also need to have accurate information regarding ways to deal with the potential problems of breastfeeding. Problems should not be addressed as “horror stories”: That would likely decrease intentions to breastfeed in the early months. Rather, they need to be addressed as challenges, many of which have solutions. Specific information about common solutions would prepare mothers to deal with the barriers and may decrease the importance of those problems as reasons to stop breastfeeding.

In the early postpartum period, the importance of Level III on breastfeeding reasons suggests that it may be helpful for mothers who are experiencing problems to reframe their frustrations and high levels of negative affect. It is important to recognize how much their frustrations lead to discontinuation of breastfeeding. Interventions need to provide instrumental and informational help to solve breastfeeding problems, but assistance with emotion-focused coping should be a significant part of any intervention if the goal is to help women who are experiencing breastfeeding problems to persevere. It is not enough to attempt to fix the problem. It is also important to discover the meaning of the breastfeeding problem for the woman, as she sees herself, and to understand her emotional reactions to both the problem and the solutions being presented. Such interventions that focus on the multifaceted and multidimensional reactions to breastfeeding, as identified by the reasons model, could result in fewer women stopping because of early breastfeeding problems.

Finally, the importance of Level II con breastfeeding reasons as reasons to stop for women who continue breastfeeding suggests the need to provide these women with an opportunity to plan ways to fit breastfeeding into their lifestyle. They need to be helped to find easy ways to breastfeed their babies and still get out of the house or return to work. They need concrete preparatory information about how to handle teething babies and babies who bite them. They need to know how to prevent and how to cope with the fatigue of ongoing nighttime feedings. By helping women deal with the barriers that ongoing breastfeeding poses to them, it is likely that more women will continue to breastfeed their babies for a year or longer.

Thus, using the reasons model to examine the dynamic processes involved in an evolving behaviour can demonstrate ways in which the focus of interventions should change over time. The patterns of change in these data point to the importance of longitudinal studies. If we want to assist people to maintain recommended behaviours, it is imperative that we know the ways in which the meaning of those behaviours change over time. The predictors of maintenance are not necessarily identical to the predictors of initiation and they will differ depending on the behavioural domain and the type of experience one has with the behaviour. Ongoing research must address these changes in the meaning of behaviour in order to position practitioners to most effectively assist people to engage in and maintain healthful behaviours.

Incorporation of Affect into the Reasons Model. The data in this present study also point to another strength of the reasons model. The reasons model suggests that people consider affect, self-concept, evidence for and against a recommended behaviour, and specific potential or actual consequences of that behaviour and create reasons that explain

how strongly they intend to engage in that behaviour. These data suggest that pregnant women do take into account their happiness and stress levels when deciding on the importance of their breastfeeding reasons. Women who participated in the Infant Feeding Study were fairly happy on average. This general level of happiness may help explain the predominance of pro breastfeeding reasons that were considered by women in the study. One explanation for the overall strength of pro breastfeeding reasons is the current social desirability of breastfeeding for new mothers. Their overall happiness may add to that tendency to focus on pro breastfeeding information. Isen (1997) indicates that happy people are more likely to bring positive information to mind and to elaborate more about positive material. Thus, these happy expectant mothers were predisposed to consider the positive aspects of breastfeeding when asked about their reasons for breastfeeding. Women who were less happy, then, were more likely to be able to focus on the negative and less socially desirable aspects of breastfeeding. Women who were more stressed were also more likely to endorse con breastfeeding reasons as important for themselves. Both happiness and stress levels predicted prenatal breastfeeding intentions over the first few months, but neither construct was consistently able to add to the prediction of breastfeeding intentions over and above the reasons model.

#### Relationship of Demographic Variables to Breastfeeding Intentions and Behaviour

In addition to the reasons model, I also assessed the predictive power of several other variables. In particular, the analyses reported in this paper examined the effects of three demographic variables on breastfeeding intentions. The first, family income, was not related to intentions at all. This may be related to the fact that the categories for annual family income stopped at \$60,000. This artificial ceiling may have reduced the range and

attenuated the relationship between income level and breastfeeding. However, previous studies have identified low income levels to be risk factors for breastfeeding (Agnew, 1994). This study did include a good range of lower income women. Therefore, if lower income was a significant factor predicting breastfeeding intentions, it should have been significant even in the presence of this ceiling effect. Thus, it appears that income was not a significant predictor of breastfeeding in this study.

Maternal age was not a significant predictor of breastfeeding intentions but was predictive of duration. Older women tended to breastfeed longer. However, the effect of age was highly correlated with years of education and was not significant when controlling for education.

Years of education were significantly related to intentions to breastfeed over the first 4 months, but they only predicted intentions to breastfeed over and above the reasons model at 2 months. However, these data suggested that the more education a woman reported was a very significant predictor of breastfeeding duration over the first six months, over and above prenatal intentions to breastfeed. It is unclear why greater levels of education should be direct predictors of breastfeeding behaviour. Perhaps it is because more highly educated women live in a more supportive breastfeeding milieu. Perhaps they are more adept at understanding the complex information that bombards new mothers in the early days. However, it appears that the lower importance that educated women place on breastfeeding reasons does not entirely explain the effect of education on breastfeeding. In addition, more highly educated women do not endorse pro breastfeeding reasons more strongly. More research is needed before we will understand the effects of education on the breastfeeding experience.

## Male Partners

Reasons Predict the Prescriptive Breastfeeding Beliefs of Male Partners. The reasons model has also been shown to be effective at predicting how strongly male partners of pregnant women think their pregnant partners should breastfeed from the time their infants are 4 months old and beyond. How strongly male partners thought their pregnant partners should breastfeed was consistently predicted by Level II con breastfeeding reasons and Level I pro breastfeeding reasons. The values that partners hold about breastfeeding and partners' concerns about the affective responses that their pregnant partners might have to breastfeeding were consistently mediated by these Level I and II reasons.

These male partners seemed to have been responding in a somewhat stereotypic masculine fashion, in that they are more focused on the evidence for breastfeeding and the more concrete negative consequences than on the less tangible Level III reasons involving breastfeeding values and affect. Perhaps this is because men do not have the exposure to the experiences and socialization that help women develop breastfeeding values. Women are socialized to care for babies, and whether or not breastfeeding was part of their vicarious care-giving experiences, the expectation that they will be caring mothers makes breastfeeding an easy fit with their benevolent values. Men have not generally been socialized as caregivers, so they do not have the same strength of values that would support breastfeeding. Male partners, therefore, think about breastfeeding in more instrumental ways. This manifests itself in their concern for the evidence regarding breastfeeding and the negative consequences for their partners. Therefore, male partners who knew the evidence for breastfeeding and deemed it important thought that breastfeeding for 4 months or longer was a positive action and should be done. Conversely, male partners who didn't know the

evidence for breastfeeding or thought it less important were not as strong in their evaluation that their pregnant partners should breastfeed. In addition, male partners who had some knowledge about the possible problems and personal disadvantages of breastfeeding were more likely to translate those concerns into weaker beliefs that their partner should breastfeed for 4 months or longer.

It is interesting to note the similarities between the path models for the reasons model predicting male partners' beliefs about whether participants should breastfeed and the postpartum models for breastfeeding women. It seems as though the male partners were more in tune with the potential effects of Level II reasons on their pregnant partners eventual breastfeeding experiences than were the women in the study. Perhaps, because these male partners were not as emotionally involved in breastfeeding decisions, they may have been able to more objectively prepare for their part in helping mothers cope with the realities of breastfeeding. Preliminary analyses conducted on the social support data suggest that the degree to which breastfeeding women indicate that their partners helped them to continue breastfeeding is related to breastfeeding duration. Women who say their partners are more helpful breastfeed longer than women whose partners are less helpful. Further analyses will examine whether the helpfulness of male partners is related to the degree to which they were prepared for the potential negative consequences of breastfeeding for their pregnant partners.

Partners' Opinions Predict Participants Prenatal Breastfeeding Intentions. It was expected that the decisions of male partners about breastfeeding should affect the breastfeeding intentions of their pregnant partners by causing the development of reasons based on the opinions of their partners. Male partners' breastfeeding reasons and their



prescriptive duration beliefs were correlated with expectant mothers' breastfeeding reasons, most strongly at Level III. It appears that the degree to which women feel good about breastfeeding or worried about breastfeeding may, in part, be a response to their partners' positive or negative messages about breastfeeding. The Level I and II reasons that women give for or against breastfeeding that relate to their partners' opinions are filtered by their own Level III pro and con breastfeeding reasons. These Level I and II reasons are framed in a way that is consistent with their Level III reasons. In many cases, women negate the strength of the importance of reasons that are based on the opinions of others. They believe in breastfeeding as a good thing to do and they don't think it matters what anyone else thinks.

The result of the present study suggests otherwise. Although male partners' prescriptive breastfeeding beliefs were related to expectant mothers' reasons, that was not the only effect that partners had on the breastfeeding intentions of the participants in this study. Male partners' thoughts about whether their female partners should breastfeed for 4 months or longer directly predicted whether or not these expectant mothers intended to breastfeed for that long. Women may not think that their partners affect them, but it appears that women whose partners think they should breastfeed for 4 months or longer are likely to intend to do so and women whose partners do not think they should are less likely to intend to do so. Of course, it is not clear whether these men are influencing their partners or whether they are simply in agreement with them. Some men were actually reluctant to respond to the intentions measures because they insisted that the decision was up to their partner. However, these data suggest that breastfeeding decisions are not just up to the

women. As expected, partners are relevant to that decision, and their relevance seems to be even more important than I expected.

This is an exciting new line of research. How much do partners affect each other's behavioural decisions? Is there something unique about the effect of partners on breastfeeding decisions, or is this a common factor in health behaviour decision-making? There are certainly some domains, such as condom use, in which partners are actually involved in the behaviour and, therefore, likely exert a very powerful effect on intentions and behaviour. Breastfeeding is an act in which the male partner is not involved directly, yet his opinion matters.

Why do male partners appear to have such a strong effect on the breastfeeding decisions of pregnant women? For some men this may be because of the positive implications of breastfeeding for the child that is a part of themselves. They have been convinced that breastfeeding is the best for their baby. For others it may be related to the implications of breastfeeding for their female partner. Men know their partners: They have some idea about how their partners handle difficult situations, and that influences how important they think those problems may be for their partners. They may even be concerned about how such problems may effect their own relationship with their partner. These reasons for and against breastfeeding lead them to interact with women and affect the breastfeeding decision in ways that women don't appear to recognize. Even participants' understanding of their partners' level of approval regarding breastfeeding is not predictive of intentions over and above the reasons model. Partners do influence the decision directly.

Could partners influence other decisions such as intentions to exercise, lose weight, quit smoking, drive safely, or other behavioural choices, over and above their effect on the

“rational” decision-making process represented by the reasons model? How do their verbal and non-verbal messages convey their pleasure or displeasure with the choice being considered? These questions need to be addressed in future research. The main message at this time is that partners must be considered, at least when one desires to understand breastfeeding decisions.

Knowing the importance of interpersonal relationships on health behavioural decision-making could make a great impact on the ability to increase the practice of healthy behaviours. More effort must be made to understand these issues. Most of the research into interpersonal relationships and health has been related to the effects of social support on health behaviour. Yet, these data suggests that close relationship partners may affect health decisions in ways other than the degree to which they provide social support. More attention needs to be paid to the interpersonal processes between partners that encourage or undermine health-related intentions and behaviour. Health researchers and practitioners must become more familiar with the relationships research in order to identify the processes by which interpersonal relationships can affect health decisions. It would also behoove health and relationships researchers to collaborate on research that would examine both the effects of interpersonal relationships on health decisions and the effects of health decisions on interpersonal relationships. Such research is crucial to the broader understanding of the determinants of health behaviour.

#### Theory of Planned Behaviour

The analyses presented in this study support the value of the reasons model as a tool for understanding and predicting individuals’ decisions in the domain of breastfeeding. The final set of results indicated that the reasons model also makes a contribution to these

decisions over and above an existing set of health behaviour decision-making models, the theory of reasoned action and the theory of planned behavior.

Attitudes. Both TRA and TPB were able to significantly predict breastfeeding decisions. The most consistent predictor was breastfeeding attitudes. Attitudes were predictive in every regression predicting prenatal intentions to breastfeed, with the exception of the equation predicting intentions to breastfeed longer than 12 months. It also remained a significant predictor even after the reasons were included in the equations up until the prediction of intentions to breastfeed to 6 months. Women with strong pro breastfeeding attitudes were definitely more likely to intend to breastfeed their young infants.

Subjective Norms. Normative beliefs were much less consistently predictive. Participants' perception of their partners' approval of them breastfeeding was only predictive of intentions to breastfeed to 2 months, and the interaction between their understanding of their partners' approval and its importance to them was predictive of intentions to breastfeed at all and intentions to breastfeed to 2 months. Participants' perceptions of their mothers' approval and the disapproval of their mothers-in-law were predictive of stronger intention to breastfeed for longer than 12 months. This is somewhat inconsistent with the findings of Manstead et al. (1983) and O'Campo et al. (1992), who found that subjective norms were important for the prediction of breastfeeding intentions. Their findings may be an artifact of the ways that subjective norms were calculated in their studies. It appears that both studies calculated subjective norms using the sum of each normative belief multiplied by motivation to comply. I used the more statistically correct procedure of testing the interaction between norms and motivation to comply after entering both as main effects (Evans, 1991; Aiken & West, 1991; Fong & Smith, 1999). However,

the difference in results may also be related to the fact that both the previous studies that utilized TRA to study breastfeeding decisions included many more formula feeders than agreed to take part in this study. A sample of women who were more representatively distributed in their intentions to breastfeed might have provided a different result with respect to the predictive value of subjective norms.

Perceived Behavioural Control. The theory of planned behavior suggests that the addition of perceived behavioural control is necessary to make the prediction of intentions more complete in situations that are not entirely under volitional control. Perceived behavioural control did add significantly to the prediction of intentions to breastfeed at all and intentions to breastfeed for 6 months and longer. These findings support the applicability of TRA in the prediction of breastfeeding intentions. It appears that the strength of intentions to breastfeed in the early months is less responsive to the confidence women hold in their ability to breastfeed no matter what happens. However, the value of confidence becomes important, relative to attitudes and subjective norms, once women consider their decisions to breastfeed longer than 6 months, as well as in the initial breastfeeding decision. If women truly lack self-efficacy regarding their ability to breastfeed, they are less likely to attempt to breastfeed. Conversely, if women are considerably more sure about their ability to breastfeed, especially about their ability to breastfeed for as long as they want, they are more likely to intend to continue for longer periods of time.

Reasons Model Adds Predictive Power to the Theory of Reasoned Action and Theory of Planned Behavior. These variables, however, were not sufficient to predict breastfeeding intentions. The reasons model provided significantly more information that added to the prediction of intentions. Level I reasons were either predictive or marginally

predictive for all intentions with the exception of intentions to breastfeed to 1 month and 6 months. Level II reasons added marginally to the prediction of intentions to breastfeed to 6, 9 and 12 months, and Level III added additionally to the prediction of intentions to breastfeed to 6 months. In the case of con breastfeeding reasons, the pattern of significant predictors was quite similar to that found in the path models for the reasons model. This suggests that the information that the con breastfeeding reasons give about the factors that may make women more reluctant to breastfeed at various time points are not adequately represented in TRA or TPB. The con breastfeeding reasons questionnaire afforded women an opportunity to express some of their negative thoughts about breastfeeding in a way that the measures used to assess TRA and TPB did not. It may have been easier to agree that some con breastfeeding reasons could be a little important as reasons to stop breastfeeding than it was to admit to a somewhat negative attitude toward breastfeeding or that others did not support them breastfeeding. Whatever the cause, these con breastfeeding reasons continued to predict breastfeeding intentions in similar ways even after these intentions had been predicted by TPB.

