Establishing the Construct of Boredom as Distinct From Apathy, Anhedonia and Depression

by

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Abstract

Boredom is a common human experience that has received little attention in the literature. To date, researchers have been unable to agree on a unified theory and definition of the construct. The present study investigated the nature of boredom by exploring its relationship to three phenomenologically similar affective states, namely apathy, anhedonia and depression. Structural equation modeling revealed that although related to apathy, anhedonia and depression to varying degrees, boredom is an empirically distinct construct. Establishing boredom as an independent construct provides an important first step in bringing the field closer to a universally accepted definition of boredom, which will undoubtedly facilitate more effective assessment and treatment of the experience of boredom, particularly in individuals with psychopathological and neuropathological illnesses in which boredom is a pervasive symptom.

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Introduction

Boredom is a pervasive and common human experience that has received very little attention in the literature (Darden & Marks, 1999; Vodanovich, 2003). Although limited, research on the construct of boredom is very diverse. Indeed, boredom has been linked to human factors such as efficiency in the workplace (Eiselt & Marianov, 2008), mental health (Binnema, 2004) and burnout of mental health professionals (Dickinson & Wright, 2008); neurocognitive factors such as vigilance and cognitive fatigue (Pattyn et al., 2008); and personality factors such as self-esteem (Seib & Vodanovich, 1998), emotional awareness (Eastwood et al., 2007; Belton & Priyadharshini, 2007) as well as impulsivity, addiction and sensation seeking (Pettiford et. al., 2007). The role of boredom has been explored within the context of social interactions (Leary et. al., 1986), juvenile delinquency (Newberry & Duncan, 2001), academic achievement (Belton & Priyadharshini, 2007; Goetz, 2007; Ruthig et. al, 2008) and school dropout rates (Wegner et. al., 2008). One obvious consequence of this diversity is the need for a consistent definition of the construct of boredom. In addition, boredom may represent a key component of many psychopathological and neurological disorders ranging from depression to traumatic brain injury (Hamilton et al. 1984; Seel & Kreutzer, 2003: Binemma, 2004, Vodanovich, Verner & Gillbride, 1991; Vodanovich, 2003; Cicerone et al, 2006). The presence of boredom in these disorders may represent a serious impediment to recovery or rehabilitation, therefore a clear definition of the construct and the means by which it can be measured are obviously vital steps in both understanding and treating disorders in which boredom is a core component.

The state of boredom has been described in many different ways by researchers across a wide range of disciplines. For example, Fenichel (1951) described boredom as the experience that results when a drive or desire exists to do something but becomes repressed, leaving the individual with a sense of purposelessness. Similarly, Heidegger (1995) views it as a state of "being held in limbo …both wanting to be 'at home' in the world as a whole, while at the same time recognizing one's fateful separation from it" (Hammer, 2004, p. 282). These theories subscribe to a state of boredom characterized by intentionality whereby an individual wants to engage in the world, but his attempts to do so yield little success. On the other hand, boredom has been conceptualized as a state of indifference, or what has been called 'profound boredom' (Heidegger, 1995). For example, Mills (1959) suggests that boredom is the feeling of having no intention or purpose. In summary, boredom can be characterized in two separate but related ways; the first, an agitated desire to engage in some activity and an inability (temporary or otherwise) to do so, and the second, a kind of apathetic disconnection from ones surroundings. The current social view of boredom encapsulates both of these ideas, as illustrated by the dictionary definition of boredom as "the state of being weary *and* restless through lack of interest" (Merriam-Webster's Online Dictionary; emphasis added).

As researchers have attempted to more fully understand the construct of boredom, various theories have been generated to explain the experience. What emerges from the literature is two distinct types of boredom, namely, situational (state) and dispositional (trait) boredom, which characterize the foci of possible causes of boredom (Belton & Priyadharshini, 2007; Musharbash, 2007). There are those who believe that boredom is

externally driven in that it is the affective result of impoverished external stimuli (Berlyne, 1960; Hebb, 1966; Shaw, 1996; Darden & Marks, 1999; Mikulas & Vodanovich, 1993; Wegner et al. 2007), which often arises out of repetition, (Geiwitz, 1966; Hill & Perkins, 1985; Reid, 1986) and a lack of cognitive skills necessary to intrinsically generate interest (Watson et al., 1994). For example, Darden & Marks (1999) suggest that boredom is "a result of social situations which give an actor either nothing to do in a scene or only activities which seem meaningless to or distant from the actor" (p. 33). Mikulas and Vodanovich (1993) define boredom as "a state of relatively low arousal and dissatisfaction, which is attributed to an inadequately stimulating situation" (p.3). In constrast, other researchers propose that boredom is internally driven (Barbalet, 2000; Binnema, 2004; MacDonald & Holland, 2002; Melton & Schulenberg, 2007; Eastwood et al., 2007; Csikszentmihalyi, 1975; Hamilton, Haier, & Buchsbaum, 1984; Seib & Vodanovich, 1998; Leary et al., 1986; Vodanovich, 2003; Pattyn et al., 2008; Simmel, 2007). Some have described boredom as the result of a general lack of meaning and/or spirituality in life (Barbalet, 2000; MacDonald & Holland, 2002; Binnema, 2004; Melton & Schulenberg, 2007). But more often, it has been conceptualized as an emotional state resulting from inefficient or deficient cognitive or attentional processes (Csikszentmihalyi, 1975; Hamilton, Haier, & Buchsbaum, 1984; Seib & Vodanovich, 1998; Cheyne, Carriere & Smilek, 2006; Eastwood et al., 2007). For example, Leary et al. (1986) propose that boredom is the consequence of how long one is required to maintain attention on a particular stimulus or task. The longer one has to sustain attention on the same task, the more likely they are to become bored. Yet even amongst those who subscribe to an internal attribution of boredom, there is disagreement about whether

boredom is a result of under- or over-stimulation. Some theories suggest that boredom is created by suboptimal levels of cortical arousal (Vodanovich, 2003; Pattyn et al., 2008) while others suggest that overstimulation or "neurasthenia" is the cause (Simmel, 1997; Pattyn et al., 2008). In summary, the conceptualization of boredom is heterogeneous both within and across different areas of research, prohibiting the creation of a universally accepted definition (Vodanovich, 2003).

