

BLINDED BY BOREDOM: EXAMINING THE EFFECT OF BOREDOM ON THE ABILITY
TO ANTICIPATE MEANINGFUL EXPERIENCE

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Abstract

Boredom is a common human experience that can have surprisingly deleterious consequences. In a world brimming with opportunities for satisfying engagement, it seems unlikely that anyone would be able to remain bored for long. However, research suggests that people sometimes struggle to rid themselves of boredom. What prevents people who are bored from finding relief in one of the many satisfying, meaningful activities available to them?

This paper tests the hypothesis that bored individuals tend to make pessimistic predictions about the meaningfulness of potential activities, and this in turn leads them to eschew the very activities that would relieve them of their boredom.

The results of this paper failed to find support for this hypothesis. However, a strong association was found between boredom proneness or “trait boredom” and predictions about the meaningfulness of potential activities, suggesting that certain individuals may be more likely to experience persistent episodes of boredom.

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Examining the Effect of Boredom on the Ability to Anticipate Meaningful Experience

Imagine, for a moment, that a friend confides in you that they are profoundly bored; absolutely *nothing* interests them. How concerned would you be? Chances are, you would not be nearly as troubled as if they had told you they were deeply sad, or wrought with anxiety. In fact, you might feel a bit irritated—how could anyone find life boring?

Such reactions are normal; popular notions of boredom portray it as a trivial malady—a problem for “people who have no problems”. However, a growing body of research is showing that boredom can be cause for serious concern. For example, the propensity to be bored has been linked to low school achievement (Jarvis & Seifert, 2002), poor job performance (Watt & Hargis, 2010), substance use (Lee, Neighbors, & Woods, 2007; LePera, 2011), as well as anger and aggression (Dahlen, Martin, Ragan, & Kuhlman, 2005; Rupp & Vodanovich, 1997). Even the common experience of momentary boredom can be harmful—individuals manipulated into a state of boredom have been shown to exhibit risky decision making (Matthies, Philipsen, & Svaldi, 2012) and increased hostility towards outgroups (van Tilburg & Igou, 2011).

The Problem of Persistent Boredom

Boredom is a challenging issue to understand—especially when one is not currently bored. In particular, people often struggle to understand why boredom is a *persistent* problem. For example, parents often find themselves feeling frustrated when their children complain of boredom. How could a child, who is surrounded by activities and who has none of the obligations or concerns of adulthood, possibly be bored? Parents are not alone in their confusion—boredom scholars have struggled with the question of why boredom persists in a world filled with opportunities for satisfying engagement. Bernstein (1975) writes, “Were our world a dull and uneventful place, the prevalence of boredom in our society would pose no

riddle. But how does boredom grow and spread in an exciting world?” (p. 512).

Such questions speak to one of the core mysteries about boredom—a proper explanation has yet to be provided for why people sometimes find that they are unable to rid themselves of boredom, even when there is ample opportunity to do so.

To date, the problem of persistent boredom has been the focus of a small body of research. For example, some authors have described cases of extreme, unremitting boredom, or so-called “pathological boredom” (Bergler, 1945; Fenichel, 1934; Greenson, 1953; Smith, 1981). Individuals suffering from pathological boredom struggle, and fail, to find *anything* engaging. Maltzberger (2000) provides an account of pathologically bored patient, who explained, “Most of all I feel extremely bored. Bored of everything—work, friends, hobbies, relationships, music, reading, movies, bored all the time...I’m bored of thinking, of talking, of feeling, bored with being bored” (p. 84).

Unfortunately, research indicates that even regular, everyday boredom can become a persistent problem. For example, Heron (1957) found moderate cognitive impairments several hours after exposure to a boring situation. Research on leisure boredom (e.g. Gordon & Caltabiano, 1996; Iso-Ahola & Weissinger, 1987; Weissinger, Caldwell, & Bandalos, 1992) further supports the notion that boredom can linger in situations where satisfying engagement is readily available.

Types of Boredom

Part of the reason why boredom can be a challenging topic to understand is because it is a multifarious construct—as Adam Phillips remarks, “Clearly, we should speak not of boredom, but of boredoms” (1993, p. 10). Boredom research has traditionally distinguished between “state boredom” and “trait boredom”. State boredom is widely understood to refer to “the actual

experience of boredom in a given moment” (Fahlman, Mercer-Lynn, Flora, & Eastwood, 2013). There is less consensus, however, on what is meant by “trait boredom.” The two most popular measures of trait boredom define it as “the tendency toward[s] experiencing boredom” (Boredom Proneness Scale; Farmer & Sundberg, 1986, p. 5), and as “the aversion for repetitive experiences of any kind, routine work, or dull and boring people and extreme restlessness under conditions when escape from constancy is impossible” (Boredom Susceptibility scale; Zuckerman, 1979, p. 103). Such definitions suggest that individuals high in trait boredom are more likely to experience state boredom, or experience state boredom more strongly.