The same could not be said for pro breastfeeding reasons. Based on the results of the prenatal reasons model analyses, it would have been expected that Level III pro breastfeeding reasons should have been strong predictors of intentions even in the presence of the TPB variables. This was not the case. Level I pro breastfeeding reasons had some predictive ability for intentions to breastfeed to 4 months, 9 months, 12 months, and longer but Level III reasons did not add significantly to the prediction of intentions. The presence of Level III reasons did reduce the significance of Level I reasons, but they were not powerful enough to add significant variance to the equations. This is probably due to the

strong effect of attitudes on breastfeeding intentions and the correlation of the generally positive breastfeeding attitudes with Level III pro breastfeeding reasons.

These findings might cause one to suggest that Level III pro breastfeeding reasons are not important, as long as breastfeeding attitudes are known. However, attitudes measure a global construct. It is good to know that women have an over-riding good feeling about breastfeeding, but, in order to intervene, it is important to know why that feeling exists. Fishbein and Ajzen suggest that one answers that question by assessing behavioural beliefs about the behaviour in question. I submit that the importance of these behavioural beliefs is simply another way of asking for reasons for and against the behaviour. The reasons model has shown that knowing reasons provides much, albeit not all, of the information in TRA and TPB, and is a relatively complete way of addressing the ways in which women make their breastfeeding decisions. Many possible items were removed from the BRQ in order to make the questionnaire short enough to be practical. A more complete list of the reasons for and against breastfeeding could actually allow the reasons model to completely subsume the constructs of TRA and TPB.

#### Value of the Reasons Model

In summary, the data from the present study have shown that the reasons model provided an excellent framework for improving our understanding of breastfeeding decisions. My test of reasons model has demonstrated the importance of knowing the attributions that people make for their own behaviour. These data have shown that reasons are not simply post-hoc explanations for behavioural decisions. People can and do formulate reasons for and against their decisions that significantly predict their behaviour. In particular, these data have shown that the importance that people place on value-relevant,

affective, schema-related reasons is integral to their behavioural decisions. How people think about themselves affects their behavioural intentions. Moreover, the degree to which a recommended behaviour such as breastfeeding fits with their values and their understanding of themselves affects the ways in which people view the evidence for and against a behaviour and the barriers and benefits of that behaviour for themselves. Ultimately, all three levels of reasons function together to help determine the behavioural choices that people will make.

The reasons model also makes an important contribution to our understanding of decision-making processes by bridging the gap between qualitative and quantitative research methods. This model explicitly focuses on the ways in which people understand their own behaviour. The best way to identify the reasons people give for their behaviour is through qualitative research. It is important to ask individuals who are contemplating, engaging in, and have discontinued engaging in recommended health behaviours the reasons behind their decisions. The reasons model provides a way to structure the abundance of reasons that people are capable of generating to explain their behavioural decisions and makes these qualitatively identified reasons amenable to analysis with quantitative methods. This marriage of qualitative and quantitative research methods implicit in the reasons model bridges the gap between these two important approaches to understanding behaviour.

The utility of the reasons model has now been demonstrated in two disparate domains. It has previously been shown that this model can predict condom use intentions and behaviour. I have now demonstrated that the reasons model can also predict breastfeeding intentions and behaviour over time. I have shown that the reasons model can identify the dynamic changes in the meaning of a behaviour over time and the ways in



which those changes affect intentions and behaviour. I have also demonstrated that the reasons model can reflect the contribution of other important constructs such as happiness and stress to behavioural decisions. Moreover, I have shown that the reasons that people give for their own behaviour, as framed by the reasons model, have predictive value over and above the popular and well-supported theory of planned behaviour.

I submit, therefore, that the reasons model must be considered to be an important decision-making model. It is the only model that explicitly respects the value of individuals' own understanding of their behavioural choices. It is the only model that explicitly focuses on the value and meaning of those choices for individuals as they really see themselves. Thus, the reasons model stands alone as a model of decision-making. I submit that the reasons model can be broadly applied to many potential domains in which individuals must make significant behavioural decisions. By understanding the reasons that individuals give for and against their own behavioural decisions, researchers and practitioners will be in a much better position to assist individuals to make and maintain choices that will promote their own health and the health of those they love.

## References

Agnew, T. (1994). Breastfeeding support. Ottawa, ON: Health Canada; Minister of Supply and Services Canada.

Aiken, L. S., & West, S. G. (1991). Multiple regression: Testing and interpreting interactions. Newbury Park, CA: Sage Publications, Inc.

Ajzen, I. (1991). The theory of planned behavior. Organizational Behavior and Human Decision Processes, 50, 172-211.

Ball-Rokeach, S. J., Rokeach, M., & Grube, J. W. (1984). The great American values test: Influencing behavior and belief through television. New York: The Free Press.

Baranowski, T., Bee, D. E., Rassin, D. K., Richardson, J. C., Brown, J. P., Guenther, N., & Nader, P. R. (1983). Social support, social influence, ethnicity and the breastfeeding decision. Social Science and Medicine, 17, 1599-1611.

Bauchner, H., Leventhal, J. M., & Shapiro, E. D. (1986). Studies of breast-feeding and infections: How good is the evidence? Journal of the American Medical Association, 256, 887-892.

Beaudry, M., & Aucoin-Larade, L. (1989). Who breastfeeds in New Brunswick, when and why? Canadian Journal of Public Health, 80, 166-172.

Bourgoin, G., & Lahaie, N. (1996, June). Factors influencing the duration breastfeeding in the regional municipality of Sudbury. Public Health and Epidemiological Reports for Ontario, 297-300.

Bryant, C. A. (1982) The impact of kin, friend and neighbor networks on infant feeding practices. Social Science and Medicine, 16, 1757-1765.

Buxton, K. E., Gielen, A. C., Faden, R. R., Brown, C. H., Paige, D. M., & Chwalow, A. J. (1991) Women intending to breastfeed: Predictors of early infant feeding experiences. American Journal of Preventive Medicine, 7, 101-107.

Canadian Pediatric Society Nutrition Committee (1979). Infant Feeding. Canadian Journal of Public Health, 70, 376-384.

Cohen, S. Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. Journal of Health and Social Behavior, 24, 385-396.

Cunningham, A. S., Jelliffe, D. B., & Jelliffe, E. F. P. (1991). Breast-feeding and health in the 1980's: A global epidemiologic review. The Journal of Pediatrics, 118, 659-666.

Dix, D. N., (1991) Why women decide not to breastfeed. Birth, 18, 222-225.

Dusdieker, L. B., Booth, B. M., Seals, B. F., & Ekwo, E. E.. (1995) Investigation of a model for the initiation of breastfeeding in primigravida women. Social Science and Medicine, 20, 695-703.

Ellis, D. J. (1981) Breastfeeding: Cultivating conducive attitudes. Canadian Journal of Public Health, 72, 319-322.

Evans, M. G. (1991) The problem of analyzing multiplicative composites: Interactions revisited. American Psychologist, 46, 6-15.

Farrow, J. E. (1992). Reasons for continuing and intentions to quit smoking. Unpublished master's thesis, University of Waterloo, Waterloo, Ontario, Canada.

Ferris, A. M., McCabe, L. T., Allen L. H., & Pelto, G. H. (1987). Biological and sociocultural determinants of successful Lactation among women in eastern Connecticut. Journal of the American Dietetic Association, 87, 316-321.

Fisbein, M., & Ajzen, I. (1975). Belief, attitude, intention and behavior: An introduction to theory and research. Reading, MA: Addison-Wesley.

Fong, G. T., & Meichenbaum, D. (1995). Applying the reasons model to understanding smoking and exercise. Unpublished manuscript, University of Waterloo.

Fong, G.T., & Smith, P.M. (1999). The problem of calculating beliefs as multiplicative composites in the theory of reasoned action. Unpublished manuscript, University of Waterloo.

Freed, G. L., Fraley, J. K., & Schanler, R. J. (1992). Attitudes of Expectant Fathers Regarding Breast-Feeding. Pediatrics, 90, 224-225.

Freed, G. L., Fraley, J. K., & Schanler, R. J. (1993). Accuracy of expectant mothers' predictions of fathers' attitudes regarding breast-feeding. The Journal of Family Practice, 37, 148-152.

Grossman, L. K., Fitzsimmons, S. M., Larsen-Alexander, J. B., Sachs, L., & Harter, C. (1990). The infant feeding decision in low and upper income women. Clinical Pediatrics, 29, 30-37.

Hall, P. A., & Fong, G. T. (1999, March). The influence of time perspective on health-relevant decision making processes. Poster session presented at the twentieth annual meeting of the Society of Behavioral Medicine, San Diego, CA

Isaacs, S., & Litwak, N. (1996, September). Wellington-Dufferin Guelph Health Unit Breastfeeding Survey - November, 1995. PHERO, 115 - 117.

Isen, A. M. (1997). Affect, attitudes, and motivation. In W. M. Goldstein, & R. M. Hogarth, (Eds.), Research on Judgement and decision making: Currents, connections, and controversies (pp. 509-534). Cambridge, UK: Cambridge University Press.

Joffe, A., & Radius, S. M. (1987). Breast versus bottle: Correlates of adolescent mothers' infant-feeding practices. Pediatrics, *79*, 689-695.

Jones, D. (1987). The choice to breast feed or bottle feed and influences upon that choice: A survey of 1525 mothers. Child: Care, Health and Development, *13*, 75-85.

Katz, D. (1960). The functional approach to the study of attitudes. Public Opinion Quarterly, *24*, 163-204.

Kessler, L. A., Gielen, A. C., Deiner-West, M., & Paige, D. M., (1995). The effect of a woman's significant other on her breastfeeding decision. Journal of Human Lactation, *11*, 103- 109.

Lawrence P. B. (1994). Breast milk: Best source of nutrition for term and preterm infants. Pediatric Clinics of North America, *41*, 925-941.

Layde, P. M., Webster, L. A., Baughman, A. L., Wingo, P. A., Rubin, G. L., & Ory, H. W. (1989). The independent associations of parity, age at first full term pregnancy, and duration of breastfeeding with the risk of breast cancer. Cancer and Steroid Hormone Study Group. Journal of Clinical Epidemiology, *42*, 963-973.

Loughlin, H. H., Clapp-Channing, N. E., Gehlbach, S. H., Pollard, J. C., & McCutchen, T. M. (1985). Pediatrics, *75*, 508-513.

Lowenstein, G. (1996). Out of control: Visceral influences on behavior. Organizational Behavior and Human Decision Processes, *65*, 272-292.

Lyndon, J. E. & Zanna, M. P. (1990). Commitment in the face of adversity: A value-affirmation approach. Journal of Personality and Social Psychology, *58*, 1040-1047.

Maior, G. R., & Olson, J. M. (1994). Value-attitude-behaviour relations: The moderating role of attitude functions. British Journal of Social Psychology, *33*, 301-312.

Maio, G. R., & Olson, J. M. (1995). Relation between values, attitudes, and behavioral intentions: The moderating role of attitude function. Journal of experimental social psychology, 31, 266-285.

Manstead A. S. R., Proffitt, C., & Smart, J. L. (1988) Predicting and understanding mothers' infant-feeding intention and behavior: Testing the theory of reasoned action. Journal of Personality and Social Psychology, 44, 657-671.

Markus, H., & Kunda, Z. (1986). Stability and malleability of the self-concept. Journal of Personality and Social Psychology, 51, 858-866.

Martin, J. (1978) Infant feeding, 1975: Attitudes and practice in England and Wales. London: JNSO, Office of Population Censuses and Surveys

McNally, E., Hendricks, S., & Horowitz, I. (1985). A look at breast-feeding trends in Canada (1963-1982). Canadian Journal of Public Health, 76, 101-107.

Meichenbaum, D., & Fong, G. T. (1993) How individuals control their own minds: A constructive narrative perspective. In D. M. & J. W. Pennebaker, (Eds.) Handbook of Mental Control. New York: Prentice Hall.

O'Campo, R, Faden, R. R., Gielen, A. C., & Wang, M. C. (1992). Prenatal factors associated with breastfeeding duration: Recommendation for prenatal interventions. Birth, 19, 195-201.

Powell, B. A., Tindale, H. E., Sianchuk, K. A., MacGregor, L. S., & Weidmark, M. D. (1998). An evaluation of Public Health Nurses' Postpartum Services. Waterloo, ON: Regional Municipality of Waterloo, Community Health Department.

Rempel, L. A. (1998). Survey of Breastfeeding Practices of Perth County Mothers--1996. Stratford, ON: Perth District Health Unit.

Rempel, L. A., & Fong, G. T. (1995, June) Abstaining from risky sex: A test of the reasons model. Poster session presented at the Annual Convention of the Canadian Psychological Association, Charlottetowne, PEI.

Rempel, L. A., & Fong, G. T. (1999). Condom Use and Non-use among University Undergraduates: A Cross-sectional and Longitudinal Test of the Reasons Model. Manuscript in preparation.

Rohan, M. J., & Zanna, M. P. (1996). Value transmission in families. In C. Seligman, J. M. Olson, & M. P. Zanna, (Eds.), The Ontario Symposium: Vol. 4. The Psychology of Values (pp. 253- 276). Mahwah, NJ: Lawrence Erlbaum Associates, Inc.

Ryan, A. A., Rush, D., Krieger, F. W., Y Lewandowski, G. E. (1991). A comparison of breast-feeding data from the national-surveys-of-family-growth and the Ross-Laboratories mothers surveys. American Journal of Public Health, 81, 1049-1052.

Schwartz, S. H. (1992). Universals in the content and structure of values: Theoretical Advances and empirical tests in 20 countries. Advances in Experimental Social Psychology, 25, 1-65.

Siskind, V., Schofield, F., Rice, D., & Bain, C. (1989). Breast cancer and breastfeeding: results from an Australian case-control study. American Journal of Epidemiology, 130, 229-236.

Stones, M. J., Kozma, A., Hirders, J., Gold, D., Arbuckle, T., & Kolopack, P. (1996). Short Happiness and Affect Research Protocol (SHARP). Social Indicators Research, 37, 75-91.

Thompson, M. M., Zanna, M. P., & Griffin, D. W. (1995). Let's not be indifferent about (attitudinal) ambivalence. In R. E. Petty & J. A. Krosnick(Eds.), Attitude Strength: Antecedents and Consequences Hillsdale, NJ: Erlbaum.

Valaitis, R. K., Ciliska, D. K., Sheeshka, J. D., & Sword, W. A. (1995, September). A survey of infant feeding practices in the regional municipality of Hamilton-Wentworth. Public Health and Epidemiological Reports for Ontario, 233 - 238.

van den Bogaard, C., van den Hoogen, H. J. M., Huygen, F. J. A., & van Weel, C.(1991). The relationship between breast-feeding and early childhood morbidity in a general population. Family Medicine, 23, 510-515.

Weinstein, N. D. (1993). Testing four competing theories of health-protective behavior. Health Psychology, 12, 324-333.

Verhoeve, K., Bell, & Lee-Han (1992). Region of Waterloo Breastfeeding Survey. Waterloo, ON: Regional Municipality of Waterloo, Community Health Department.

West, C. P. (1980) Factors influencing the duration of breast-feeding. Journal of Biosocial Science, 12, 325-331.

World Health Organization (1990). Innocenti declaration on the protection, promotion and support of breastfeeding. Geneva: World Health Organization.

Yeung, D. L., Pennell, M. D., Leung, M., & Hall, J. (1981) Breastfeeding: Prevalence and Influencing Factors. Canadian Journal of Public Health, 72, 323-330.

Zanna, M. P., & Rempel, J. (1988). Attitudes: A new look at an old concept. In D. Bar-Tal & A. Kruglanski (Eds.), The Social Psychology of Knowledge (pp. 315-334). New York: Cambridge University Press.



**Appendix A. Infant Feeding Study Assessment Schedule**

	Prenatal	2 or 4 weeks	6 or 8 weeks	4 months	6 months	Weaned
Reasons	X (X <sup>1</sup> )	X	X	X	X	X
Attitudes	X(X)					
Subjective Norms	X (X)					
Perceived Behavioural Control	X(X)					
Perceived Stress Scale	X(X)					X(X)
Time Perspective Questionnaire	X(X)					
Short Happiness and Affect Research Protocol	X(X)					
Intentions	X(X)	X(X)	X(X)	X(X)		
Mother's and Friends Breastfeeding Experiences	X(X)					
Demographics	X(X)					
Partner Questionnaire	X(X)					
Infant Feeding Behaviour		X(X)	X(X)	X(X)	X(X)	X(X)
Breastfeeding Problems		X(X)	X(X)	X(X)	X(X)	X(X)
Social Support		X(X)	X(X)	X(X)	X(X)	X(X)

<sup>1</sup> Structure interview reasons assessment.