The absence of a universal definition of boredom has made it difficult to measure and identify the construct. More specifically, there are various instruments available to measure boredom, yet most are limited in the scope of what they actually measure. For example, some scales such as the Leisure Boredome Scale (Iso-Ahola & Weissinger, 1990) have been developed to assess only specific kinds of boredom. The Leisure Boredom Scale measures individual differences in perceptions of boredom only while engaged in leisure activities. Other indices of boredom are subscales of instruments intended as a measure of other, more general constructs. For example, the Zuckerman Sensation Seeking scale (Zuckerman, 1979) includes a Boredom Susceptibility subscale. This subscale has been shown by others to be a poor measure of boredom (Hamilton et al., 1984; Farmer & Sundberg, 1986; Vodanovich, 2003). In sum, many of the smaller subscales (e.g. Zuckerman Boredom Susceptibility) or behaviour specific scales (e.g. Leisure Boredom Scale) are too specific to accurately characterize the subjective experience of boredom.

To date, the only empirically validated, comprehensive tool available that measures the general construct of boredom is the Boredom Proneness Scale (BPS; Farmer & Sundberg, 1986). The BPS is a 28-item self-report questionnaire created to be a

full-scale measure of one's trait susceptibility to the experience of boredom. Individuals respond to statements on a 7-point Likert scale based on how they usually feel. Examples of statements include "It is easy for me to concentrate on my activities" and "It takes more stimulation to get me going than most people". However, the BPS is not without limitations. First, the BPS was created using data from undergraduate students, which limits its generalizability to the public at large (Vodanovich, 2003). Second, the factor structure of the BPS remains unidentified. Across different studies, factor analysis has yielded anything from two to eight factors (see Vodanovich, 2003 for a full review). For example, Ahmed (1990) found evidence for a two-factor structure characterized by apathy and inattention, while Vodonovich & Kass (1990) discovered five factors (i.e., external stimulation, internal stimulation, attention, perception of time and constraint). One study (Vodanovich, Watt & Piotrowski, 1997) even found evidence for eight factors, which suggests that many of those factors only have one or two items from the BPS loading onto it, which is a significant departure from the statistical norm which requires at least five items to load on each factor (Gorsuch, 1983). Consequently, the undefined factor structure of the BPS makes it difficult to define consistent subscales on the BPS, which further impedes the determination of the specific factors that contribute to one's individual experience of boredom (Musharbash, 2007). Moreover, not having a clear understanding of the individual experience of boredom severely limits the meaningful identification of individuals with atypically high boredom levels in real-world settings, and makes it impossible to develop appropriate and effective therapeutic interventions (Binnema, 2004).

In addition, BPS scores are significantly and positively correlated with various affective states including depression, hopelessness, loneliness, negative self-awareness, amotivation, hostility, aggression, and apathy (Farmer & Sundberg, 1986; Ahmed, 1990; Vodanovich et al., 1991; Buss & Perry, 1992; Seib & Vodanovich, 1998; Gordon et al., 1997). Based on the high rate of correlation between boredom and other emotions, two critical questions arise. First, what in fact is the BPS a measure of if its scores are so closely related to other affective states besides boredom? Second, is boredom in fact a distinct affective experience from the other affective states it is highly correlated with? In other words, is the high rate of overlap between boredom and other affective states due to the use of a measurement instrument which contains items that also load onto other affective states, or is the strong relationship between boredom and other affective states in fact a by-product of those states? Boredom is often regarded as a symptom of other syndromes, and to date, the subjective experience of boredom has not been clearly distinguished from other phenomenologically similar affective states.

Three affective states that have similar clinical presentations to boredom are apathy, anhedonia and depression. Apathy is defined as a neuropsychiatric syndrome of primary motivational loss, not attributed to emotional distress, intellectual impairment or diminished level of consciousness (Levy et al., 1998; Marin, 1991). Similarly, anhedonia reflects a relative absence of enjoyment and reduced motivation to engage in pleasurable life activities (American Psychiatric Association, 1994). Although it is commonly thought of as a loss of interest (Lampe et. al., 2000), anhedonia is more aptly defined as the loss of capacity or failure to experience pleasure (Ribot, 1896; Klein, 1974; Meehl, 1987; Snaith, 1993; Leventhal et al., 2006). Conceptually, both anhedonia and apathy are

closely linked to motivation as they are states of primary motivational impairment (Marin, 1990), which makes it difficult to distinguish them from boredom.

Consistently high correlations have been shown between the experience of boredom and depression (Vodanich, 2003; Farmer & Sundberg, 1986). Farmer & Sundberg (1986) propose that although the two constructs have some overlapping symptomatology, they can be differentiated by quality and intensity of mood. In contrast, other research suggests that depression is a primary affective state while boredom is a secondary superficial emotion (e.g. Kemper, 1987). Whether one considers boredom to be a qualitatively distinct emotion from depression or simply a secondary consequence of depression, the challenge of distinguishing boredom from depression remains unresolved.