Recent work has complicated such definitions. Mercer-Lynn, Bar, and Eastwood (2014) found that trait boredom (regardless of whether it was measured by the Boredom Proneness Scale or the Boredom Susceptibility scale) independently predicted state boredom, but did not interact with a boring situation in the prediction of state boredom. Mercer-Lynn and her co-authors (2014) suggest that, perhaps, “characteristics of the situation and a person’s propensity to boredom contribute *independently* to boredom” (p. 124) and that “One possible implication of the present findings is that there are two distinct types of state boredom distinguished by cause: person-based state boredom and situation-based state boredom” (p. 124). Therefore, it may be that trait boredom does not simply measure the likelihood that someone will find a situation boring; instead, it may measure an internal psychological factor that is likely to lead to state boredom, irrespective of environmental factors.

The Purpose of This Paper

The primary purpose of this paper is to find an answer to the following question: “what prevents individuals in a *state* of boredom from alleviating their boredom by finding something interesting to do?” An answer to this question is imperative for two reasons. First, by articulating

the mechanism by which normal, everyday boredom becomes a persistent problem, it may be possible to increase awareness of the dangers of boredom. For example, if parents understand that boredom can persist and worsen, they may be more understanding when their children find themselves helplessly bored. Second, unravelling the mystery of persistent boredom may hold the key to developing effective boredom interventions; it stands to reason that if we understand why boredom persists, we may be able to interrupt that process and help those afflicted by boredom re-engage with their lives.

Potential Answers to the Problem of Persistent Boredom

Broadly speaking, attempts to understand and define boredom fall under one of four theoretical approaches: psychodynamic, arousal, cognitive, and existential. In this section, each theoretical approach will be briefly described, and a potential answer to the problem of persistent boredom that is in line with each theoretical approach will be provided.

Psychodynamic Definition. Psychodynamic theorists contend that boredom is a state of conflict and discomfort that results from repressed desires, and that it is characterized by a desire for activity and an inability to identify a desirable activity (Fenichel, 1953; Greenson, 1953; Lipps, 1904). For example, Lipps (1904) defines boredom as “a feeling of displeasure due to the conflict between the urge for intense psychic occupation and the lack of stimulation or the incapacity to allow oneself to be stimulated” (as cited in Lewinsky, 1943, p. 148). Similarly, Fenichel (1953) suggests that the bored individual does not suffer from an absence of opportunities for activity, rather, they suffer from an inability to designate an activity that would satisfy their need for stimulation. Greenson (1953) offers a more detailed definition:

...it now seems possible to attempt to explain the occurrence of boredom in normal people. One might construct the following sequence of events: At the behest of the

superego, certain instinctual aims and/or objects have to be repressed (Spitz, 19; Windholz, 20). This step results in a feeling of tension. At this point, if the ego has to inhibit fantasies and thought derivatives of these impulses because they are too threatening, we have as a consequence a feeling of emptiness... Tension and emptiness is felt as a kind of hunger—stimulus hunger. Since the individual does not know for what he is hungry, he now turns to the external world, with the hope that it will provide the missing aim and/or object. I believe it is this state of affairs which is characteristic for all boredom. (p. 19-20)

Therefore, a psychodynamic answer to the problem of persistent boredom might be that people struggle to escape boredom when they have not addressed a repressed wish, and thus, no other activity is satisfying to them. This explanation is readily applicable to severe expressions of boredom. For example, Greenson (1953) describes how a client's pathological boredom protected her from more painful feelings, writing, "It quickly became clear that in the bored state the affects connected to the traumatic events were repressed. When she was bored it was possible to get her to describe a traumatic event, but this was done without any emotion. The return of the boredom indicated the re-establishment of the old defenses, directed against affects primarily" (p. 10).

Psychodynamic perspectives on boredom can also be applied to everyday boredom that occurs in the context of constraining circumstances, such as waiting in line, or being forced to sit through a bureaucratic meeting. Fenichel (1953) writes, "How does a differently structured 'normal' boredom look? It arises when we must not do what we want to do, or must do what we do not want to do... *something expected does not occur*... it fails to occur because one represses the drive-action to prevent anxiety" (p. 359). Thus, Fenichel suggests that "normal" expressions

of boredom result from the repression of less serious desires (such as the desire to escape an intolerably dull or uninteresting situation) rather than the repression of traumatic memories, extreme emotions, or taboo desires.