**Note.** Measures used for Open-ended reasons group at each assessment point are noted in parentheses.

Appendix B.**INFANT FEEDING STUDY****Questionnaire for  
Expectant Mothers**

This study has been approved by the Office of Human Research and Animal Care at the University of Waterloo and the Region of Waterloo Community Health Department Research and Evaluation Committee. Answers will only be used to help the researchers understand how women make decisions about infant feeding. You may refuse to answer some questions or stop at any time. Your participation in this study will not affect your access to services from the Community Health Department or other agencies now or in the future.

Your answers will be kept confidential. Your name will not be attached to your responses. We will use a code number to identify your questionnaire. The only people who will know your code number are those who are directly involved in the Infant Feeding Study. Answers will be combined with those of other mothers. Individual answers will not be reported to anyone. The combined results may be reported at professional meetings so that people in other areas can also learn something from this study. The data from this study may be provided to other agencies provided that any use of this data is consistent with the original purposes of this study.

If you have any concerns about the ethics of this study, please contact Dr. Susan Sykes, Office of Human Research, University of Waterloo (885-1211, Ext. 6005). If you have any questions about this study, please call the Waterloo Region Community Health Department, 883-2002, Ext. 2009. Leave a message for Maggie Weidmark.

### **Infant Feeding Reasons Questionnaire**

Decisions about infant feeding, especially breastfeeding, are very personal. Every woman has her own reasons for the choices she makes. She has reasons why she may be partly or completely for breastfeeding. She also has reasons why she may be partly or completely against breastfeeding. These reasons help her to decide whether or not to breastfeed. If she breastfeeds, a woman also has her own reasons to stop breastfeeding when the time comes. We want to know your reasons for and against breastfeeding so that we can understand what women think about when they make their infant feeding decisions.

#### **Con Breastfeeding Reasons**

Each woman has some reasons why she is partly or completely against breastfeeding. Even if a woman is completely for breastfeeding, she can recognize that there are some aspects of breastfeeding that are not totally positive. This list contains some of the negative aspects of breastfeeding. They are reasons that some women may give for not breastfeeding. Some of these may be reasons that might lead you to stop breastfeeding. Some of these may be reasons why you may sometimes think that you would rather not breastfeed. Each reason will be read to you. Please tell us how much these reasons have helped you think about why you sometimes might not want to breastfeed or why you might stop breastfeeding. In other words, please tell us how important the following reasons against breastfeeding are to you.

If you never heard of or thought about any reason as a reason against breastfeeding answer with "N". If you have thought about the reason that is read to you but have decided that it is definitely not a reason for you to stop breastfeeding or not to breastfeed, answer with a 0. If the reason that is read is one that might get you to stop breastfeeding or not breastfeed, choose a number from 1 to 5 that says how important that reason is as a reason why you might stop breastfeeding or not breastfeed. The higher the number, the more important the reason is to you.

**N = Never thought about this** as a reason to stop breastfeeding or not breastfeed

**0 = Thought about this but definitely not a reason** to stop breastfeeding or not breastfeed

**1 = Slightly important reason** to stop breastfeeding or not breastfeed

**2 = Somewhat important reason** to stop breastfeeding or not breastfeed

**3 = Fairly important reason** to stop breastfeeding or not breastfeed

**4 = Very important reason** to stop breastfeeding or not breastfeed

**5 = Extremely important reason** to stop breastfeeding or not breastfeed

#### **I might stop breastfeeding or might not breastfeed because:**

- \_\_\_ 1. "My partner wants to be able to feed the baby."  
How important is this as one of your reasons to stop breastfeeding or not to breastfeed?

Please follow the same pattern for each of the rest of the reasons listed. After each reason is read, please say how important the reason is as a reason why you might stop breastfeeding or not breastfeed.

- \_\_\_ 2. "I have family members or friends who don't really support breastfeeding."  
\_\_\_ 3. "I don't know anyone who has been able to breastfeed for long."  
\_\_\_ 4. "Breastmilk can contain substances that might hurt a baby."  
\_\_\_ 5. "I'm not the kind of person who wants to breastfeed so much that I would continue long after other people might think breastfeeding should stop."  
\_\_\_ 6. "Breastfeeding a newborn for a few months is all right, but it would seem strange to keep breastfeeding once my baby gets older than that."  
\_\_\_ 7. "I'm afraid that my baby would bite me when the baby gets teeth."  
\_\_\_ 8. "I want to be able to get out of the house and that is hard to do when you are breastfeeding."  
\_\_\_ 9. "Breastfeeding may be difficult."

- \_\_\_ 10. "I plan to go back to work or school outside my home."
- \_\_\_ 11. "Breastfeeding would not allow me to go on a strict weight-loss diet."
- \_\_\_ 12. "You can't tell how much a breastfed baby drinks."
- \_\_\_ 13. "I might not like the way my body would feel when breastfeeding."
- \_\_\_ 14. "I might not be able to handle it if I had a breastfeeding problem."
- \_\_\_ 15. "Formula is pretty much as good for a baby as breastmilk."
- \_\_\_ 16. "I would feel embarrassed to breastfeed in front of other people."
- \_\_\_ 17. "Sometimes it seems like my partner doesn't want to share my breasts with the baby."
- \_\_\_ 18. "Breastfeeding may be tiring for me."
- \_\_\_ 19. "I may not be able to make enough milk for my baby."
- \_\_\_ 20. "Breastfeeding may make me feel awkward around some people who can't really understand what a breastfeeding mother goes through."
- \_\_\_ 21. "My doctor doesn't really support breastfeeding."
- \_\_\_ 22. "Breastfeeding may make me feel frustrated and unhappy."
- \_\_\_ 23. "I don't have many friends or acquaintances who breastfeed."
- \_\_\_ 24. "I sometimes find it hard to continue doing something that is difficult."
- \_\_\_ 25. "My partner doesn't really support me breastfeeding."
- \_\_\_ 26. "My breasts will look unattractive if I breastfeed."
- \_\_\_ 27. "I have no support person who can give me breastfeeding advice or encourage me if things don't go well."
- \_\_\_ 28. "People do not like to see a woman breastfeed."
- \_\_\_ 29. "Breastfeeding may give me sore breasts or sore nipples."
- \_\_\_ 30. "I'm afraid that my baby might want to breastfeed all the time."
- \_\_\_ 31. "Breastfeeding would not allow me to drink alcohol or smoke as much as I want."
- \_\_\_ 32. "I'm not the type to let a baby tie me down."
- \_\_\_ 33. "I have medical reasons that may prevent me from breastfeeding."

### **Pro Breastfeeding Reasons**

This list has reasons that some women may give for breastfeeding. Some of these may be reasons why you might breastfeed. Please tell us how important the following reasons for breastfeeding are to you.

The response options are the same as the options in the previous scale. Remember to answer with "N" if you have never heard about or thought about a reason as a reason for breastfeeding. Answer with a zero if you have thought about the reason but have decided that it is definitely not a reason that you might use for breastfeeding. If the reason is a reason why you might breastfeed, choose a number from 1 to 5 that says how important that reason is for you.

**N = Never thought about this as a reason for breastfeeding**

**0 = Thought about this reason but definitely not a reason of mine for breastfeeding**

**1 = Slightly important reason of mine for breastfeeding**

**2 = Somewhat important reason of mine for breastfeeding**

**3 = Fairly important reason of mine for breastfeeding**

**4 = Very important reason of mine for breastfeeding**

**5 = Extremely important reason of mine for breastfeeding**

**I might breastfeed because:**

- \_\_\_ 1. "Breastfeeding will save me money because it is cheaper than formula-feeding."  
How important is this as one of your reasons for breastfeeding?

Please follow the same pattern for each of the rest of the reasons listed. After each reason is read, please say how important the reason is as a reason why you may breastfeed.

- \_\_\_ 2. "Breastfed babies have less chance of getting diseases like cancer or diabetes when they get older."  
\_\_\_ 3. "Breastfeeding will make me feel happy."  
\_\_\_ 4. "I have family members or friends who think that breastfeeding is a good idea."  
\_\_\_ 5. "The more months a mother breastfeeds, the better it is for the mother and the baby."  
\_\_\_ 6. "Breastfeeding is part of being a woman."  
\_\_\_ 7. "Breastfeeding will be convenient for me."  
\_\_\_ 8. "Breastfeeding will make my baby feel secure and loved."  
\_\_\_ 9. "Breastfed babies have better speech and language development."  
\_\_\_ 10. "Breastfeeding will make it easier for me to get out of the house."  
\_\_\_ 11. "I will feel very close to my baby when I breastfeed."  
\_\_\_ 12. "Breastfeeding keeps babies healthy."  
\_\_\_ 13. "Mothers who breastfeed have less risk of getting breast and ovarian cancer."  
\_\_\_ 14. "My doctor or midwife supports breastfeeding."  
\_\_\_ 15. "Breastfeeding will let me sleep better."  
\_\_\_ 16. "Breastfeeding is a natural way to feed a baby."  
\_\_\_ 17. "It is important for me to do anything that will be good for my baby, and that includes breastfeeding."  
  
\_\_\_ 18. "My breasts will be more attractive when I breastfeed."  
\_\_\_ 19. "Doctors, nurses, midwives, and prenatal teachers say you should breastfeed."  
\_\_\_ 20. "I have always thought that I would breastfeed when I became a mother."  
\_\_\_ 21. "Breastfed babies are less likely to get allergies."  
\_\_\_ 22. "I've seen family members or friends breastfeed successfully."  
\_\_\_ 23. "I will feel great about myself when I breastfeed."  
\_\_\_ 24. "Breastfed babies are less likely to get ear infections."  
\_\_\_ 25. "Breastfeeding will help me get my figure back more quickly."

### Attitudes

Please choose a number that will tell us how well these words describe breastfeeding for you. For example, if you think breastfeeding is all bad, you would choose 10. If you think that breastfeeding is all good, you would choose 1. If you think that breastfeeding is more good than bad, you would choose a smaller number. If you think that breastfeeding is more bad than good, you would choose a larger number.

Good	1	2	3	4	5	6	7	8	9	10	Bad
Foolish	1	2	3	4	5	6	7	8	9	10	Wise
Pleasant	1	2	3	4	5	6	7	8	9	10	Unpleasant
Negative	1	2	3	4	5	6	7	8	9	10	Positive

### PBC

Please finish the following sentence:

1. "For me to breastfeed will be:

Very easy	Moderately easy	A little easy	In the middle	A little difficult	Moderately difficult	Very difficult
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Please indicate how much you agree with the following statements.

2. "I believe that I can breastfeed for as long as I want."

Strongly disagree	Moderately disagree	Somewhat disagree	In the middle	Somewhat agree	Moderately agree	Strongly agree
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3. How sure are you that you could breastfeed no matter what happens?

Very unsure	Moderately unsure	Somewhat unsure	In the middle	Somewhat sure	Moderately sure	Very sure
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### SN

Use the following scale to indicate how much the people who are important to you approve of you breastfeeding.

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>
<b>Disapprove strongly</b>	<b>Disapprove</b>	<b>Neutral</b>	<b>Approve</b>	<b>Strongly approve</b>	<b>Does not apply</b>

- \_\_\_ 1. Would most people who are important to you approve of you breastfeeding?
- \_\_\_ 2. Would your partner approve of you breastfeeding?
- \_\_\_ 3. Would your mother approve of you breastfeeding?
- \_\_\_ 4. Would your mother-in-law approve of you breastfeeding?
- \_\_\_ 5. Would your friends approve of you breastfeeding?

6. How important to you are your partner's opinions about breastfeeding?

Not at all important	Slightly important	Somewhat important	Very important	Extremely important	Does not apply
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7. How important to you are your mother's opinions about breastfeeding?

Not at all important	Slightly important	Somewhat important	Very important	Extremely important	Does not apply
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8. How important to you are your mother-in-law's opinions about breastfeeding?

Not at all important	Slightly important	Somewhat important	Very important	Extremely important	Does not apply
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9. How important to you are your friend's opinions about breastfeeding?

Not at all important	Slightly important	Somewhat important	Very important	Extremely important	Does not apply
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### **General Information**

The following scales are not specific to breastfeeding. They have to do with more general thoughts and feelings.

### **SHARP**

These questions are about how things have been going for you lately. Please answer "YES" or "NO" to the following.

During the past month, have you felt...

1. \_\_\_ In high spirits?
2. \_\_\_ Particularly content with your life?
3. \_\_\_ Depressed or very unhappy?
4. \_\_\_ Flustered as you didn't know what was expected of you?
5. \_\_\_ Bitter about the way your life has turned out?
6. \_\_\_ Generally satisfied with how your life has turned out?

The next questions have to do with general life experiences. Answer "YES" or "NO" to the following.

1. \_\_\_ I am just as happy as when I was younger.
2. \_\_\_ As I look back on my life, I am fairly well satisfied.
3. \_\_\_ Things are getting worse as I get older.
4. \_\_\_ Little things bother me more this year.
5. \_\_\_ Life is hard for me most of the time.
6. \_\_\_ I am satisfied with my life today.

**STLT**

Consider each of the statements below. Use the following scale to indicate how much you agree or disagree.

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>
<b>Disagree very strongly</b>	<b>Disagree strongly</b>	<b>Disagree</b>	<b>Neutral</b>	<b>Agree</b>	<b>Agree strongly</b>	<b>Agree very strongly</b>

- \_\_\_ 1. I have a defined set of short, intermediate, and long-term goals that I think about when I make decisions in my life.
- \_\_\_ 2. People who know me would describe me as a person who plans for the future.
- \_\_\_ 3. I have a good sense of what my long-term priorities are in life.
- \_\_\_ 4. Living for the moment is more important than planning for the future.
- \_\_\_ 5. Short-term goals are more important to me than long-term goals.
- \_\_\_ 6. I spend a lot more time thinking about today than thinking about the future.
- \_\_\_ 7. I often try to do things that are good for me at the time, even if they are not good for me in the long run.
- \_\_\_ 8. It's really difficult to predict what will happen in the future, so it's more important to focus on today.
- \_\_\_ 9. Living in the here-and-now is better than living for the future.
- \_\_\_ 10. I consider the long-term consequences of an action before I do it.
- \_\_\_ 11. Many people are disappointed in life because they sacrificed their daily enjoyment for a better future that never came.
- \_\_\_ 12. I spend a great deal of time thinking about how my present actions will have an impact on my life later on.
- \_\_\_ 13. "Eat, drink, and be merry, for tomorrow we die" is a good philosophy to follow in life.

**PSS**

The questions in this next scale ask you about your feelings and thoughts during the last month. In each case, you will be asked to indicate how often you felt or thought a certain way. Although some of the questions are similar, there are differences between them and you should treat each one as a separate question. The best approach is to answer each question fairly quickly. That is, don't try to count up the number of times you felt a particular way, but rather indicate the alternative that seems like a reasonable estimate.

For each question choose from the following alternatives:

<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>never</b>	<b>almost never</b>	<b>sometimes</b>	<b>fairly often</b>	<b>very often</b>

- \_\_\_ 1. In the last month, how often have you been upset because of something that happened when you did not expect it?
- \_\_\_ 2. In the last month, how often have you felt that you could not control the important things in your life?
- \_\_\_ 3. In the last month, how often have you felt nervous and "stressed"?
- \_\_\_ 4. In the last month, how often have you dealt successfully with the stresses of daily life?
- \_\_\_ 5. In the last month, how often have you felt that you were effectively coping with important changes that were occurring in your life?
- \_\_\_ 6. In the last month, how often have you felt sure that you could handle your personal problems?