As a first step to identifying more clearly the construct of boredom the current study explored how the construct of boredom interacts with or is influenced by other related concepts. More specifically, the purpose of the current study was to investigate the nature of boredom by contrasting it with three related constructs which are similar in subjective experience, namely, apathy, anhedonia and depression. While each of these affective states may be considered to have both emotive and motivational contents (which, although distinct, are inextricably related), the purpose here was not to distinguish between these components within the constructs but to examine the relationship between the constructs. By measuring boredom, apathy, anhedonia, and depression, the aim was to statistically distinguish between subjectively similar constructs to determine whether or not boredom is in fact an independent emotional construct. This represents an important first step in enabling a more precise and unified definition of boredom, which will have a great impact on approaches to assessing and treating the

experience of boredom particularly in individuals with psychopathological and neuropathological illnesses (e.g. depression, traumatic brain injury) in which boredom is most pervasive (Hamilton et al. 1984; Seel & Kreutzer, 2003: Binemma, 2004, Vodanovich, Verner & Gillbride, 1991; Vodanovich, 2003; Cicerone et al, 2006).

Method

Participants and Procedure

Eight hundred and twenty three undergraduate students between the ages of 16 and 56 were recruited through the University of Waterloo and York University (males=243, mean (SD) age =20 (3.7) years). Questionnaires were anonymously administered through the on-line study resources of each university, and data from all participants were included in the analysis. The complete study duration was approximately twenty minutes. Participants received course credit or remuneration for their participation. The Office of Research Ethics at the University of Waterloo and York University approved all procedures.

Measures

Boredom. Three established measures were used as indicators of boredom. The 28-item Boredom Proneness Scale (BPS; Farmer & Sundberg, 1986) measures people's general susceptibility to experiencing boredom. Sample items include "It is easy for me to concentrate on my activities" and "It takes more stimulation to get me going than most people", and are rated on a 7-point Likert scale ranging from "strongly disagree" (1) to "strongly agree" (7). Responses are summed to form one total boredom proneness score ranging from 28 to 196, with higher scores indicating greater proneness to the experience of boredom. The 10-item Boredom Coping scale (BC; Hamilton et al, 1984) assesses the ability to cope with boredom. Items are presented in a forced-choice format (e.g. a choice between "I get bored seeing the same old faces" or "I continue to be interested in familiar everyday faces"). Scores are summed to produce a total value

ranging from 0 to 10, with higher scores indicating greater ability to cope with boredom. The 29-item Multidimensional State Boredom Scale (MSBS; Fahlman, et al., in preparation) measures current feelings of boredom on a 7-point Likert scale with left and right anchors of "strongly disagree" and "strongly agree". Boredom is measured across five domains of experience (i.e. inattention, disengagement, agitation, dysphoria and time). Sample items include "Time is passing slower than usual" and "I am easily distracted". Scores are summed to produce a total value ranging from 29-203 with higher scores indicating a higher level of state boredom.

Apathy. The three subscales of the Apathy Evaluation Scale-Self report version (AES-S; Marin et al., 1991) were used as indicators of apathy. The 18-item questionnaire evaluates the presence of apathy across three domains of goal directed behaviour, namely, overt activity, thought content and emotional responsivity, representing the Behaviour, Cognition and Emotion subscales respectively. Sample items include "I am interested in things", and "I get things done during the day", and are rated on a 4-point Likert scale from "not at all" (1) to "a lot" (4) based on how much the statement describes the individual's thoughts, feelings, and activity in the past four weeks. Responses are summed to produce a total value ranging from 18 to 72, or scores can be tabulated within each of the scale's three domains separately. Higher scores indicate higher levels of apathy which are reflective of a lower level of motivation for engaging in life.

Anhedonia. Two established measures were used as indicators of anhedonia. The 14-item Snaith-Hamilton Pleasure Scale (SHAPS; Snaith et al, 1995) measures the capacity to experience pleasure *in the last few days.* Participants rate their agreement with statements (e.g. "I would enjoy my favorite television or radio program") on a 4-point

Likert scale ranging from “strongly disagree” to “strongly agree”. Responses are summed to produce one total value ranging from 0-14, with higher scores indicating greater capacity to experience pleasure. The 36-item Fawcett-Clark Pleasure Capacity Scale (FCPS; Fawcett et al, 1983) measures current ability to experience pleasure. Participants rate how pleasurable they would find certain situations (e.g. “You are listening to beautiful music in peaceful surroundings”) on a 5-point Likert scale ranging from “no pleasure at all”(1) to “extreme and lasting pleasure”(5). Responses to all items are averaged to produce a mean pleasure score ranging from 1 to 5, with higher scores indicating greater capacity to experience pleasure.

Depression. Existence and severity of depression was indicated by the two subscales of the Beck Depression Inventory-II (BDI-II; Beck, Steer, & Brown, 1996), a widely used self-report measure of depression as listed in the American Psychiatric Association's *Diagnostic and Statistical Manual of Mental Disorders* Fourth Edition (DSM-IV; 1994). The BDI is composed of 21 items, each consisting of four self-evaluative statements scored from 0 to 3. Measures of depression are taken across two major domains of symptomatology: somatic-affective, and cognitive, which comprise the two subscales (Beck, Steer & Brown, 1996). An example of the four choice items includes the following: 0, “I don’t feel particularly guilty”; 1, “I feel guilty over many things I have done or should have done”; 2, “I feel quite guilty most of the time”; 3, “I feel guilty all of the time”. A total BDI score ranging from 0 to 63 is calculated by summing the responses from the entire scale. Alternatively, the scale’s two domains can be tabulated separately to produce two subscale scores. Higher scores indicate greater depression severity, with scores of 0 to 13 indicating minimal clinical depression, 14-19

indicating mild clinical depression, 20-28 indicating moderate clinical depression, and 29-63 indicating severe clinical depression (Beck, Steer & Brown, 1996).

Data Analysis

The data was analyzed with structural equation modeling using Amos 7.0 (Arbuckle, 2006). Amos is a statistical analysis program that applies a model to the data to determine if the model provides a plausible account of the data (measured by fit), and to estimate the parameters of that model (for example, the proportion of variance in each measure that is due to its construct, and the correlations among the constructs). Amos operates by accepting a path diagram as a model specification, and then displaying parameter estimates graphically on the path diagram.