Arousal Definition. Arousal theorists define boredom as a transient state that results from a mismatch between the individual's desired level of arousal and the stimulation offered by the environment (e.g. Berlyne, 1960; Csikszentmihalyi, 1975; DeChenne, 1988). Arousal theorists most commonly identify monotony as the state of affairs that leads to boredom (Fisher, 1993; Sundberg, Latkin, Farmer, & Saoud, 1991). In fact, some arousal theorists have *equated* boredom with monotony. Thackray (1981) writes, "For the purposes of this discussion, boredom and monotony will be used interchangeably to refer to the experience that arises from exposure to stimulus conditions which are perceived to be either uniform or repetitive, and which also induce a desire for change or variety" (p.165-166).¹

Thus, the most popular view among arousal theorists is that boredom corresponds to a state of painful under-arousal, brought about by under-stimulating conditions. In this way, arousal theories define boredom as a largely external problem, although research has also been done on personality traits that may predispose a particular person to find under-stimulating circumstances boring (e.g. Emmons, 1981; Hamilton, Haer, & Buchsbaum, 1984; Stagner, 1975), as well as one's susceptibility to "boring" circumstances more generally (e.g. Zuckerman, 1971; Zuckerman, 1979).

In addition to research indicating that boredom is a state of non-optimal under-arousal, some researchers have suggested that boredom can manifest as or result in a state of non-optimal over-arousal (Berlyne, 1960; London & Schubert, & Washburn, 1972; Smith, 1981). Various

¹ Geana (2015) has similarly argued that boredom occurs when an activity or situation does not provide sufficient informational value to warrant continued engagement.

explanations for the discrepancy between under-and-over arousal theories of boredom have been suggested. One is that boredom corresponds to an increase in arousal because completing a task *in spite of boredom* is arousing, as the bored individual must expend effort to remain engaged (London, Schubert, & Washburn, 1972). A variation on this theory is that increased arousal represents an attempt to upregulate one's cognitive system and therefore make it possible to engage with an under-arousing task. Another theory is that boredom leads to decreased *cortical* arousal, and increased *autonomic* arousal (Berlyne, 1960). A third is that certain individual differences decide whether or not one experiences boredom as under- or over-arousing (Malkovsky, Merrifield, Goldberg, & Danckert, 2012).

Because arousal theories contend that boredom is a transient, situational problem, they are inconsistent with the notion that normal, everyday episodes of boredom can become a persistent problem. Instead, they suggest that persistent boredom is simply a term that pertains to frequent experiences of state boredom, and that one is more likely to experience boredom frequently if they have high trait boredom.

Cognitive Definition. Cognitive theorists have defined boredom primarily as a problem of attention (Damrad-Frye & Laird, 1989; Eastwood, Frischen, Fenske, & Smilek, 2012; Fisher, 1993; Hitchcock, Dember, Warm, Moroney, & See, 1999; Hunter & Eastwood, 2016; Leary, Rogers, Canfield, & Coe, 1986; Martin, Sadlo, & Stew, 2006). For example, Eastwood, Frischen, Fenske, and Smilek (2012) define boredom as the aversive experience that occurs when we are (a) unable to successfully engage attention with internal or external stimuli, (b) are aware of this fact, and (c) attribute the cause of our aversive state to the environment.

Some proponents of the cognitive perspective have suggested that attentional difficulties may *cause* boredom (Carriere et al., 2008; Cheyne et al., 2006; Damrad-Frye & Laird, 1989;

Hunter & Eastwood, 2016). For example, several researchers have suggested that we find monotonous situations boring because they lack the novelty required to sufficiently engage and sustain attention (Hill & Perkins, 1985; Hitchcock, Dember, Warm, Moroney, & See, 1999). Experimental evidence supporting the notion that it is impaired attention specifically (and not, for example, simply the monotonous nature of a task) that produces boredom also exists—Damrad-Frye and Laird (1989) demonstrated that distracting individuals was enough to produce boredom, independent of task features.

Cognitive research on boredom has also drawn links between impaired attention and many of the experiential components of boredom. For example, Eastwood et al. (2012) have demonstrated that the core phenomenological components of boredom—mental effort and mind wandering, nonoptimal arousal, negative affect, constraint and disordered agency, and the perception that time is passing slowly—can all be understood in terms of underlying attentional processes.