- \_\_\_ 7. In the last month, how often have you felt that things were going the way you wanted?
- \_\_\_ 8. In the last month, how often have you found that you could not cope with all the things that you had to do?
- \_\_\_ 9. In the last month, how often have you been able to control the things that bother you?
- \_\_\_ 10. In the last month, how often have you felt that you could do all the things that needed to be done?
- \_\_\_ 11. In the last month, how often have you been angered because of things that happened that you could not control?
- \_\_\_ 12. In the last month, how often have you found yourself thinking about things that you have to get done?
- \_\_\_ 13. In the last month, how often have you been able to control the way you spend your time?
- \_\_\_ 14. In the last month, how often have you felt that you had so many problems that you could not handle them?

Please answer the next questions to give us additional information about your infant feeding expectations.

1. Do you plan to breastfeed your baby? Yes \_\_\_ No \_\_\_ Maybe \_\_\_

If no or maybe, skip to question 4.

2. How many months do you intend to breastfeed your baby? \_\_\_\_\_

The following questions may seem similar, but are actually somewhat different. They will help us understand your breastfeeding plans more clearly.

3. Choose a number from 0 to 10 that indicates how strongly you **intend** to breastfeed for each of the following time periods. **0** means you definitely **do not** intend to breastfeed for that long. **10** means that you definitely **do** intend to breastfeed for that long. You may choose any number between 0 and 10 if you do not have definite intentions one way or the other.

How strong is your intention to breastfeed at all? \_\_\_\_\_

How strong is your intention to still be breastfeeding when your baby is:

1 month of age? \_\_\_\_\_ 6 months of age? \_\_\_\_\_

2 months of age? \_\_\_\_\_ 9 months of age? \_\_\_\_\_

4 months of age? \_\_\_\_\_ 12 months of age? \_\_\_\_\_

How strongly do you intend to breastfeed for longer than 12 months? \_\_\_\_\_

4. Choose a number from 0 to 100 that tells us how **likely** it is that you will breastfeed for each of the these time periods. Use a 0-100 scale where 0 means definitely not and 100 is absolutely or 100% likely to breastfeed for that long. You can choose any number from 0 to 100.

How likely is it that you will breastfeed at all? \_\_\_\_\_

How likely is it that you will still be breastfeeding when your baby is:

1 month of age? \_\_\_\_\_ 6 months of age? \_\_\_\_\_

2 months of age? \_\_\_\_\_ 9 months of age? \_\_\_\_\_

4 months of age? \_\_\_\_\_ 12 months of age? \_\_\_\_\_

How likely is it that you will breastfeed for longer than 12 months? \_\_\_\_\_

5. Do you plan to:

- |                             |  |                              |   |
|-----------------------------|--|------------------------------|---|
| Breastfeed at all feedings? | Breastfeed and occasionally give breastmilk from a bottle? | Breastfeed and formula feed? | Always pump your breastmilk and feed your baby from a bottle? |
|-----------------------------|--|------------------------------|---|
6. When did you decide whether you would breastfeed your baby?
- |                            |   |  |  |
|----------------------------|---|--|--|
| Before you became pregnant | In the first 3 months of your pregnancy | In the second 3 months of your pregnancy | In the last 3 months of your pregnancy |
|----------------------------|---|--|--|
7. a. How many children did your mother have? \_\_\_\_\_  
 b. How many were breastfed? \_\_\_\_\_ Don't Know \_\_\_\_\_
- If none or don't know, skip to question 9.
- c. Did your mother breastfeed you? Yes \_\_\_\_\_ No \_\_\_\_\_ Don't Know \_\_\_\_\_  
 d. On average, how long did your mother breastfeed her children? \_\_\_\_\_ months Don't know \_\_\_\_\_
8. Was breastfeeding a good or bad experience for your mother?
- |               |          |              |               |               |           |                |            |
|---------------|----------|--------------|---------------|---------------|-----------|----------------|------------|
| Extremely bad | Very bad | Somewhat bad | In the middle | Somewhat good | Very good | Extremely good | Don't know |
|---------------|----------|--------------|---------------|---------------|-----------|----------------|------------|
9. a. How many of your friends are mothers? \_\_\_\_\_  
 b. How many of your friends who are mothers breastfed their babies? \_\_\_\_\_  
 d. On average, how long did most of your friends breastfeed their babies? \_\_\_\_\_ months Don't know \_\_\_\_\_
10. Of those friends who breastfed, how good or bad was breastfeeding for most of them?
- |               |          |              |               |               |           |                |            |
|---------------|----------|--------------|---------------|---------------|-----------|----------------|------------|
| Extremely bad | Very bad | Somewhat bad | In the middle | Somewhat good | Very good | Extremely good | Don't know |
|---------------|----------|--------------|---------------|---------------|-----------|----------------|------------|
11. How good or bad do you expect your breastfeeding experience will be?
- |               |          |              |               |               |           |                |
|---------------|----------|--------------|---------------|---------------|-----------|----------------|
| Extremely bad | Very bad | Somewhat bad | In the middle | Somewhat good | Very good | Extremely good |
|---------------|----------|--------------|---------------|---------------|-----------|----------------|
12. Who will be delivering your baby?
- |              |                  |         |
|--------------|------------------|---------|
| Obstetrician | Family Physician | Midwife |
|--------------|------------------|---------|
13. What is the gender of your family physician? Male \_\_\_\_\_ Female \_\_\_\_\_
14. Approximately how old is your family physician?
- |         |       |       |       |         |
|---------|-------|-------|-------|---------|
| 20 - 29 | 30-39 | 40-49 | 50-59 | over 60 |
|---------|-------|-------|-------|---------|
15. From which sources did you get information about breastfeeding during your pregnancy?
- Books \_\_\_\_\_ ( Specify: \_\_\_\_\_ )  
 Videos \_\_\_\_\_ (Specify: \_\_\_\_\_ )  
 Friends \_\_\_\_\_  
 Family \_\_\_\_\_

Doctor \_\_\_\_\_

Midwife \_\_\_\_\_

Prenatal Class \_\_\_\_\_ (Specify: Community Health Department \_\_\_\_\_; K/W Health Centre \_\_\_\_\_;  
Conestoga College \_\_\_\_\_; Private prenatal class \_\_\_\_\_)

Breastfeeding Class \_\_\_\_\_ (Specify: Cambridge Memorial Hospital \_\_\_\_\_; K/W Health Centre \_\_\_\_\_;  
Conestoga College \_\_\_\_\_; YMCA \_\_\_\_\_)

Breastfeeding Support Site (e.g. Fairview Park Mall) \_\_\_\_\_

La Leche League \_\_\_\_\_

Other \_\_\_\_\_

The final questions will give us general information about the people who take part in this survey. Remember that your name is not attached to this questionnaire.

16. How old are you? \_\_\_\_\_ years

17. How many years of education have you completed? \_\_\_\_\_

18. a. What is your occupation? \_\_\_\_\_

b. Which of the following describes what you are doing now?

\_\_\_ Employed full-time (35 or more hours / week) ?

\_\_\_ Employed part-time ?

\_\_\_ Not working?

\_\_\_ A full-time homemaker?

\_\_\_ A full-time student?

\_\_\_ A part-time student?

19. What is your partner's occupation (if you have a partner)? \_\_\_\_\_

20. What is your family's annual income?

Less than \$6,000	\$6,000- \$11,999	\$12,000- \$19,999	\$20,000- \$29,999	\$30,000- \$39,999	\$40,000- \$49,999	\$50,000- \$59,999	More than \$60,000
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Refused \_\_\_\_\_

21. a. In what country were you born? \_\_\_\_\_

b. In what country were your parents born? \_\_\_\_\_

22. What is your marital status?

Single

Married

Living in  
common law

Separated

Divorced

Widowed

23. How many weeks pregnant are you? \_\_\_\_\_

Thank you for participating in the Infant Feeding Study. We understand that this questionnaire may have made you curious to learn more about breastfeeding or formula feeding. If you want more information, please call the Waterloo Region Community Health Department Healthy Children Info Line, 883-2245, or talk to your doctor or midwife.

## Appendix C. Questions for Prenatal Semi-structured Interview

### **Open-ended Reasons Questionnaire**

The decision whether or not to breastfeed is a very personal one. In her own way, every woman thinks about the reasons why she may choose to breastfeed her baby. Many women also think about why they might quit breastfeeding at some point. We are interested in understanding the different ways that women come to their decisions about breastfeeding.

This survey contains questions about breastfeeding. We want you to tell us how you came to your decision about how you will feed your baby.

1. Please tell me why you might breastfeed your baby. What are all of your reasons for breastfeeding?
2. Now I would like you to tell me why you might not breastfeed your baby. Or, if you intend to breastfeed your baby, I would like you to tell me why you would stop breastfeeding your baby. What are all of your reasons for not breastfeeding or why you might stop breastfeeding?
3. How important was (list back each reason) to your decision about how you would feed your baby?

Thank you for telling me your reasons for your infant feeding decision. It is very helpful to know the reasons that are at the top of your head. However, there may be some reasons you have considered that you have forgotten about or that are less important to you. I would like to explore your reasons with you further by asking you a series of questions.

4. Please tell me what you know about the general benefits of breastfeeding, that is, the good things that breastfeeding does for mothers and babies.
5. I'm going to list back each of the benefits that you mentioned. For each benefit, please tell me how important it has been to your decision about feeding your baby. I realize that you may know something about breastfeeding but not really have considered it as a reason for breastfeeding. So don't feel like you have to say any of these benefits are important just because you mentioned them. Just tell me honestly how much each benefit you know about breastfeeding figured in to your decision about whether or not to breastfeed your baby or how long to breastfeed—that is how important they were.
6. Most women have ideas about what breastfeeding might be like for themselves, if they were to breastfeed. Please tell me how you think breastfeeding might affect you positively.
7. Please tell me how you think breastfeeding might affect you negatively.
8. I'm going to list back each of the ways that you said breastfeeding might affect you, if you were to breastfeed. For each effect, please tell me how important it is for you as a reason whether or not to breastfeed or how long to breastfeed.
9. Some mothers also have ideas about how they might feel emotionally when they breastfeed. How do you think you might feel emotionally when you breastfeed?

10. I am going to list back those feelings that you have identified thinking about. Please tell me how important each one has been to your decision for or against breastfeeding.
11. Breastfeeding is not always easy, and sometimes mothers experience problems with breastfeeding. What problems, if any, do you think you might have if you breastfeed?
12. I am going to list back the problems you mentioned. Please tell me how much each problem figured in to your decision about how you will feed your baby--that is, how important is it as a reason whether or not to breastfeed or as a reason to stop breastfeeding?
13. What does your partner think about you breastfeeding? How important is that as a reason whether or not to breastfeed or a reason to stop breastfeeding?
14. What do your family members (e.g. mother, father, mother-in-law, sisters, brothers etc.) think about you breastfeeding? How important what they think as a reason whether or not to breastfeed or a reason to stop breastfeeding?
15. What do your friends think about you breastfeeding? How important is that as a reason whether or not to breastfeed or as a reason to stop breastfeeding?
16. What does your doctor think about you breastfeeding? How important is that as a reason whether or not to breastfeed or as a reason to stop breastfeeding?
17. As I have said, your decision about feeding your baby is a personal decision. We know that there are many possible sides to decisions such as this one. We are interested to know whether you feel that your decision about infant feeding represents any deeper or more broadly important issues than just how you will feed your baby. For example, how, if at all, does your decision to breastfeed / not to breastfeed reflect things you think are important in life (or things that you value)?
18. How important has (name each issue) been a reason whether or not to breastfeed or as a reason to stop breastfeeding?
19. Similarly, we want to know if the way you see yourself as a person has affected your decision to breastfeed or formula feed. Perhaps your picture of yourself, your idea of what you are like, or your idea of your strengths or weaknesses has made it easier or harder for you to plan to breastfeed or formula feed your baby. What, if anything, is there about you, personally, that has figured in to your decision about how you intend to feed your baby?
20. How important do you think (name each characteristic) a reason whether or not to breastfeed or as a reason to stop breastfeeding?
21. We are not only interested in how women decide whether to breastfeed or formula feed their babies, but also in how they decide how long they will breastfeed, if they decide to try it. What do you think will determine the length of time that you actually breastfeed?

Thank you for telling us your reasons for your infant decisions. I would now like continue the survey with the questions that you have in the questionnaire package that was sent to you.

## **Appendix D. Post-Weaning Open-ended Interview Questions**

### **Open-ended Reasons Questionnaire**

The decision to discontinue breastfeeding is a very personal one. In her own way, every woman goes through a process of thinking about the reasons why she may choose not to continue breastfeeding her baby. We are interested in understanding the different ways that women come to their decisions about discontinuing breastfeeding.

This survey contains questions about reasons for stopping breastfeeding. Please help us understand your infant feeding decision.

1. Please tell me why you decided to stop breastfeeding your baby. What are all the reasons that have gone into this decision?
2. How important was (list back each reason) to your decision about to stop breastfeeding your baby?

Thank you for telling me your reasons for weaning your baby. It is very helpful to know the reasons that are at the top of your head. However, there may be some reasons you have considered that you have forgotten about or that are less important to you. I would like to explore your breastfeeding experience and your reasons for weaning with you further by asking you a series of questions.

3. Breastfeeding often affects women both positively and negatively. Please tell me how breastfeeding affected you positively.
4. Please tell me how breastfeeding affected you negatively.
8. I'm going to list back each of the ways that you said breastfeeding affected you. For each effect, please tell me how important it has been to your decision to stop breastfeeding your baby.
6. Mothers sometimes talk about the emotions they experience when they breastfeed. How did you feel emotionally when you breastfed?
10. I am going to list back those feelings that you have identified. Please tell me how important each one has been to your decision to stop breastfeeding your baby.
8. We realize that breastfeeding is not always easy, and that some mothers have problems with breastfeeding. What problems did you have when you breastfeed?
12. I am going to list back the problems you mentioned. Please tell me how much each problem figured in to your decision to stop breastfeeding your baby--that is, how important it was.
13. What did your partner think about you breastfeeding? How important was that a reason for your decision to stop breastfeeding your baby?
14. What did your family members (e.g. mother, father, mother-in-law, sisters, brothers) think about you breastfeeding? How important was what they thought as a reason for your decision to stop breastfeeding your baby?

15. What did your friends think about you breastfeeding? How important was that a reason for your decision to stop breastfeeding your baby?
16. What did your doctor think about you breastfeeding? How important was that a reason for your decision to stop breastfeeding your baby?
17. As I have said, your decision about how long to breastfeed your baby is a personal decision. We know that there are many possible sides to decisions such as this one. We are interested to know whether you feel that your decision to stop breastfeeding your baby represented any deeper or more broadly important issues than just how you would feed your baby. For example, how, if at all, did your decision to stop breastfeeding reflect things you think are important in life?
18. How important was (name each issue) to your decision?
19. Similarly, we want to know if the way you see yourself as a person affected your decision to stop breastfeeding your baby. Perhaps your picture of yourself, your idea of what you are like, or your idea of your strengths or weaknesses made it easier or harder for you to breastfeed your baby. What, if anything, is there about you, personally, that figured in to your decision to stop breastfeeding your baby?

I would like to continue the interview by asking the questions from the questionnaire for discontinued breastfeeders. Please refer to your copy of the questionnaire.

Appendix E Partner Questionnaire

**INFANT FEEDING STUDY**

**Questionnaire for  
Expectant Fathers**

This study has been approved by the Office of Human Research and Animal Care at the University of Waterloo and the Region of Waterloo Community Health Department Research and Evaluation Committee. Answers will only be used to help the researchers understand how women make decisions about infant feeding. You may refuse to answer some questions or stop at any time. Your participation in this study will not affect your access to services from the Community Health Department or other agencies now or in the future.

Your answers will be kept confidential. Your name will not be attached to your responses. We will use a code number to identify your questionnaire. The only people who will know your code number are those who are directly involved in the Infant Feeding Study. Answers will be combined with those of other mothers. Individual answers will not be reported to anyone. The combined results may be reported at professional meetings so that people in other areas can also learn something from this study. The data from this study may be provided to other agencies provided that any use of this data is consistent with the original purposes of this study.

If you have any concerns about the ethics of this study, please contact Dr. Susan Sykes, Office of Human Research, University of Waterloo (885-1211, Ext. 6005). If you have any questions about this study, please call the Waterloo Region Community Health Department, 883-2002, Ext. 2009. Leave a message for Maggie Weidmark.