To create the present path diagrams in Amos, first the four latent constructs (depicted as ovals; e.g., Figure 2) were entered, with the scales used to measure them placed below (depicted as squares; e.g., Figure 2). Then a path was drawn from each construct to its measures (i.e. indicators) as follows: *Boredom* was indicated by the Boredom Proneness Scale (BP), the Boredom Coping Scale (BC), and the Multidimensional State Boredom Scale (MSB); *Apathy* was indicated by the three subscales of the Apathy Evaluation Scale, namely, Behaviour (Beh), Cognition (Cog), and Emotional Responses (Emo); *Anhedonia* was indicated by the Snaith-Hamilton Pleasure Scale (SHA) and the Fawcett-Clark Pleasure Scale (FCP); *Depression* was indicated by the two subscales of the Beck Depression Inventory-II, namely Somatic-Affective (Sad) and Cognitive (Cd). Error terms (depicted as circles; e.g., Figure 2) were

added to the model to represent the random measurement error present in each of the indicators.

Once the parameter estimates have been calculated for a given model, the model is evaluated to determine how well it fits the data. The measures of fit used here included Chi-Square (χ^2), which is an index of the lack of fit of the model to the data. A model that fit the data perfectly would yield a chi-square of zero; as a model fits the data less well it yields increasing chi-square values. Thus, large values of chi-square suggest that the model is implausible and disconfirmed. However, the chi-square test is very sensitive to sample size, and for a large enough sample, such as the one tested here, the obtained chi-square is often statistically significant even when the model captures the data well. Thus, in addition to reporting the chi-square, it is common to report other fit indices that are less affected by sample size. In the current analysis, the comparative fit index (CFI; Bentler, 1990) and root-mean-square error of approximation (RMSEA; Browne & Cudeck, 1993) were also utilized. Both the CFI and RMSEA index how well the model fits the data. A model with a CFI value greater than .95 and a RMSEA value of less than .08 is considered to fit the data very well (Bentler, 1990; Browne & Cudeck, 1993).

Results

The first step of the current analysis was to explore any gender differences in the measures used in the current study. In order to assess whether the measures were related in the same way in men and women, a test of homogeneity of covariance matrices was conducted using Amos 7.0 (Arbuckle, 2006). This test assesses whether the variances and covariances of all the measures considered as a set, differ between men and women significantly more than what would be expected due to sampling error. The multiple-group model used in Amos for this purpose (Figure 1) sets all variances (labeled as the v's) and all covariances (labeled as the c's) equal across the two genders. Good fit of this model to the data would indicate that the measures were related in the same way across the two genders. In contrast, poor fit of the model to the data would indicate important gender differences. The test of homogeneity of covariance matrices indicated very good fit of the model: χ^2 (55, *N*=823) = 127.641, p<0.001, CFI =.983, RMSEA =.040, probability of close fit (pclose) =.962. The high pclose value indicates a very high probability that this degree of lack of fit would occur due to sampling error alone. Thus, it was established that the variances and covariances were homogeneous for men and women. That is, the measures used in the current study are related in the same way in populations of both men and women.

The next step in the exploration of gender differences was to test the homogeneity of the means. A further restriction was added to the previous multiple-group model: the respective means were set equal across the genders. This further restriction yielded a significant worsening of the fit; $\Delta \chi^2$ (10, *N* = 823) = 103.97, p <0.001. Although this result indicates some degree of differences between the means for men versus women,

the relatively large sample size (N=823) in the current analysis makes this test very powerful, and thus the actual magnitude of the differences must be examined. Table 1 presents the means and standard deviations for the men and the women and provides a *t*-test of each difference in the means. The differences are significant for 8 of the 10 measures, with women scoring higher than men on all measures except those for boredom, on which the two genders showed no consistent difference. Nonetheless, these gender differences are of small magnitude. Thus, men and women were generally reasonably comparable in their means for the various measures.

In summary, because the variances, covariances and means were generally comparable across the two genders, in later analyses there was no reason to pursue the possibility of different structural equation models for the two genders. Table 2 presents the correlations among all the measures, computed across the entire sample, and, on the main diagonal, the coefficient alpha for each measure.

The main analysis in this study examined the relationships between the constructs of boredom, apathy, anhedonia, and depression using a 4-factor structural equation model. If boredom is indeed a construct that is distinct from apathy, anhedonia, and depression, then structural modeling of the data should reveal little relationship if any between it and the other three constructs.

The current model (Figure 2) was evaluated using Amos 7.0 (Arbuckle, 2006). Missing data (which occurred in rare cases when a participant declined to answer an item on a given scale), were included in the analysis using the full information maximum likelihood method (Anderson, 1957; Arbuckle, 2006). Results indicated that the 4-factor model adequately fit the data; χ^2 (29, N = 823) = 259.284, p <0.001, CFI = .946, RMSEA

= .098, pclose <0.001. The RMSEA and pclose, in particular, suggested that the model might be improved substantially. To determine which component of the model was reducing the fit, model modification indices where utilized in Amos. These indicated that there was just one major source of lack of fit in the model, which was the absence of a path from the construct of Boredom to the Behaviour subscale of the AES (Beh). The model was revised to include this path, and the data were reanalyzed. The resulting model (Figure 3) provided a much better fit to the data than the original model, χ^2 (28, N = 823) = 170.88, p <0.001, CFI = 0.967, RMSEA = .079, pclose <0.001. These results indicate that although the Behaviour subscale of the AES was a good measure of apathy, to some extent it was also a measure of the construct of boredom, even when controlling for the relation between the constructs of boredom and apathy.