One particularly valuable contribution that has been made by advocates of the cognitive perspective is the notion that boredom is adaptive. Specifically, Bench and Lench (2013) have suggested that boredom involves a reduction of attention towards the current task, which prompts a shifting of attention towards novel stimuli. They suggest that boredom is “a discrete functional emotion, and serves to encourage people to seek new goals and experiences.” (Bench & Lench, 2013, p. 468).

Cognitive models of boredom also potentially offer an explanation for why bored individuals sometimes engage in shallow pursuits that offer immediate but insufficient gratification, such as gambling or drug use. Such activities may occupy attention without placing strenuous demands on the individual, thus providing an “easy way” out of boredom.

A cognitive answer for the persistent nature of boredom may be that boredom lingers because it takes time for the attentional system to recover. For example, one might escape a boring situation, but still feel bored because it takes some time to be able attend and engage with the world normally again. Similarly, it may be that individuals suffer boredom when they have time and resources to spare not because the world around them is legitimately impoverished, but because their attentional systems are overwhelmed by the volume of possibilities. It is also possible that certain individuals suffer from persistent boredom because of individual differences in attentional ability that make it especially difficult for them to successfully attend and engage.

Existential Definition. Existential theorists assert that boredom corresponds to an absence of *meaning* (e.g. Barbalet, 2000; Frankl, 1984; Fromm, 1972; Maddi, 1970; Melton & Schulenberg, 2007; van Tilburg & Igou, 2012). The precise nature of this correspondence varies from theorist to theorist. For example, Barbalet (2000) suggested that people feel bored when their “actions or circumstances are without purpose or meaning” (p. 632). Frankl (1984) states that the feeling of meaninglessness is primarily expressed *as* boredom. Heidegger (1993) argued that boredom *strips* the world of meaning, writing, “Profound boredom...removes all things and men and oneself along with it into a remarkable indifference” (p. 4).

Case studies have lent support to the theory that boredom closely corresponds to a sense of meaninglessness. For example, Bargdill (2000) interviewed six people who were bored with their lives and found that all participants had become bored after compromising on their life goals. A case study of five chronically bored patients by Drob and Bernard (1987) found that all had failed to achieve a fundamental life project which would have infused their life with meaning. More recent empirical work has provided quantitative support for the idea that boredom is closely linked to a sense of meaninglessness. For example van Tilburg & Igou

(2017a) found that low perceived meaningfulness was a distinct component of boredom, distinguishing it from other negative emotions such as sadness, anger, fear, and disappointment.

Existential approaches to boredom are not entirely incompatible with other theoretical perspectives. For example, Fiske and Maddi (1961) have posited that one's level of arousal may be partially determined by the meaning of a given situation. Thus, a boring situation may be under-arousing *because* it is meaningless. Klapp (1986) has argued that modern society suffers from boredom because it is continually bombarded by repetitious, low-quality information, and that this information overload leads to the diminution of meaning. Leary, Rogers, Canfield, & Coe (1986) drew a link between existential and cognitive theories of boredom by suggesting that the severity of one's boredom may depend on the effort required to sustain focused attention on a given stimulus, and that the extent of this effort depends on the degree to which this stimulus is intrinsically captivating.

One of the most valuable contributions that existential theory has made to the study of boredom is a plausible explanation for the association between boredom and deleterious behavior. For example, boredom has long been associated with gambling (Blaszczynski, McConaghy, & Frankova, 1990; Mercer & Eastwood, 2010). Barbalet (2000) attempted to explain this connection, writing, "Gambling, then, is a short route out of boredom...By focusing their involvement on the positive attributes of betting 'skill' or 'luck', the gambler constructs a meaning over otherwise empty time" (p. 642). Boredom has also been implicated in aggression and intergroup conflict (Dahlen, Martin, Ragan, & Kuhlman, 2005; Rupp & Vodanovich, 1997; van Tilburg & Igou, 2011). Barbalet (2000) explains, "...intergroup conflict affords opportunities for meaning construction and therefore satisfies a need for boredom-aversion...Group cohesiveness, and the definition of a person's place within it, which arise out

of intergroup conflict, are obvious sources of social meaning” (p. 643). Empirical evidence for the mediating effect of meaning on boredom and various negative sequelae can be found primarily in the work of Dr. Wijnand van Tilburg and Dr. Eric Igou. For example, van Tilburg & Igou (2011) found that inducing boredom can lead to various meaning-regulation strategies, including the provision of increased hypothetical jail sentences to outgroup offenders. van Tilburg and Igou have also attempted to explain why boredom has been found to be associated with both positive *and* negative consequences. They write, “boredom does not motivate people to engage in one particular behavior; it motivates people to engage in any activity that seems meaningful to them” (van Tilburg & Igou, 2012, p. 4). In line with this theory, they have found that boredom can lead to prosocial behaviour when such behaviour is available and portrayed as highly meaningful (van Tilburg & Igou, 2017b).