### **Infant Feeding Reasons Questionnaire**

Decisions about infant feeding, especially breastfeeding, are very important for pregnant women. We want to understand how women make their infant feeding decisions. Because of your importance in your partner's life, we think that knowing what you think about breastfeeding could help us do a better job of understanding what women like your partner think about when they make their infant feeding decisions. Every man has his own reasons for the way he thinks about issues like infant feeding. He has reasons why he may be partly or completely for breastfeeding. He also has reasons why he may be partly or completely against breastfeeding. These reasons help him to decide whether or not he thinks that his partner should breastfeed. If he thinks his partner should breastfeed, a man also has his own reasons why he thinks his partner should stop breastfeeding when the time comes. We want to know your reasons for and against breastfeeding so that we can understand what partners think about infant feeding decisions.

#### **Con Breastfeeding Reasons**

Each person has some reasons why he is partly or completely against breastfeeding. Even if a person is completely for breastfeeding, he can recognize that there are some aspects of breastfeeding that are not totally positive. This list contains some of the negative aspects of breastfeeding. Some of these may be reasons that you think should lead your partner to stop breastfeeding. Some of these may be reasons why you sometimes think that you would rather not have your partner breastfeed. Each reason will be read to you. Please tell us how much these reasons have helped you think about why you sometimes might not want your partner to breastfeed or why you might think she should stop breastfeeding. In other words, please tell us how important the following reasons against breastfeeding are to you.

If you never heard of or thought about any reason as a reason against breastfeeding answer with "N". If you have thought about the reason that is read to you but have decided that it is definitely not a reason for your partner to stop breastfeeding or not to breastfeed, answer with a 0. If the reason that is read is one that you think should get your partner to stop breastfeeding or not breastfeed, choose a number from 1 to 5 that says how important that reason is as a reason why you think she should stop breastfeeding or not breastfeed. The higher the number, the more important the reason is to you.

**N = Never thought about this** as a reason to stop breastfeeding or not breastfeed

**0 = Thought about this but definitely not a reason** to stop breastfeeding or not breastfeed

**1 = Slightly important reason** to stop breastfeeding or not breastfeed

**2 = Somewhat important reason** to stop breastfeeding or not breastfeed

**3 = Fairly important reason** to stop breastfeeding or not breastfeed

**4 = Very important reason** to stop breastfeeding or not breastfeed

**5 = Extremely important reason** to stop breastfeeding or not breastfeed

**I sometimes think my partner should stop breastfeeding or should not breastfeed because:**

- \_\_\_ 1. "I want to be able to feed the baby."  
How important is this as one of your reasons for thinking that your partner should not breastfeed?

Please follow the same pattern for each of the rest of the reasons listed. After each reason is read, please say how important the reason is as a reason why your partner should perhaps stop breastfeeding or not breastfeed.

- \_\_\_ 2. "I have family members or friends who don't really support breastfeeding."  
\_\_\_ 3. "We don't know anyone who has been able to breastfeed for long."  
\_\_\_ 4. "Breastmilk can contain substances that might hurt a baby."  
\_\_\_ 5. "I'm not the kind of person who wants my partner to breastfeed so much that I would want her to continue long after other people might think breastfeeding should stop."  
\_\_\_ 6. "Breastfeeding a newborn for a few months is all right, but it would seem strange for my partner to keep breastfeeding once my baby gets older than that."

- 7. "I'm afraid that my baby would bite my partner when the baby gets teeth."
- 8. "My partner wants to be able to get out of the house and that is hard to do when you are breastfeeding."
- 9. "Breastfeeding may be difficult."
- 10. "My partner plans to go back to work or school outside my home."
- 11. "Breastfeeding would not allow my partner to go on a strict weight-loss diet."
- 12. "You can't tell how much a breastfed baby drinks."
- 13. "I might not like it if my partner's breasts leaked during lovemaking."
- 14. "My partner might not be able to handle it if she had a breastfeeding problem."
- 15. "Formula is pretty much as good for a baby as breastmilk."
- 16. "I would feel embarrassed if my partner was to breastfeed in front of other people."
- 17. "Sometimes I don't want to share my partner's breasts with the baby."
- 18. "Breastfeeding may be tiring for my partner."
- 19. "My partner may not be able to make enough milk for my baby."
- 20. "Breastfeeding may make my partner feel awkward around some people who can't really understand what a breastfeeding mother goes through."
- 21. "My partner's doctor doesn't really support breastfeeding."
- 22. "Breastfeeding may make my partner feel frustrated and unhappy."
- 23. "We don't have many friends or acquaintances who breastfeed."
- 24. "My partner sometimes find it hard to continue doing something that is difficult."
- 25. "My partner's breasts will look unattractive if she breastfeeds."
- 26. "My partner has no support person who can give her breastfeeding advice or encourage her if things don't go well."
- 27. "People do not like to see a woman breastfeed."
- 28. "Breastfeeding may give my partner sore breasts or sore nipples."
- 29. "I'm afraid that my baby might want to breastfeed all the time."
- 30. "Breastfeeding would not allow my partner to drink alcohol or smoke as much as she wants."
- 31. "My partner is not the type to let a baby tie her down."
- 32. "My partner has medical reasons that may prevent her from breastfeeding."

#### **Pro Breastfeeding Reasons**

This list has reasons for breastfeeding. Some of these may be reasons why you might think that your partner should breastfeed. Please tell us how important the following reasons for breastfeeding are to you.

The response options are the same as the options in the previous scale. Remember to answer with "N" if you have never heard about or thought about a reason as a reason for breastfeeding. Answer with a zero if you have thought about the reason but have decided that it is definitely not a reason that you might use for thinking that your partner should breastfeed. If the reason is a reason why you think your partner should possibly breastfeed, choose a number from 1 to 5 that says how important that reason is for you.

**I think that my partner should breastfeed because:**

- 1. "Breastfeeding will save me money because it is cheaper than formula-feeding."

How important is this as one of your reasons for thinking that your partner should possibly breastfeed?

Please follow the same pattern for each of the rest of the reasons listed. After each reason is read, please say how important the reason is as a reason why you think your partner should possibly breastfeed.

- \_\_\_ 2. "Breastfed babies have less chance of getting diseases like cancer or diabetes when they get older."
- \_\_\_ 3. "Breastfeeding will make my partner feel happy."
- \_\_\_ 4. "I have family members or friends who think that breastfeeding is a good idea."
- \_\_\_ 5. "The more months a mother breastfeeds, the better it is for the mother and the baby."
- \_\_\_ 6. "Breastfeeding is part of being a woman."
- \_\_\_ 7. "Breastfeeding will be convenient for me and my partner."
- \_\_\_ 8. "Breastfeeding will make my baby feel secure and loved."
- \_\_\_ 9. "Breastfed babies have better speech and language development."
- \_\_\_ 10. "Breastfeeding will make it easier for my partner to get out of the house."
- \_\_\_ 11. "My partner will feel very close to our baby when she breastfeeds."
- \_\_\_ 12. "Breastfeeding keeps babies healthy."
- \_\_\_ 13. "Mothers who breastfeed have less risk of getting breast and ovarian cancer."
- \_\_\_ 14. "My partner's doctor or midwife supports breastfeeding."
- \_\_\_ 15. "Breastfeeding will let my partner sleep better."
- \_\_\_ 16. "Breastfeeding is a natural way to feed a baby."
- \_\_\_ 17. "It is important for me to do anything that will be good for my baby and that includes my partner breastfeeding."
- \_\_\_ 18. "My partner's breasts will be more attractive when she breastfeeds."
- \_\_\_ 19. "Doctors, nurses, midwives, and prenatal teachers say you should breastfeed."
- \_\_\_ 20. "I have always thought that my partner would breastfeed when she became a mother."
- \_\_\_ 21. "Breastfed babies are less likely to get allergies."
- \_\_\_ 22. "I've seen family members or friends breastfeed successfully."
- \_\_\_ 23. "My partner will feel great about herself when she breastfeeds."
- \_\_\_ 24. "Breastfed babies are less likely to get ear infections."
- \_\_\_ 25. "Breastfeeding will help my partner get her figure back more quickly."

### Attitudes

Please choose a number that will tell us how well these words describe breastfeeding for you. For example, if you think breastfeeding is all bad, you would choose 10. If you think that breastfeeding is all good, you would choose 1. If you think that breastfeeding is more good than bad, you would choose a smaller number. If you think that breastfeeding is more bad than good, you would choose a larger number.

Good	1	2	3	4	5	6	7	8	9	10	Bad
Foolish	1	2	3	4	5	6	7	8	9	10	Wise
Pleasant	1	2	3	4	5	6	7	8	9	10	Unpleasant

Negative      1      2      3      4      5      6      7      8      9      10      Positive

### SN

Use the following scale to indicate how much the people who are important to you approve of breastfeeding.

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>
<b>Disapprove strongly</b>	<b>Disapprove</b>	<b>Neutral</b>	<b>Approve</b>	<b>Strongly approve</b>	<b>Does not apply</b>

\_\_\_ 1. Would most people who are important to you approve of your partner breastfeeding?

\_\_\_ 2. Would your mother approve of your partner breastfeeding?

\_\_\_ 3. Would your friends approve of your partner breastfeeding?

4. How important to you are your mother's opinions about breastfeeding?

Not at all important	Slightly important	Somewhat important	Very important	Extremely important	Does not apply
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5. How important to you are your friend's opinions about breastfeeding

Not at all important	Slightly important	Somewhat important	Very important	Extremely important	Does not apply
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### General Information

The following scales are not specific to breastfeeding. They have to do with more general thoughts and feelings.

### STLT

Consider each of the statements below. Use the following scale to indicate how much you agree or disagree.

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>
<b>Disagree very strongly</b>	<b>Disagree strongly</b>	<b>Disagree</b>	<b>Neutral</b>	<b>Agree</b>	<b>Agree strongly</b>	<b>Agree very strongly</b>

\_\_\_ 1. I have a defined set of short, intermediate, and long-term goals that I think about when I make decisions in my life.

\_\_\_ 2. People who know me would describe me as a person who plans for the future.

\_\_\_ 3. I have a good sense of what my long-term priorities are in life.

\_\_\_ 4. Living for the moment is more important than planning for the future.

\_\_\_ 5. Short-term goals are more important to me than long-term goals.

\_\_\_ 6. I spend a lot more time thinking about today than thinking about the future.

\_\_\_ 7. I often try to do things that are good for me at the time, even if they are not good for me in the long run.

- \_\_\_ 8. It's really difficult to predict what will happen in the future, so it's more important to focus on today.
- \_\_\_ 9. Living in the here-and-now is better than living for the future.
- \_\_\_ 10. I consider the long-term consequences of an action before I do it.
- \_\_\_ 11. Many people are disappointed in life because they sacrificed their daily enjoyment for a better future that never came.
- \_\_\_ 12. I spend a great deal of time thinking about how my present actions will have an impact on my life later on.
- \_\_\_ 13. "Eat, drink, and be merry, for tomorrow we die" is a good philosophy to follow in life.

### SHARP

These questions are about how things have been going for you lately. Please answer "YES" or "NO" to the following.

During the past month, have you felt...

1. \_\_\_ In high spirits?
2. \_\_\_ Particularly content with your life?
3. \_\_\_ Depressed or very unhappy?
4. \_\_\_ Flustered as you didn't know what was expected of you?
5. \_\_\_ Bitter about the way your life has turned out?
6. \_\_\_ Generally satisfied with how your life has turned out?

The next questions have to do with general life experiences. Answer "YES" or "NO" to the following.

1. \_\_\_ I am just as happy as when I was younger.
2. \_\_\_ As I look back on my life, I am fairly well satisfied.
3. \_\_\_ Things are getting worse as I get older.
4. \_\_\_ Little things bother me more this year.
5. \_\_\_ Life is hard for me most of the time.
6. \_\_\_ I am satisfied with my life today.

### PSS

The questions in this next scale ask you about your feelings and thoughts during the last month. In each case, you will be asked to indicate how often you felt or thought a certain way. Although some of the questions are similar, there are differences between them and you should treat each one as a separate question. The best approach is to answer each question fairly quickly. That is, don't try to count up the number of times you felt a particular way, but rather indicate the alternative that seems like a reasonable estimate.

For each question choose from the following alternatives:

0	1	2	3	4
never	almost never	sometimes	fairly often	very often

- \_\_\_ 1. In the last month, how often have you been upset because of something that happened when you did not expect it?

- \_\_\_ 2. In the last month, how often have you felt that you could not control the important things in your life?
- \_\_\_ 3. In the last month, how often have you felt nervous and "stressed"?
- \_\_\_ 4. In the last month, how often have you dealt successfully with the stresses of daily life?
- \_\_\_ 5. In the last month, how often have you felt that you were effectively coping with important changes that were occurring in your life?
- \_\_\_ 6. In the last month, how often have you felt sure that you could handle your personal problems?
- \_\_\_ 7. In the last month, how often have you felt that things were going the way you wanted?
- \_\_\_ 8. In the last month, how often have you found that you could not cope with all the things that you had to do?
- \_\_\_ 9. In the last month, how often have you been able to control the things that bother you?
- \_\_\_ 10. In the last month, how often have you felt that you could do all the things that needed to be done?
- \_\_\_ 11. In the last month, how often have you been angered because of things that happened that you could not control?
- \_\_\_ 12. In the last month, how often have you found yourself thinking about things that you have to get done?
- \_\_\_ 13. In the last month, how often have you been able to control the way you spend your time?
- \_\_\_ 14. In the last month, how often have you felt that you had so many problems that you could not handle them?

Please answer the next questions to give us additional information about your thoughts about infant feeding.

1. Do you think your partner should breastfeed your baby? Yes \_\_\_ No \_\_\_ Maybe \_\_\_

If no or maybe, skip to question 4.

2. How many months do you think she should breastfeed your baby? \_\_\_\_\_

The following questions may seem similar, but are actually somewhat different. They will help us understand your thoughts about breastfeeding more clearly.

3. Choose a number from 0 to 10 that indicates how strongly you think your partner should breastfeed for each of the following time periods. **0** means you definitely **do not** think she should breastfeed for that long. **10** means that you definitely **do** think she should breastfeed for that long. You may choose any number between 0 and 10 if you do not have definite thoughts one way or the other.

How strongly do you think your partner should breastfeed at all? \_\_\_\_\_

How strongly do you think your partner should still be breastfeeding when your baby is:

1 month of age? \_\_\_\_\_ 6 months of age? \_\_\_\_\_

2 months of age? \_\_\_\_\_ 9 months of age? \_\_\_\_\_

4 months of age? \_\_\_\_\_ 12 months of age? \_\_\_\_\_

How strongly do you think your partner should breastfeed for longer than 12 months? \_\_\_\_\_

4. Choose a number from 0 to 100 that tells us how **likely** it is that your partner will breastfeed for each of the these time periods. Use a 0-100 scale where 0 means definitely not and 100 is absolutely or 100% likely to breastfeed for that long. You can choose any number from 0 to 100.