Because the Behaviour scale of the AES confounds apathy and boredom, it is interesting to estimate a model from which it has been removed. The resulting model (Figure 4) fit the data reasonably well, χ^2 (21, N = 823) = 153.946, p < 0.001, CFI = 0.961, RMSEA = .088, pclose< 0.001, without changing the relationships between boredom and the other constructs, or the relationships of the indicators to the constructs. Thus, although the behaviour subscale of the AES measures both apathy and boredom, its presence does not distort the results. Therefore for the sake of comprehensiveness, the final model that was adopted, shown in Figure 3, included this measure.

The final measurement model (Figure 3) consisted of reasonably high loadings of most measures on the latent variables. The construct of boredom significantly explained 73% (p<0.001) of the variance in the BPS, 44% (p<0.001) of the variance in the BC, and 71% (p<0.001) of the variance in the MSBS. Anhedonia accounted for 73% of the

variance in the SHAPS (SHA), yet only 19% of the variance in the FCPS (FCP). If an indicator is indeed a robust measure of the construct it claims to represent, a higher proportion of variance explained by the construct would be expected. Thus, the low proportion of variance in the FCPS attributable to Anhedonia suggests that the FCP is a poorer measure of anhedonia.

Apathy, together with a small contribution from boredom, accounted for 69% ($p<0.001$) of the variance in the Behaviour subscale subscale of the AES. Apathy explained 93% ($p<0.001$) of the variance in the Cognition subscale, and 75% ($p<0.001$) of the variance in the Emotional Responses subscale. Depression significantly accounted for 85% ($p<0.001$) of the variance in the Somatic-Affective subscale and 65% ($p<0.001$) of the variance in the Cognitive subscale of the BDI-II.

An advantage of the structural equation model is that the estimated correlations among the four constructs are corrected for random measurement error; therefore, they should provide a more accurate picture of the relation of boredom to the other constructs than the simple correlations between pairs of measures would. There were significant yet low estimated correlations between boredom and apathy ($r = 0.27$, $p<0.001$), and boredom and anhedonia ($r = 0.38$, $p<0.001$). The correlation between boredom and depression was substantially higher ($r=0.72$, $p<0.001$). Therefore, in order to test whether this level of correlation between boredom and depression was different from r=1.00, a model was created in which the correlation between boredom and depression was fixed at r=1.00 (Figure 5). The result was a very poor fit, $\chi^2 = (32, N = 823) = 536.311$, $p < 0.001$, CFI = 0.882, RMSEA = .138, pclose < 0.001. Additionally, the difference in fit between the original and current models was significant; $\Delta \chi^2 (3, N=823) = 277.28$, $p<0.001$.

Taken together, these results suggest that the correlation between boredom and depression is statistically different from r=1.00. That is, although boredom and depression are highly related constructs, they are empirically distinguishable.

In summary, results demonstrated that boredom was statistically different from apathy, anhedonia and depression.

Discussion

The goal of the present study was to more clearly identify the construct of boredom by examining its relationship to the phenomenologically similar states of apathy, anhedonia and depression. It was hypothesized that although boredom would be related to varying degrees with these phenomenologically similar constructs, it would stand on its own as a distinct construct. Analysis with structural equation modeling revealed a low correlation between boredom and apathy, and a low correlation between boredom and anhedonia, establishing these three constructs as empirically distinct.

Consistent with previous findings, a higher degree of correlation was found between boredom and depression (Vodanich, 2003; Farmer & Sundberg, 1986), however the two constructs were also shown to be statistically independent. Although the two constructs appear to share some symptoms (Farmer & Sundberg, 1986), it is unclear why they are related to such a high degree. One possible explanation can be derived from investigating the scales that measure boredom and depression. First, there is significant overlap between the domains of experience being measured by both scales. In addition, there is some difference of opinion about the exact number and nature of the domains being measured in each of the scales. For example, a recent investigation of the factor structure of the BDI-II (Cohen, 2008), suggests that the two dimensions measured by the BDI-II are (a) the life domains where symptoms occur, for example, disturbances in the satisfaction of primary needs (e.g. “loss of interest in sex” and “changes in appetite”) and (b) how the symptoms are expressed in terms of arousal level (e.g. “loss of energy” and “loss of pleasure” indicate low arousal, while “agitation” and “irritatability” indicate high arousal). Although the factor structure of the BPS remains unidentified, most researchers

agree that two of the domains of experience measured by the BPS are external stimulation and internal stimulation (Farmer & Sundberg, 1986; Vodanovich & Kass, 1990). When compared to the arousal level being measured by the BDI-II, it is clear that both scales appear to measure similar domains of experience.Given that the present findings have established boredom as separate from apathy and an inability to experience pleasure, it can be more confidently characterized by a sense of frustration and/or agitation resulting from the desire to engage in life activities and experience pleasure, while not being able to do so. Therefore, boredom is conceptualized as the result of a high degree of arousal coupled with a failure to sufficiently self-stimulate (whether through internal or external sources). If as Cohen (2008) suggests, arousal level also plays a role in depression, then it is not surprising that boredom and depression would be so highly related.

Moreover, there is a high degree of overlap in the content of individual items in both scales. To provide just one example, the first item of the BPS (Farmer & Sundberg, 1986) is "It is easy for me to concentrate on my activities", which is highly similar to item nineteen on the BDI-II (Beck, Steer, & Brown, 1996) which is "I can concentrate as well as ever, etc." Other similarities are presented in Table 3.

A study that investigated the relationship between boredom and life meaning (Fahlman et. al., in press) found that the relationship between boredom and depression was mediated by the presence of meaning in life. That is, when the variance associated with life meaning was removed from the analysis, the relationship between boredom and depression was significantly minimized. In addition, life meaning predicted levels of boredom weeks later, whereas depression did not. Furthermore, changing perceptions of

life meaning caused changes in levels of boredom. Taken together, these findings suggest that the extent of the relationship between boredom and depression is dependent on at least one other factor (i.e., life meaning; Fahlman et al., in press). However, one limitation of this study was that it failed to examine the relationship of boredom to depression in the context of other negative emotional states whose clinical presentations are similar to boredom. The inclusion of apathy and anhedonia in the present study allows for a more thorough investigation of the relationship between boredom and other phenomenologically similar affective states.

In summary, due to the high degree of overlap between the symptoms and scales used to measure boredom and depression, as well as the influence of meaning in life on the relatedness between boredom and depression, further investigation into the nature of their relationship is warranted.

An unexpected finding in the current study was the confound between boredom and the Behavioural subscale of the AES (Beh). The fact that the Behaviour subscale is the only one of the three subscales of the AES that significantly loaded onto the construct of boredom suggests that something about the individual items that compose the Behaviour subscale is unique. Sample items from the Behavioural subscale of the AES are "I spend time doing things that interest me", "I get things done during the day" and "I put little effort into anything". A review of all the individual items from the Behaviour subscale highlighted the fact that as a measure of the motivational impairment found in apathy, these items also unavoidably tap into the motivational aspect of boredom. Thus, since motivational impairment plays a role in both boredom and apathy, it is not surprising that measures of lack of motivation would touch on both constructs.

Nevertheless, the fact that the Behaviour subscale was confounded with boredom did not influence the relationship between boredom and apathy in any way, as evidenced by the relatively unchanging correlational values in the model with or without the presence of the subscale in question (Figures 2 and 4).

In conclusion, the present study statistically established that although related to varying degrees to apathy, anhedonia, and depression, boredom is indeed an independent construct. Establishing boredom as a distinct construct is a necessary first step in facilitating the creation of a precise and unified definition of boredom which until now has been impossible to achieve. Future studies will attempt to more clearly define the construct in an effort to provide the field with a consistent and recognized definition of boredom. This will hopefully guide the development of new instruments and empirical research related to the assessment and treatment of this universal human experience, which will be especially important in psychopathological and neuropathological populations where boredom is most pervasive (Hamilton et al., 1984, Binnema, 2004).

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Tables

Table 1: Descriptive statistics for all measures used in the current study by gender, including tests of the differences between the means of the two genders.

	All participants		Women		Men		Diff Gender Means		
	Mean	**SD**	**Mean**	**SD**	**Mean**	**SD**	**t**	**df**	**p**
BPS	100.54	19.5	99.54	18.96	102.91	20.64	-2.24	805	0.025
BC	3.95	2.31	3.89	2.23	4.12	2.51	-1.3	804	0.194
MSBS	103.88	32.63	104.95	32.27	101.26	33.51	1.48	814	0.140
AES: Behaviour	9.89	2.89	10.07	2.98	9.46	2.61	2.79	819	0.005
AES: Cognition	16.75	6.24	17.26	6.56	15.50	5.17	3.74	819	0.000
AES: Emotion	4.42	1.67	4.55	1.71	4.12	1.53	3.33	819	0.001
SHAPS	12.91	1.9	13.03	1.74	12.60	2.22	2.99	819	0.003
FCPS	3.77	0.44	3.81	0.43	3.67	0.46	4.22	819	0.000
BDI-II:SA	7.24	5.85	7.97	6.00	5.55	5.13	5.41	781	0.000
BDI-II:C	4.07	4.32	4.34	4.46	3.43	3.92	2.74	813	0.006

Table 2: Correlations between all measures used in the current study including reliability estimates.

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
1. BPS	**(.860)**									
2. BC	.634**	**(.652)**								
3. MSBS	.711**	.523**	**(.951)**							
4. AES: Behaviour	.357**	.197**	.346**	**(.611)**						
5. AES: Cognition	.205**	.109**	.200**	.776**	**(.891)**					
6. AES: Emotion	.177**	.100**	.188**	.692**	.837**	**(.505)**				
7. SHAPS	.319**	.249**	.210**	.261**	.207**	.205**	**(.787)**			
8. FCPS	.202**	.157**	.126**	.117**	.086*	.141**	.375**	**(.911)**		
9. BDI-II: Somatic-affective	.515**	.389**	.636**	.328**	.235**	.245**	.321**	.138**	**(.884)**	
10. BDI-II: Cognitive	.469**	.296**	.569**	.284**	.148**	.176**	.261**	.137**	.745**	**(.872)**

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Note: N= 774 to 823

Note: Cronbach's α levels are presented on the main diagonal in parentheses.

Table 3: Similarities between individual items of the Boredom Proneness Scale and the Beck Depression Inventory-II

Boredom Proneness Scale	**Beck Depression Inventory-II**
It is easy for me to concentrate on my activities. (1)	I can concentrate as well as ever. (19)
I get a kick out of most things I do. (11)	I get as much pleasure as I ever did from the things I enjoy. (4)
In any situation I can usually find something to do or see to keep me interested. (13)	I have not lost interest in other people or activities. (12)
Much of the time I just sit around doing nothing. (14)	I don't have enough energy to do anything. (15)
In situations where I have to wait, such as a line or queue, I get very restless. (17)	I am so restless or agitated that I have to keep moving or doing something. (11)
I feel that I am working below my abilities most of the time. (21)	I feel I am a total failure as a person. (3)