How likely is it that your partner will breastfeed at all? \_\_\_\_\_

How likely is it that your partner will still be breastfeeding when your baby is:

1 month of age? \_\_\_\_\_ 6 months of age? \_\_\_\_\_

2 months of age? \_\_\_\_\_ 9 months of age? \_\_\_\_\_

4 months of age? \_\_\_\_\_ 12 months of age? \_\_\_\_\_

How likely is it that your partner will breastfeed for longer than 12 months? \_\_\_\_\_

5. a. How many children did your mother have? \_\_\_\_\_  
 b. How many were breastfed? \_\_\_\_\_ Don't Know \_\_\_\_\_

If none or don't know, skip to question 7.

c. Did your mother breastfeed you? Yes \_\_\_\_\_ No \_\_\_\_\_ Don't Know \_\_\_\_\_

d. On average, how long did your mother breastfeed her children? \_\_\_\_\_ months Don't know \_\_\_\_\_

6. Was breastfeeding a good or bad experience for your mother?

Extremely bad    Very bad    Somewhat bad    In the middle    Somewhat good    Very good    Extremely good    Don't know

7. a. How many of your friends are mothers? \_\_\_\_\_  
 b. How many of your friends who are mothers breastfed their babies? \_\_\_\_\_  
 d. On average, how long did most of your friends breastfeed their babies? \_\_\_\_\_ months Don't know \_\_\_\_\_

8. Of those friends who breastfed, how good or bad was breastfeeding for most of them?

Extremely bad    Very bad    Somewhat bad    In the middle    Somewhat good    Very good    Extremely good    Don't know

9. How good or bad do you expect your partner's breastfeeding experience will be?

Extremely bad    Very bad    Somewhat bad    In the middle    Somewhat good    Very good    Extremely good

10. From which sources did you get information about breastfeeding during this pregnancy?

Books \_\_\_\_\_ (Specify: \_\_\_\_\_)

Videos \_\_\_\_\_ (Specify: \_\_\_\_\_)

Friends \_\_\_\_\_

Family \_\_\_\_\_

Doctor \_\_\_\_\_

Midwife \_\_\_\_\_

Prenatal Class \_\_\_\_\_ (Specify: Community Health Department \_\_\_\_\_ ; K/W Health Centre \_\_\_\_\_ ;  
 Conestoga College \_\_\_\_\_ ; Private prenatal class \_\_\_\_\_)

Breastfeeding Class \_\_\_\_\_ (Specify: Cambridge Memorial Hospital \_\_\_\_\_ ; K/W Health Centre \_\_\_\_\_ ;  
Conestoga College \_\_\_\_\_ ; YMCA \_\_\_\_\_ ;

Breastfeeding Support Site (e.g. Fairview Park Mall) \_\_\_\_\_  
La Leche League \_\_\_\_\_  
Other \_\_\_\_\_

The final questions will give us general information about the people who take part in this survey. Remember that your name is not attached to this questionnaire.

11. How old are you? \_\_\_\_\_ years
12. How many years of education have you completed? \_\_\_\_\_
13. a. What is your occupation? \_\_\_\_\_
- b. Which of the following describes what you are doing now?
  - \_\_\_ Employed full-time (35 or more hours / week) ?
  - \_\_\_ Employed part-time ?
  - \_\_\_ Not working?
  - \_\_\_ A full-time homemaker?
  - \_\_\_ A full-time student?
  - \_\_\_ A part-time student?
14. a. In what country were you born? \_\_\_\_\_
- b. In what country were your parents born? \_\_\_\_\_

Thank you for participating in the Infant Feeding Study. We understand that this questionnaire may have made you curious to learn more about breastfeeding or formula feeding. If you want more information, please call the Waterloo Region Community Health Department Healthy Children Info Line, 883-2245, or talk to your partner's doctor or midwife.



## Appendix F. Postnatal Questionnaire for Breastfeeding Mothers

### **Infant Feeding Reasons Questionnaire**

Decisions about infant feeding, especially breastfeeding, are very personal. Every woman has her own reasons for the choices she makes. She has reasons why she may be partly or completely for breastfeeding. She also has reasons why she may be partly or completely against breastfeeding. These reasons help her to decide whether or not to breastfeed. If she breastfeeds, a woman also has her own reasons to stop breastfeeding when the time comes. We want to know your reasons for and against breastfeeding so that we can understand what women think about when they make their infant feeding decisions.

#### **Con Breastfeeding Reasons**

Each woman has some reasons why she is partly or completely against breastfeeding. Even if a woman is completely for breastfeeding, she can recognize that there are some aspects of breastfeeding that are not totally positive. This list contains some of the negative aspects of breastfeeding. They are reasons that some women may give for not breastfeeding. Some of these may be reasons that might lead you to stop breastfeeding. Some of these may be reasons why you may sometimes think that you would rather not breastfeed. Each reason will be read to you. Please tell us how much these reasons have helped you think about why you sometimes might not want to breastfeed or why you might stop breastfeeding. In other words, please tell us how important the following reasons against breastfeeding are to you.

If you never heard of or thought about any reason as a reason against breastfeeding answer with "N". If you have thought about the reason that is read to you but have decided that it is definitely not a reason for you to stop breastfeeding, answer with a 0. If the reason that is read is one that might get you to stop breastfeeding, choose a number from 1 to 5 that says how important that reason is as a reason why you might stop breastfeeding. The higher the number, the more important the reason is to you.

**N = Never thought about this as a reason to stop breastfeeding**

**0 = Thought about this but definitely not a reason to stop breastfeeding**

**1 = Slightly important reason to stop breastfeeding**

**2 = Somewhat important reason to stop breastfeeding**

**3 = Fairly important reason to stop breastfeeding**

**4 = Very important reason to stop breastfeeding**

**5 = Extremely important reason to stop breastfeeding**

**I might stop breastfeeding because:**

- \_\_\_ 1. "My partner wants to be able to feed the baby."  
How important is this as one of your reasons to stop breastfeeding?

Please follow the same pattern for each of the rest of the reasons listed. After each reason is read, please say how important the reason is as a reason why you might stop breastfeeding.

- \_\_\_ 2. "I have family members or friends who don't really support breastfeeding."  
\_\_\_ 3. "I don't know anyone who has been able to breastfeed for long."  
\_\_\_ 4. "Breastmilk can contain substances that might hurt a baby."  
\_\_\_ 5. "I'm not the kind of person who wants to breastfeed so much that I would continue long after other people might think breastfeeding should stop."  
\_\_\_ 6. "Breastfeeding a newborn for a few months is all right, but it would seem strange to keep breastfeeding once my baby gets older than that."  
\_\_\_ 7. "I'm afraid that my baby would bite me when the baby gets teeth."  
\_\_\_ 8. "I want to be able to get out of the house and that is hard to do when you are breastfeeding."

- 9. "Breastfeeding is difficult."
- 10. "I plan to go back to work or school outside my home."
- 11. "Breastfeeding does not allow me to go on a strict weight-loss diet."
- 12. "You can't tell how much a breastfed baby drinks."
- 13. "I do not always like the way my body feels when I am breastfeeding."
- 14. "I might not be able to handle it if I have a breastfeeding problem."
- 15. "Formula is pretty much as good for a baby as breastmilk."
- 16. "I feel embarrassed to breastfeed in front of other people."
- 17. "Sometimes it seems like my partner doesn't want to share my breasts with the baby."
- 18. "Breastfeeding is tiring for me."
- 19. "I may not be able to make enough milk for my baby."
- 20. "Breastfeeding makes me feel awkward around some people who can't really understand what a breastfeeding mother goes through."
- 21. "My doctor doesn't really support breastfeeding."
- 22. "Breastfeeding makes me feel frustrated and unhappy."
- 23. "I don't have many friends or acquaintances who breastfeed."
- 24. "I sometimes find it hard to continue doing something that is difficult."
- 25. "My partner doesn't really support me breastfeeding."
- 26. "My breasts will look unattractive if I continue to breastfeed."
- 27. "I have no support person who can give me breastfeeding advice or encourage me if things don't go well."
- 28. "People do not like to see a woman breastfeed."
- 29. "Breastfeeding may give me (or has given me) sore breasts or sore nipples."
- 30. "My baby seems to want to breastfeed all the time."
- 31. "Breastfeeding does not allow me to drink alcohol or smoke as much as I want."
- 32. "I'm not the type to let a baby tie me down."
- 33. "I have medical reasons that may prevent me from continuing to breastfeed."

### **Pro Breastfeeding Reasons**

This list has reasons that some women may give for breastfeeding. Some of these may be reasons why you might continue to breastfeed. Please tell us how important the following reasons for breastfeeding are to you.

The response options are the same as the options in the previous scale. Remember to answer with "N" if you have never heard about or thought about a reason as a reason for breastfeeding. Answer with a zero if you have thought about the reason but have decided that it is definitely not a reason that you might use for breastfeeding. If the reason is a reason why you might breastfeed, choose a number from 1 to 5 that says how important that reason is for you.

**N = Never thought about this as a reason for breastfeeding**

**0 = Thought about this reason but definitely not a reason of mine for breastfeeding**

**1 = Slightly important reason of mine for breastfeeding**

**2 = Somewhat important reason of mine for breastfeeding**

**3 = Fairly important reason of mine for breastfeeding**

**4 = Very important reason of mine for breastfeeding**

**5 = Extremely important reason of mine for breastfeeding**

**I might continue to breastfeed because:**

- \_\_\_ 1. "Breastfeeding saves me money because it is cheaper than formula-feeding."  
How important is this as one of your reasons for breastfeeding?

Please follow the same pattern for each of the rest of the reasons listed. After each reason is read, please say how important the reason is as a reason why you may continue to breastfeed.

- \_\_\_ 2. "Breastfed babies have less chance of getting diseases like cancer or diabetes when they get older."  
\_\_\_ 3. "Breastfeeding makes me feel happy."  
\_\_\_ 4. "I have family members or friends who think that breastfeeding is a good idea."  
\_\_\_ 5. "The more months a mother breastfeeds, the better it is for the mother and the baby."  
\_\_\_ 6. "Breastfeeding is part of being a woman."  
\_\_\_ 7. "Breastfeeding is convenient for me."  
\_\_\_ 8. "Breastfeeding makes my baby feel secure and loved."  
\_\_\_ 9. "Breastfed babies have better speech and language development."  
\_\_\_ 10. "Breastfeeding makes it easier for me to get out of the house."  
\_\_\_ 11. "I feel very close to my baby when I breastfeed."  
\_\_\_ 12. "Breastfeeding keeps babies healthy."  
\_\_\_ 13. "Mothers who breastfeed have less risk of getting breast and ovarian cancer."  
\_\_\_ 14. "My doctor or midwife supports breastfeeding."  
\_\_\_ 15. "Breastfeeding lets me sleep better."  
\_\_\_ 16. "Breastfeeding is a natural way to feed a baby."  
\_\_\_ 17. "It is important for me to do anything that is good for my baby and that includes breastfeeding."  
\_\_\_ 18. "My breasts are more attractive when I breastfeed."  
\_\_\_ 19. "Doctors, nurses, midwives, and prenatal teachers say you should breastfeed."  
\_\_\_ 20. "I have always thought that I would breastfeed when I became a mother."  
\_\_\_ 21. "Breastfed babies are less likely to get allergies."  
\_\_\_ 22. "I've seen family members or friends breastfeed successfully."  
\_\_\_ 23. "I feel great about myself when I breastfeed."  
\_\_\_ 24. "Breastfed babies are less likely to get ear infections."  
\_\_\_ 25. "Breastfeeding will help me (or has helped me) get my figure back more quickly."

## PSS

The questions in this next scale ask you about your feelings and thoughts during the last month. In each case, you will be asked to indicate how often you felt or thought a certain way. Although some of the questions are similar, there are differences between them and you should treat each one as a separate question. The best approach is to answer each question fairly quickly. That is, don't try to count up the number of times you felt a particular way, but rather indicate the alternative that seems like a reasonable estimate.

For each question choose from the following alternatives:

<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>never</b>	<b>almost never</b>	<b>sometimes</b>	<b>fairly often</b>	<b>very often</b>

- 
- \_\_\_ 1. In the last month, how often have you been upset because of something that happened when you did not expect it?
- \_\_\_ 2. In the last month, how often have you felt that you could not control the important things in your life?
- \_\_\_ 3. In the last month, how often have you felt nervous and "stressed"?
- \_\_\_ 4. In the last month, how often have you dealt successfully with the stresses of daily life?
- \_\_\_ 5. In the last month, how often have you felt that you were effectively coping with important changes that were occurring in your life?
- \_\_\_ 6. In the last month, how often have you felt sure that you could handle your personal problems?
- \_\_\_ 7. In the last month, how often have you felt that things were going the way you wanted?
- \_\_\_ 8. In the last month, how often have you found that you could not cope with all the things that you had to do?
- \_\_\_ 9. In the last month, how often have you been able to control the things that bother you?
- \_\_\_ 10. In the last month, how often have you felt that you could do all the things that needed to be done?
- \_\_\_ 11. In the last month, how often have you been angered because of things that happened that you could not control?
- \_\_\_ 12. In the last month, how often have you found yourself thinking about things that you have to get done?
- \_\_\_ 13. In the last month, how often have you been able to control the way you spend your time?
- \_\_\_ 14. In the last month, how often have you felt that you had so many problems that you could not handle them?

### Infant Feeding Behavior

1. Overall, how successful do you think your breastfeeding experience has been?

Extremely Unsuccessful	Very Unsuccessful	Somewhat Unsuccessful	In the middle	Somewhat Successful	Very Successful	Extremely Successful
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2. How many months do you intend to breastfeed your baby? \_\_\_\_\_

3. Choose a number from 0 to 10 that indicates how strongly you **intend** to breastfeed for each of the following time periods. **0** means you definitely **do not** intend to breastfeed for that long. **10** means that you definitely **do** intend to breastfeed for that long. You may choose any number between 0 and 10 if you do not have definite intentions one way or the other.

How strong is your intention to still be breastfeeding when your baby is:

1 month of age? _____	6 months of age? _____
2 months of age? _____	9 months of age? _____
4 months of age? _____	12 months of age? _____

How strongly do you intend to breastfeed for longer than 12 months? \_\_\_\_\_

4. Choose a number from 0 to 100 that tells us how **likely** it is that you will breastfeed for each of the these time periods. Use a 0-100 scale where 0 means definitely not and 100 is absolutely or 100% likely to breastfeed for that long. You can choose any number from 0 to 100.

How likely is it that you will still be breastfeeding when your baby is:

1 month of age? _____	6 months of age? _____
2 months of age? _____	9 months of age? _____
4 months of age? _____	12 months of age? _____

How likely is it that you will breastfeed for longer than 12 months? \_\_\_\_\_

4. a. On average, how many times a day (24 hours) do you breastfeed your baby? \_\_\_\_\_

b. How often (if at all) does your baby get any kind milk from a bottle?

Never	Less than once per week	Once or more per week	Daily (Specify number of times / day _____)
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c. What do you feed your baby, other than breastmilk?

Water \_\_\_\_\_  
 Sugar water \_\_\_\_\_  
 Juice \_\_\_\_\_  
 Vitamins \_\_\_\_\_  
 Commercial Infant Formula \_\_\_\_\_  
 Cow's Milk \_\_\_\_\_ (Specify: Whole \_\_\_\_; 2% \_\_\_\_; Skim \_\_\_\_)  
 Solid Foods (e.g. pablum or baby food) \_\_\_\_\_  
 Other \_\_\_\_\_ (Specify: \_\_\_\_\_)

If baby has had no other milk go to question 6.

d. Over the last week what percent of milk has your baby received from the following sources? (The numbers should total to 100.)

Breastmilk from the breast \_\_\_\_\_ %

Breastmilk from a bottle \_\_\_\_\_ %

Formula \_\_\_\_\_ %

Cow's milk \_\_\_\_\_ %

e. How old was your baby when you first gave formula or cow's milk? \_\_\_\_\_ weeks / months

If baby has not had solid foods, go to question 7.

6. How old was your baby when you began to give solid foods? \_\_\_\_\_ weeks / months

7. Which of the following problems have you experienced since the last time you took part in this study?

Engorgement \_\_\_\_\_

Too much let-down \_\_\_\_\_

Nipple pain \_\_\_\_\_

Thrush \_\_\_\_\_

Cracked nipples \_\_\_\_\_

Slow weight gain \_\_\_\_\_

Breast infection or plugged ducts \_\_\_\_\_

Sleepy baby \_\_\_\_\_

Hospitalized baby \_\_\_\_\_

Fussy baby \_\_\_\_\_

Baby not getting enough milk \_\_\_\_\_

Jaundice \_\_\_\_\_

Poor latch / suck \_\_\_\_\_

Other \_\_\_\_\_

8. a. Did you work or go to school outside of your home before your baby was born? Yes \_\_\_ No \_\_\_

If yes:

b. How likely is it that you will go to work or school outside of your home now that you have a baby?

Definitely

Probably

Maybe

Maybe not

Probably not

Definitely not

c. If you do return to work or school, how old will your baby be? \_\_\_\_\_ months

9. Since the last time you took part in this study, how much have the following people helped you to continue breastfeeding?