Figures

Figure 1

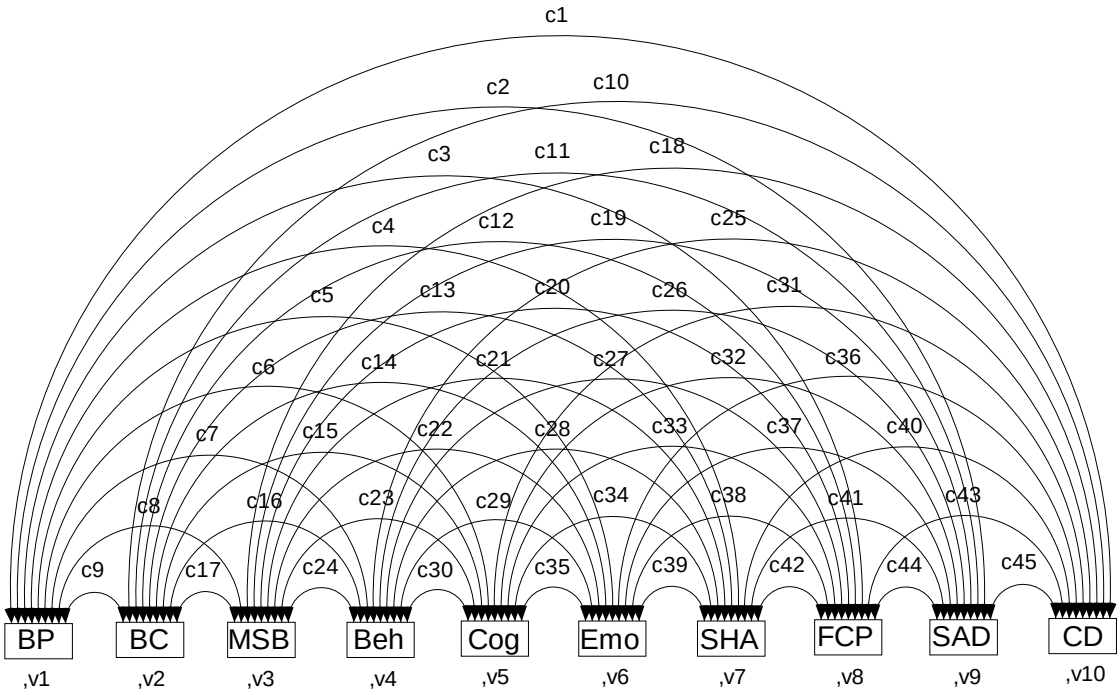

Figure 1: Model depicting Test of Homogeneity of Covariance Matrices conducted with multiple-group SEM to test for gender differences. Note: all labeled variances and covariances are set equal across the two groups (men and women).

Figure 2

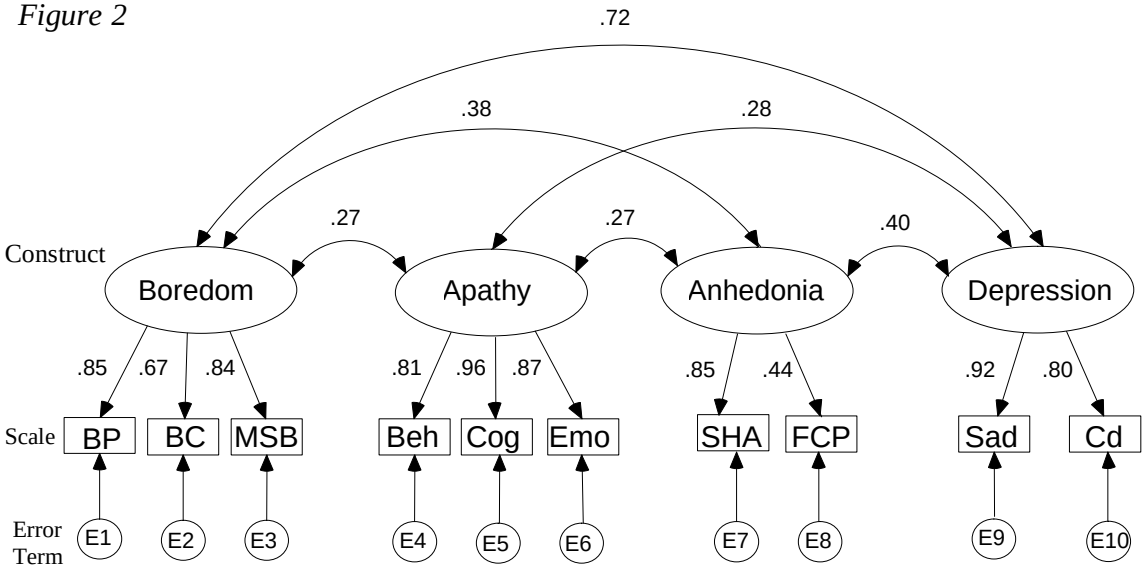

Figure 2: 4-Factor structural equation model for the relationship between boredom, apathy, anhedonia and depression. The measures of each construct (scales and/or subscales) are indicated in rectangles. The letters E1 through E10 (depicted in circles), designate error variables reflecting imperfect measurement by the respective indicators of the latent variables.

Figure 3

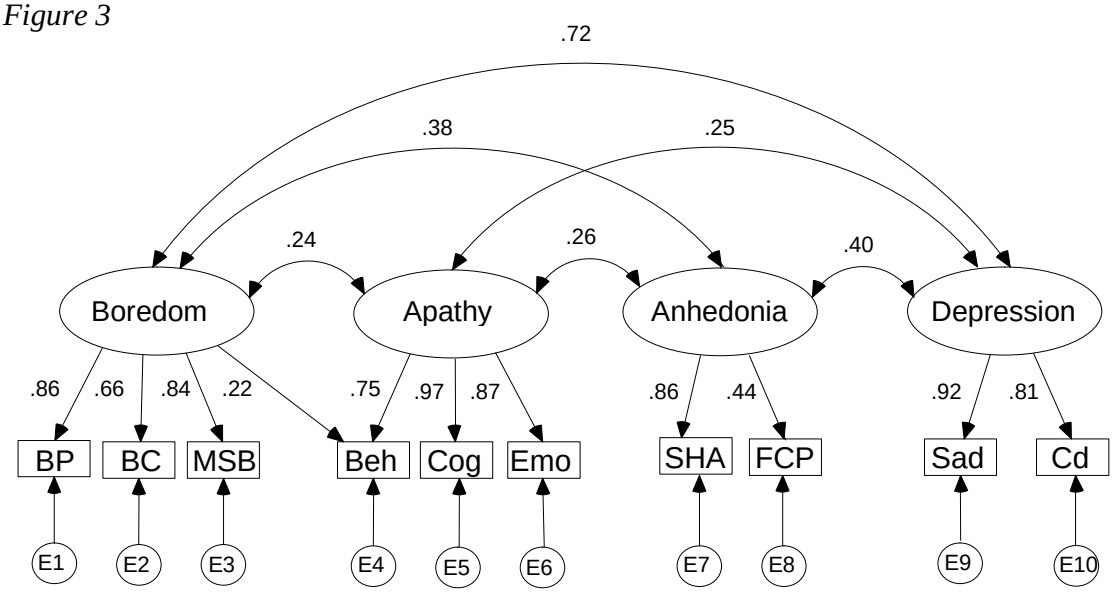

Figure 3: 4-factor structural model depicting the confound between Boredom and the Behaviour subscale of the AES.

Figure 4

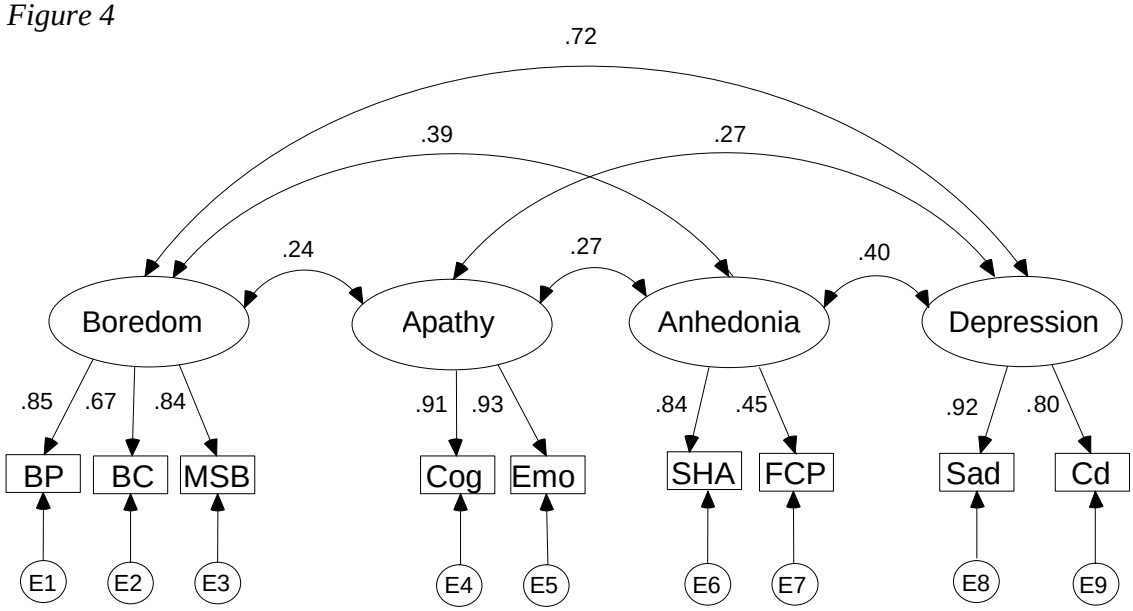

Figure 4: 4-factor structural model with the Behaviour subscale removed.

Figure 5

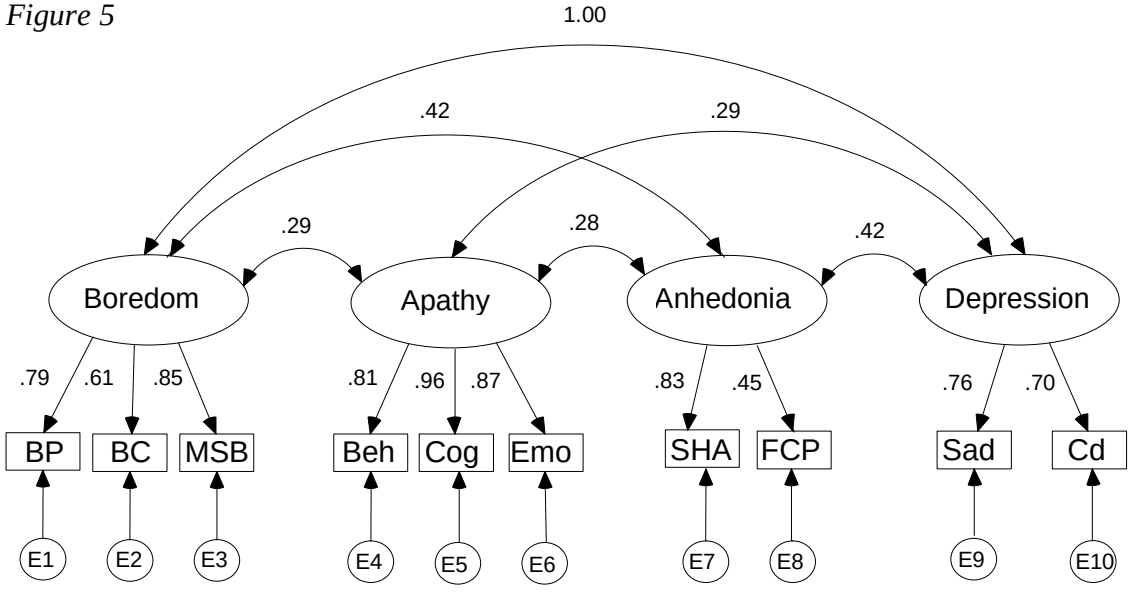

Figure 5: 4-Factor structural equation model to test the correlation between boredom and depression by fixing it at r=1.00.