Your partner:

Extremely much

Very much

Moderately

Some

Very little

Not at all

Your mother

Extremely much

Very much

Moderately

Some

Very little

Not at all

Other family members ( specify: \_\_\_\_\_ )

Extremely much

Very much

Moderately

Some

Very little

Not at all

Friends:

Extremely much

Very much

Moderately

Some

Very little

Not at all

10. Since the last time you took part in this study how many times have you received breastfeeding help or information from each of the following sources? How much did each resource you used help you continue breastfeeding?

a. Healthy Children Info Line: \_\_\_ times

Extremely much    Very much    Moderately    Some    Very little    Not at all

b. Public Health Nurse (Specify: Home visit: \_\_\_ times ; telephone visit: \_\_\_ times )

Extremely much    Very much    Moderately    Some    Very little    Not at all

c. Hospital (Specify: Grand River Hospital : \_\_\_ times ; Cambridge Memorial Hospital: \_\_\_ times )

Extremely much    Very much    Moderately    Some    Very little    Not at all

d. La Leche League: \_\_\_ times

Extremely much    Very much    Moderately    Some    Very little    Not at all

e. Doctor: \_\_\_ times

Extremely much    Very much    Moderately    Some    Very little    Not at all

f. Midwife: \_\_\_ times

Extremely much    Very much    Moderately    Some    Very little    Not at all

g. Breastfeeding support site: \_\_\_ times (Specify: Fairview Park Mall \_\_\_; Lang's Farm \_\_\_; Our Place \_\_\_;

Extremely much    Very much    Moderately    Some    Very little    Not at all

h. Books, Videos, or Pamphlets: \_\_\_ times

Extremely much    Very much    Moderately    Some    Very little    Not at all

11. From whom have you received the most breastfeeding support?

---

12. How much did the following kinds of support help you continue to breastfeed?

a. Having someone help with housework, make meals or care for the baby.

Extremely much    Very much    Moderately    Some    Very little    Not at all    Did not get this support

b. Having someone help solve my breastfeeding questions or problems.

Extremely much    Very much    Moderately    Some    Very little    Not at all    Did not get this support

c. Having someone encourage me when things were not going so well.

Extremely much    Very much    Moderately    Some    Very little    Not at all    Did not get this support

d. Having someone encourage me even when things were going well.

Extremely much    Very much    Moderately    Some    Very little    Not at all    Did not get this support

## Appendix G. Recruitment Video Script

**(SCENE OF MOTHER BOTTLE FEEDING BEHIND TITLE)**

**(ME) Pregnancy is an exciting time. When you are pregnant, you experience and learn many new things. You also make many decisions and you want those decisions to be right for you. We would like to find better ways to help future mothers make the decisions that are right for them. But, to do this, we need to know what mothers think, now. We need to know what matters to new mothers; what they feel good about and what they don't like; what they feel confident about and what makes them feel unsure. If you are expecting your first baby, you can help us learn what new mothers think by taking part in a survey study that I am conducting.**

**My name is Lynn Rempel. I am a community health nurse who is currently a full-time graduate student at the University of Waterloo. I am conducting a study about infant feeding decisions along with the (SCENE OF WRCHD SIGN) Child Health Program of the Waterloo Region Community Health Department. (BACK TO ME) I will be using the results from this study to complete my doctoral dissertation in health psychology under the supervision of Dr. Geoffrey Fong. The health department will be using the results to help them make decisions about programs for pregnant women and new mothers like yourselves.**

**Deciding how you will feed your baby is one of the biggest choices you have to make when you are about to have your first baby. Some of you have chosen to feed your baby formula. Some of you have chosen to breastfeed. Some of you are not sure what you will do. We would like to hear from all of you. We will put your ideas together with those of other first time mothers in Waterloo Region to find out how mothers decide about bottle feeding and breastfeeding. To make sure that we don't miss out on your ideas and the ideas of women like you, we need you to take part in our study. Whether you plan to breastfeed or formula feed your baby, we would like you to answer some questions about your infant feeding choice.**

**(SCENE OF PREGNANT WOMAN TALKING ON TELEPHONE WITH SURVEY IN FRONT OF HER). This study has two parts. For the first part of the study we would like you to answer the questions on one survey before your baby is born. If you agree to participate in the study, (SCENE OF MOTHER OPENING MANILA ENVELOPE) a questionnaire package will be sent to your home for you to review. A few days later, a trained interviewer will call you to arrange an interview. Each interview will take about 20 to 30 minutes of your time.**

**(SCENE OF MAN TALKING ON PHONE WITH SURVEY IN FRONT OF HIM). We are also interested in finding out exactly what partners think about breastfeeding and formula feeding. So, if you have a partner, we will also ask that your partner take part in our study. This would mean having your partner complete a survey at around the same time as you do yours. However, we would like you to take part even if your partner does not.**



**(SCENE OF ME WITH QUESTIONNAIRE TALKING TO A BREASTFEEDING MOTHER)** If you breastfeed your baby, we would also like you to participate in the second part of the study. I will visit you at your home once during the first month after your baby is born and we will complete the second interview.

If you continue to breastfeed your baby, an interviewer would call you once every month or two over the next year to ask you questions about breastfeeding. At each time, we will only call you if you were still breastfeeding the last time we called. Although, as a nurse and a mother, I know that this will be a very busy time for you, it is important that we call you several times. This will help us understand your infant feeding decisions much better than if we only talked with you once or twice.

**(POINTS SHOWN ON VIDEO)** This study has been approved by the Office of Human Research and Animal Care at the University of Waterloo and the Region of Waterloo Community Health Department Research and Evaluation Committee. It meets the strictest ethical guidelines. We will only use your answers for the reasons specified. We want you to know that all of your answers will be kept confidential. Your name will not be attached to your responses. We will use a code number to identify your questionnaire. The only people who will know your code number are those who are directly involved in this study. Your answers will be combined with those of other mothers, and your individual answers will not be reported to anyone. You may refuse to answer some question and you may stop being in the study at any time. No person in a position to take care of you before or after you have your baby will know if you helped us with this study or not, so your care will not be affected in any way.

**(SHOW FORMS)** Please refer to the Infant Feeding Study information sheet to review what I have told you in this video. *We would like to talk to each one of you about this exciting opportunity. Please complete the Participant Contact Agreement form so that a researcher from the study can call you to answer your questions and find out if you are willing to take part.* If you do not have the form at this time, please ask the clinic nurse for a copy. **(PREGNANT WOMAN ON PHONE)** I hope you will be able to help us and future new mothers by taking part in our Infant Feeding study. What you think is important to us!

Appendix H. Recruitment Forms

## **INFANT FEEDING STUDY**

**RESEARCHERS FROM  
THE WATERLOO REGION COMMUNITY HEALTH DEPARTMENT  
AND THE UNIVERSITY OF WATERLOO  
WANT TO KNOW HOW WOMEN MAKE THEIR DECISIONS  
ABOUT FORMULA FEEDING AND BREASTFEEDING.**

**THE ONLY WAY WE CAN FIND OUT  
IS IF YOU TELL US!**

This study is being conducted by the Waterloo Region Community Health Department, Healthy Growth and Development Division and Lynn Rempel, a graduate student at the University of Waterloo. Lynn is a community health nurse who is studying for a doctoral degree in health psychology under the supervision of Dr. Geoffrey Fong. Results from this study will be used for Lynn's doctoral dissertation and to help the Community Health Department make decisions about programs for pregnant women and new mothers.

Because we are health care workers who have done a lot of work with new mothers, we know that deciding how you will feed your baby is one of the biggest choices you have to make when you are about to have a baby. Some of you have chosen to feed your baby formula. Some of you have chosen to breastfeed. Some of you are not sure what you will do. We would like to hear from all of you. The more women who take part in this study, the better we will understand how women in general make their infant feeding decisions. Whether you plan to breastfeed or formula feed your baby, we would like you to answer some questions about your infant feeding choice.

It is important for people who help pregnant women and new mothers to have this information. We need to know what matters to you so that we can do our best at meeting your needs. We want to be able to give you the information and support you need to make the infant feeding decisions that are right for you. That is why we need your help.

This study has two parts. For the first part of the study we would like you to answer the questions on one survey before your baby is born. If you decide to participate, a questionnaire package will be sent to your home for you to review. A few days later, a trained interviewer will call you to determine whether you want to participate. She will ask whether you want to answer the survey by telephone or in person at your own home. Each interview will take about 20 to 30 minutes of your time. Interviews will be done at a time that is convenient for you.

We are also interested in finding out exactly what partners think about breastfeeding and formula feeding. So, if you have a partner, we will also ask that your partner take part in our study. This would mean having your partner complete a survey at around the same time as you do yours. However, we would like you to take part even your if partner does not.

If you breastfeed your baby, we would also like you to participate in the second part of the study. You will receive a visit at your home once during the first month after your baby is born for the second interview. We also want to know about what you think about infant feeding as your baby gets older. So, if you continue to breastfeed your baby, we will continue calling you to ask you questions about breastfeeding. We will interview you when your baby is 2, 4, 6, 9, and 12 months old. At each time, we will only call you if you were still breastfeeding the last time we called and if you say we can call again. Although we know that this will be a very busy time for you, it is important that we call you several times. This will help us understand your infant feeding decisions much better than if we only talked you once or twice.

This study has been approved by the Office of Human Research and Animal Care at the University of Waterloo and the Waterloo Region Community Health Department Research and Evaluation Committee. It meets the strictest ethical guidelines. We will only use your answers for the reasons specified. We want you to know that all of your answers will be kept confidential. Your name will not be attached to your responses. We will use a code number to identify your questionnaire. The only people who will know your code number are those who are directly involved in this study. Your answers will be combined with those of other mothers, and your individual answers will not be reported to anyone. You may refuse to answer some question and you may stop being in the study at any time. No person in a position to take care of you before or after you have your baby will know if you helped us with this study or not, so your care will not be affected in any way. If you have any concerns about the ethics of this study, please contact Dr. Susan Sykes, Office of Human Research, University of Waterloo (885-1211, Ext. 6005).

If you have completed the Participant Contact Agreement Form, a researcher with the study will call you to answer your questions about the study and find out whether or not you are willing to take part. You may also call the Child Health Program of the Waterloo Region Community Health Department at 883-2002, Ext. 2909, for more information. Leave a message for Maggie Weidmark, Child Health Program Manager. Thank you in advance for helping us understand the important choices you are making at this exciting time.

We wish you a safe and exciting delivery experience.

Enjoy your journey into parenthood!

## INFANT FEEDING STUDY

### Participant Contact Agreement

Please complete this form to allow a researcher with the Infant Feeding Study to call you. We would like to answer your questions about this study and find out if you are willing to take part.

- I allow a researcher to contact me about the Infant Feeding Study.  
I have been informed that this study meets strict ethical standards. I understand that any information I provide will be confidential and will only be used for the Infant Feeding Study.

\_\_\_\_\_  
Name

\_\_\_\_\_  
Street Address

\_\_\_\_\_  
City

\_\_\_\_\_  
Postal Code

\_\_\_\_\_  
Home Telephone

Are you expecting your first baby?                      Yes \_\_\_\_\_                      No \_\_\_\_\_

What is your expected due date? \_\_\_\_\_

Do you currently have a male partner?                      Yes \_\_\_\_\_                      No \_\_\_\_\_

What is a convenient time of day to call you? Please circle all that apply.

Morning

Afternoon

Evening

Specify times, if desired (for example, you might prefer to limit calls to between 6:00 p.m. and 10:00 p.m.):

\_\_\_\_\_

## INFANT FEEDING STUDY

### Home Visit Interview Consent Form

I \_\_\_\_\_ consent to this home visit as part of my  
**Print Name**

participation in the Infant Feeding study. I understand that I may stop my participation in the study at any time. My signature below verifies that I have agreed to participate in the Infant Feeding Study.

\_\_\_\_\_

**Date**

**Signature**

If you are interested in getting a summary of the results of this study once the study is completed, please write your mailing address in the space below.

\_\_\_\_\_

\_\_\_\_\_

**City or town**

**Postal Code**

## Appendix I. Information Letter for Participants

### **INFANT FEEDING STUDY**

**Dear Expectant Mother:**

**Thank you so much for your interest in the Infant Feeding Study. The purpose of this study is to learn more about how women decide whether to breastfeed or formula feed their babies. This study is being conducted by the Child Health Program of the Waterloo Region Community Health Department and Lynn Rempel, a graduate student at the University of Waterloo. Lynn is a community health nurse who is studying for a doctoral degree in health psychology under the supervision of Dr. Geoffrey Fong. Results from this study will be used for Lynn's doctoral dissertation and may be published so that other researchers can benefit from the things she will learn from you. The Community Health Department will use the results to make decisions about programs for pregnant women and new mothers.**

**Because we are health care workers who have done a lot of work with new mothers, we know that each woman has her own reasons for breastfeeding and for not breastfeeding. We want to know your reasons. We also believe that what partners think about breastfeeding may affect whether or not new mothers breastfeed their babies. We know something about what women think their partners think about breastfeeding but we know very little about what partners really think. So, we also want to know what your partner thinks about breastfeeding.**

**It is important for people who help pregnant women and new mothers to have this information. We need to know what matters to you so that we do can our best at meeting your needs. We want to be able to give new mothers the information and support they need to make the infant feeding decisions that are right for them.**

**In the envelope you will find a questionnaire about your reasons for breastfeeding and not breastfeeding your baby. There are also other questions that will tell us more about you and how you made your infant feeding choice. Please read the questions over and think about your answers. There is a second questionnaire for your partner. Please do not discuss your answers with your partner until after you have completed your first interview.**

**You will get a telephone call from an interviewer with the study in about a week. Please let her know when and how you and your partner would prefer to answer the questionnaire. This can be done over the telephone, in your own home, or you may choose to return the questionnaires to the Community Health Department by mail using the self stick address label you will find in your questionnaire envelope. We want your help, so we will do our best to find the way that is easiest for you.**

**We understand that you may choose not to breastfeed your infant. If you do not breastfeed, you will only answer this one questionnaire. We thank you very much for helping**

us. Your answers are important to us, because we want to be sensitive to the issues around breastfeeding that are important to all new mothers.

On the other hand, if you do breastfeed your baby even once, we will call you again. A researcher will visit you within the first month after your baby is born. She will ask you about your reasons for breastfeeding or not breastfeeding at that time. This visit will only be to talk about the questions in the study. The researcher will not be able to answer any questions about your health or about taking care of your baby.

If you are still breastfeeding when that visit is made, we will call you again during the second month after your baby is born. As long as you continue to breastfeed, you will be called and asked to participate in the survey again. We will call when your baby is 4 months, 6 months, 9 months, and 1 year old. At each time, we will only call you if you were still breastfeeding the last time we called and if you said we could call again. In this way, we can study your breastfeeding stories over time. By talking to you several times, we can get a much better understanding of how you make your infant feeding decisions than if we only talked to you once or twice.

This study has been approved by the Office of Human Research and Animal Care at the University of Waterloo and the Waterloo Region Community Health Department Research and Evaluation Committee and meets the strictest ethical guidelines. We will only use your answers for the reasons specified. We understand that some of the reasons that are important to your thinking about infant feeding may be very personal. We want you to know that all of your answers will be kept confidential. Your name will not be attached to your responses. We will use a code number to identify your questionnaire. The only people who will know your code number are those who are directly involved in this study. Your answers will be combined with those of other new mothers, and your individual answers will not be reported to anyone. There may be some parts of the questionnaire that you do not want to answer. You may refuse to answer some questions. You may also stop being in the study at any time. No person in a position to take care of you before or after you have your baby will know if you helped us with this study. If you have any concerns about the ethics of this study, please contact Dr. Susan Sykes, Office of Human Research, University of Waterloo (885-1211, Ext. 6005).

If you have any questions about the Infant Feeding Study, please call the Waterloo Region Community Health Department, 883-2002, Ext. 2909. Leave a message for Maggie Wiedmark. We hope you enjoy sharing your own reasons for your infant feeding decisions with us. We look forward to the insights you will offer us as you allow us to share in this exciting time in your lives.

Sincerely,

Lynn Rempel, R.N., B.Sc.N., M.A.Sc.  
Principle Investigator,  
Infant Feeding Study

## Appendix J. Information Letter for Partners

### **INFANT FEEDING STUDY**

**Dear Expectant Fathers:**

Thank you so much for your interest in the Infant Feeding Study. The purpose of this study is to learn more about how women decide whether to breastfeed or formula feed their babies. This study is being conducted by the Child Health Program of the Waterloo Region Community Health Department and Lynn Rempel, a graduate student at the University of Waterloo. Lynn is a community health nurse who is studying for a doctoral degree in health psychology under the supervision of Dr. Geoffrey Fong. Results from this study will be used for Lynn's doctoral dissertation and may be published so that other researchers can benefit from the things she will learn from you. The Community Health Department will use the results to make decisions about programs for pregnant women and new mothers.

We would like partners like you to help us understand how women make decisions about feeding their babies. We believe that partners' beliefs about infant feeding may have an effect on new mothers' infant feeding choices. Yet, few researchers have taken the time to find out what men really think about breastfeeding and formula feeding. We think that it is unfair to assume we know what men think about infant feeding without actually asking men, themselves.

It is important for people who help pregnant women and new mothers to have this information. In order to be sensitive and responsive to the needs of pregnant women and new parents, we need to know what matters to them. We want to be able to give mothers the information and support they need to make the infant feeding decisions that are right for them.

In the envelope you will find a questionnaire about your reasons for thinking that your partner should or should not breastfeed your baby. There are also other questions that will tell us more about you and help us understand your answers more clearly. Please read the questions over and think about your answers. Do not discuss the answers with your partner.

You will get a telephone call from an interviewer with the Infant Feeding Study in about a week to arrange an interview. Please let the interviewer know when you prefer to answer the questionnaire. This can be done over the telephone, in your own home, or you may choose to return the questionnaires to the Community Health Department by mail using the self stick address label you will find in your questionnaire envelope. We want your help, so we will do our best to find the way that is easiest for you.



**This study has been approved by the Office of Human Research and Animal Care at the University of Waterloo and the Waterloo Region Community Health Department Research and Evaluation Committee and meets the strictest ethical guidelines. We will only use your answers for the reasons specified. We understand that some of the reasons that are important to your thinking about infant feeding may be very personal. We want you to know that all of your answers will be kept confidential. Your name will not be attached to your responses. We will use a code number to identify your questionnaire. The only people who will know your code number are those who are directly involved in this study. Your answers will be combined with those of other expectant fathers, and your individual answers will not be reported to anyone. There may be some parts of the questionnaire that you do not want to answer. You may refuse to answer some questions. You may also stop being in the study at any time. No person in a position to take care of your partner before or after you have your baby will know if you helped us with this study. Your partner may participate whether or not you choose to take part. If you have any concerns about the ethics of this study, please contact Dr. Susan Sykes, Office of Human Research, University of Waterloo (885-1211, Ext. 6005).**

**If you have any questions about this study, please call the Waterloo Region Community Health Department, 883-2002, Ext. 2909, and leave a message for Maggie Weidmark, Child Health Program supervisor. Thank you so much for taking time to take part in this study. We look forward to the insights you will offer us as you allow us to share in this exciting time in your lives.**

**Sincerely,**

**Lynn Rempel, R.N., B.Sc.N., M.A.Sc.  
Principle Investigator,  
Infant Feeding Study**

## Appendix K. Instructions to Raters

### **Criteria for Reasons Classifications**

The reasons that people give for behavioural decisions in many realms illustrate their ability to explain their behaviour or lack thereof in ways that seem to fit their own experience (Meichenbaum & Fong, 1992). We feel that, although the actual reasons that people give may differ, they may share similar properties. Furthermore, we think that these reasons can be understood as falling into 3 qualitatively different levels of reasons depending on the depth and breadth of the reasons provided. These three levels of reasons are: evidence-based Level I reasons; self-consequential Level II reasons; and affective schema-related Level III reasons. This document explains the way we believe reasons should be classified into the three levels. I will begin with an overview of the model and proceed to provide more specific information and examples that will clarify the differences between the three levels.

#### Overview of the Reasons Model

##### Level I Reasons

The reasons model classifies all reasons into three types, or levels. Level I reasons are evidence-based reasons, that is, those reasons that bear on the evidence for and against a recommended behavior. These reasons are based on the general consequences that could be expected to result from a health behavior. Level I reasons may also include recommendations from authorities such as health professionals based on accepted scientific evidence. On the other hand, scientific evidence may be interpreted by others in a way that supports non-adherence to a recommended behavior. Thus, for example, a heterosexual woman who chooses not to use condoms may reason that she need not use condoms because heterosexuals are at low risk for HIV transmission. Although she may recognize that heterosexuals can contract HIV, she bases her decision, in part, on reports of high HIV infection rates among homosexuals. Whatever its truth value, when forming Level I reasons for non-adherence, people adduce evidence that supports the behavior they are choosing.

##### Level II Reasons

Level II reasons are self-consequential reasons, that is, those reasons that relate to the more specific consequences that a behavior will have on the person making the decision. They include the barriers and benefits that the behavior will present for the person, such as convenience, physical comfort and pleasure, and the maintenance and enhancement of social relationships. Level II reasons are similar to attitudes that fulfill the utilitarian function proposed by Katz (1960), in that they deal with the rewards and punishments that the behavior can engender from the environment (Maio & Olson, 1994). Level II reasons differ from Level I reasons in that, whereas Level I reasons focus on a statement of "fact" that is true for people in general, Level II reasons focus on the relevance of the evidence for the individual.

##### Level III Reasons

Finally, Level III reasons are affective, schema-related reasons, that is, those reasons that focus on the meaning of the behavior for the individual. These reasons represent costs and benefits of behavioral decisions that involve people's core values and self-concepts. They include reasons that express the ways that the behavior reflects individuals as they really see

themselves. Level III reasons reflect the values or "guiding principles" (Schwartz, 1992) that people deem to be important to their decisions about a behavior such as breastfeeding. Other Level III reasons include the emotional consequences of the behavior for the individual. These may include expressions of positive affect such as the comfort, happiness, or security, or strong negative emotions such as fear. Reasons based on such feelings derive from the effect that a behavior has on one's self-identity. These Level III reasons differ from Level II reasons in that they focus on feelings and on the personal relevance of the reason for the individual as she really sees herself.

### Qualitative Differences in Reasons Levels

As the preceding paragraphs have indicated, the three levels of reasons differ in several important ways. The following paragraphs will illustrate the differences in the quality of reasons given at each of the three levels and provide examples of reasons which could be given for various types of behaviours at each level.

#### Depth of importance

The three levels of reasons vary in terms of the depth of their importance. Level I reasons are the most surface reasons. When offering these types of reasons, people are taking a logical stance and citing the evidence as they see it. Someone who is behaving in a recommended way such as not smoking, using condoms for sex or exercising regularly may offer Level I reasons that mirror generally accepted "scientific" evidence. Those who are not adhering to behavioural recommendations, however, may provide evidence that calls "scientific evidence" into question. They may cite the small degree of risk engendered by the non-recommended behavior or the lack of negative consequences that behavior is likely to incur on themselves or others. Thus, a smoker may tell of the relative who lived to a ripe old age despite smoking all his life. Someone who is not dieting as recommended may cite evidence on the negative aspects of weight cycling as a reason for continuing their present eating habits. The reasons may be flawed and driven by errors in thinking and judgment but they represent people's attempts to think about their behavioural decisions in a logical and perhaps emotionally detached way. Level II and III reasons are less evidence driven and are considered to be more important than Level I reasons, with Level III reasons representing the deepest level in importance. This increasing importance is related to the increasing degree of personal relevance of Level II and Level III reasons.

#### Degree of personal relevance

Level I reasons are considered to have minimal personal relevance because they deal with evidence that is true for people in general. Level II and Level III reasons, in contrast, both carry a large element of personal relevance. However, there are differences in the degree of personal relevance between Level II and Level III reasons. Both Level II and III reasons focus on the self but, whereas Level II self-consequential reasons deal with the outward costs, benefits, barriers and advantages to behaviour, schema-related Level III reasons focus on the costs and benefits that are related to a person's core values and self-concept. Level II and Level III reasons may actually have similar content but differ in the degree of the consequences of the reasons for the individual. For example, a person may choose not to exercise because it is hard to maintain an exercise program or he may not exercise because he believes he is not a disciplined person and would never persevere with the exercise program. The first reason is a Level II, because of its focus on the straightforward barrier to exercising.

The second reason is a Level III because it deals with the barrier in terms of the individual's core self-concept.

Level III reasons are schema-related reasons that reflect the way people really think about themselves. A person may see herself as smart, stupid, lovable, distant, responsible, risk-taking, strong-willed, dependent or a host of other possibilities. The way she sees herself can then translate into reasons why she feels she behaves as she does. These reasons may be the expression of the root metaphor that individuals hold about themselves. This leads to reasons that are formed in metaphorical terms, using "like" statements and analogies. "I'd feel like dirt if I screwed around on my partner," "I feel invincible when I am driving fast," "I'll always be a big, ugly blimp," or "I feel like a stud when I can lay a new girl," are examples of metaphorical statements that indicate an aspect of the schema that drives behaviour.

### Affect

**Strength.** Level I reasons carry no affective component. However, Level II and Level III reasons carry differing degrees of affect and the meaning of that affect to the individual. Level III reasons reflect strong, affective responses to a behaviour or the consequences of a behaviour. These could include fear, anxiety, depression, comfort, happiness or security. A fear of failure should one attempt to quit smoking or lose weight are Level III reasons. Smoking as a response to depression or engaging in unsafe sex as a way to feel loved are also examples of this type of Level III reason. Such strong reactions are likely consequences of the importance of the issue for the individual's self-concept. On the other hand, affective responses that focus only on the way the behavioural act is experienced, such as "I enjoy eating", "I enjoy smoking," "I don't like sex with a condom," are Level II reasons. As noted before, these reasons lack the relationship to the schema, core self-concept or root metaphor that is characteristic of Level III reasons.

**Breadth.** Level II and Level III reasons also differ in terms of the breadth of affect ascribed to the reason. For example, a smoker may not quit because she does not like to gain weight, a Level II reason. However, it may be that she is sure that if she gains weight no one will care about her. The displeasure with weight gain is, then, representative of a larger issue and becomes a Level III reason.

### Focus

This difference in terms of breadth of affect is derived, in part from the different foci of Level II and Level III reasons. Level II reasons focus directly on the behavioural act whereas Level III reasons focus on the meaning of the act for the person. For example, if a man does not want to use condoms because sex doesn't feel natural with a condom (it is like having a shower with a raincoat on) he is using a Level II reason because he is focusing directly on the act. On the other hand, a man may say that using a condom is not natural because he can't get a woman pregnant. This is a Level III reason that focuses on the meaning of the act for the individual.

Differences in the types of barriers cited at Levels II and III can also be distinguished by the distinction between the focus on the act and the focus on the meaning of the act for the individual. External barriers, such as the cost of smoking cessation programs, the unavailability of condoms or low fat food or the influence, both perceived and real, of others on behaviour could all translate into Level II reasons. Additionally, internal barriers to a

desired behaviour could also translate into Level II reasons. Those internal barriers that are directly related to the act, such as finding it hard to put a condom on when in the heat of passion or having trouble coping with the cravings of cigarette withdrawal, are also Level II reasons for non-adherence. Internal barriers become Level III reasons when they are described in relation to a characterological trait. If a person states that he can't put a condom on in the heat of passion or cope with cigarette withdrawal because he is a weak person, the internal barriers move into the realm of self-concept and Level III.

#### Relevance to Core Personal Issues

Another distinctive characteristic of Level III reasons is that they may be illustrative of core issues for people. One example of this is the issue of control. Someone may say that he/she continues smoking, drives at high speeds, has sex with multiple partners without using condoms, or eats a high fat diet after having had a heart attack because "No-one is going to tell me what to do with my life!" In other words, the behaviour is done as a way of dealing with an issue that is very important in their lives, that of the amount of control that they will allow others to have over their behaviour. Other core issues may include the person's world-view. A smoker might say, "We're all going to die anyway," or a single mother who is being encouraged to go for job training might reply that "Nothing I can do will improve my lot in life." On the positive side, someone might be willing to attempt a behaviour change because, "Things usually work out for me in the end." Pessimism, fatalism or optimism can be core issues that are used as reasons for or against many behaviours.

#### Synthesis

In general, then, Level III reasons can be seen as the most important, underlying reasons for behaviour. They may be the reasons given to elaborate or explain Level I or II reasons. They may not be readily identified by all people (although it may be possible to get anyone to generate Level III reasons, giving enough probing in a clinical interview). Level I reasons are superficial and detached reasons why a particular course of action should or should not be attempted. Level II reasons are more specific reasons why "I" do or do not want to, can or cannot act in a particular way, but Level III reasons identify the "real" reasons why "I as I really see myself" behave or think I should behave.

### Characteristics Differentiating Level I, Level II and Level III Reasons

	Level I	Level II	Level III
<b>Definition</b>	General consequences that anyone could expect from the behavior	Specific consequences of the behavior for the person making the decision	Consequences of the behavior for the person "as she really sees herself"
<b>Types of content</b>	Scientific or anecdotal evidence; recommendations from professionals or "authorities"	Barriers and benefits; rewards and punishments E.g. Convenience; physical comfort and pleasure; maintenance and enhancement of social relationships	Costs and benefits that involve core values and self-concept Emotional consequences e.g. Happiness, security, fear
<b>Depth of Importance</b>	Surface reasons  Detached, logical presentation of "evidence" (as the person interprets it)	More important reasons  Deal with personal consequences	Deeply important reason  Deal with core personal issues
<b>Degree of Personal Relevance</b>	No real personal relevance	Self-relevant  Deal with outward costs and benefits; barriers and advantages of behavior	Highly self-relevant  Deal with costs and benefits for person's core values and self-concept Reflect the way a person thinks about self Possibly global, personality attributions May be expressed as a metaphor or analogy ("like" statements)

	<b>Level I</b>	<b>Level II</b>	<b>Level III</b>
<b>Affect: Strength</b>	Little or no affective component	Mild or moderate affect Describes the way behavior is experienced Eg. enjoy, pleased/ displeased, like/ dislike	Strong affect Affective consequences of the behavior or the issue Eg. fear, anxiety, depression, comfort, happiness, security, love
<b>Affect: Breadth</b>		Narrow Limited to response to the act	Broader Represents affective responses to other issues of personal relevance
<b>Focus</b>	Impersonal	Focus strictly on the behavioral <u>act</u> Eg. too hard; others will approve/ disapprove	Focus on the <u>meaning</u> of the act for the person May be described in terms of characterological trait Eg. "I am too weak."
<b>Relevance to Core Personal Issues</b>	No apparent relationship to personal issues	No apparent relationship to personal issues	May be illustrative of core personal issues Eg. control issues; optimistic/ pessimistic world view; fatalism

## Appendix L. Reasons Rating Scale with Sample Items

### REASONS RATING SCALE

This questionnaire contains two lists of reasons. The first is a list of con breastfeeding reasons that women may give for not breastfeeding. The second is a list of pro breastfeeding reasons that women may give for breastfeeding. Using the rating scale below, please rate how closely each reason meets the criteria for a Level I, Level II, and Level III reason. Please remember that any one reason is unlikely to exhibit all of the characteristics on which reasons are differentiated. Thus, each reason must be rated according to how closely it meets the criteria for a Level I, Level II, and Level III reason on the basis of those characteristics that it does exhibit.

1	2	3	4	5
Does not meet criteria at all	Slightly similar to criteria	Moderately similar to criteria	Very similar to criteria	Extremely similar to criteria

#### Con Breastfeeding Reasons

**I might not breastfeed because:**

**1. "My partner wants to be able to feed the baby."**

How well does this meet the criteria for a:

Level I reason?	1	2	3	4	5
Level II reason?	1	2	3	4	5
Level III reason?	1	2	3	4	5

#### Pro Breastfeeding Reasons

**I might breastfeed because:**

**1. "Breastfeeding will save me money because it is cheaper than formula-feeding."**

How well does this meet the criteria for a:

Level I reason?	1	2	3	4	5
Level II reason?	1	2	3	4	5
Level III reason?	1	2	3	4	5