Like cognitive theorists, existential scholars have argued that boredom is an adaptive emotion which assists individuals in disengaging from their current state of affairs, and motivates the search for new activities (Barbalet, 2000; Elpidorou, 2014; van Tilburg & Igou, 2012). van Tilburg and Igou (2012) write, “we argue that the experience of boredom makes one’s activities seem meaningless, motivating people to create or re-establish a sense of meaningfulness” (p. 4). Elpidorou (2014) writes, “Boredom thus facilitates the pursuit of alternative goals: it ‘pushes’ us *out* of this non-stimulating, uninteresting, or unchallenging situation and *into* another. In motivating us to pursue a situation that is different from our current one, boredom ultimately promotes the restoration of the perception that one’s activities are meaningful” (p. 3).

Existential models have also emphasized the close relationship between boredom and time. For example, Svendsen (2005) argues that the bored individual foresees a meaningless future, writing, “Boredom is linked to a way of *passing the time*, in which time, rather than being

a horizon for opportunities, is something that has to be beguiled” (p. 23). One of Bargdill’s case study participants (2000) remarked, “I might think that I would become bored with whatever activity I’m looking at. I project boredom. I’m looking ahead and saying ‘Oh boy, it looks like it’s going to be boring after all. So I don’t even start it” (p. 198). Bargdill found this case to be representative of his experiences with bored patients in general, writing, “They anticipated that potential projects would become boring, and so they decided not to bother with them” (p. 198). Brisset and Snow (1993) state that for the bored individual, “The future seems devoid of opportunities for possibly making a personal difference, which is at the very heart of involvement, self definition, and perhaps even self-existence” (p. 240). Straus (1980) and Knowles (1986) have similarly argued that boredom corresponds to an inability to foresee meaningful futures.

In sum, existential theorists argue that boredom is an evaluative problem—the bored individual surveys the world around them and finds it lacking in meaning. Furthermore, the bored individual looks ahead to the future, and predicts meaninglessness. Therefore, a potential existential answer to the problem of persistent boredom is that people who are in a state of boredom make inaccurate predictions about the meaningfulness of future activities, and thereby avoid activities that might relieve them of their boredom.

Selecting A Theoretical Model

The failure of any one theoretical approach to gain widespread acceptance indicates that each model is an incomplete description of boredom. It is likely that each model excels at describing certain aspects of boredom, while missing others.

The above review indicates that psychodynamic, arousal, cognitive, and existential models all offer plausible explanations for the problem of persistent boredom. The present paper

will test the accuracy of the existential answer to the problem of persistent boredom: boredom becomes a persistent problem because individuals in a state of boredom have an impaired ability to anticipate the meaningfulness of potential activities. These faulty predictions thus lead the bored individual to eschew activities that would provide the satisfying engagement they desperately wish for.

As stated earlier, existential theorists differ in terms of how they conceptualize the precise nature of the association between boredom and meaning. Some suggest that a lack of meaning *causes* boredom (Barbalet, 2000), some argue that boredom is an *expression* of meaninglessness (Frankl, 1984), and others still have argued that boredom plays a central role in the reduction of meaning (Heidegger, 1993). Our hypothesis is most consistent with the notion that a lack of meaning causes boredom.

Personality and Persistent Boredom

The primary objective of this paper is to test the hypothesis that individuals in a state of boredom have an impaired ability to anticipate the meaningfulness of potential activities. If true, this may explain the mechanism by which momentary boredom becomes a persistent problem. However, additional factors may also play a part in this process. One particularly important factor that may be involved in the problem of persistent boredom is trait level differences. For example, it is possible that individuals who feel that their life in general is meaningless will be more likely to make pessimistic predictions about the meaningfulness of potential future activities. In other words, it is possible that trait meaning in life moderates the relationship between state boredom and anticipatory meaning. Trait boredom may also moderate the relationship between state boredom and anticipatory meaning; that is, individuals with high trait boredom may be more susceptible to normal everyday episodes of boredom becoming a

persistent problem. Given recent debate regarding the nature of trait boredom (Hunter, Hunter, & Eastwood, 2016), it is also possible that trait boredom plays a direct role in the development of persistent boredom, irrespective of state boredom.

Hypotheses

This paper will test three hypotheses. The first hypothesis is that individuals in a state of boredom will have an impaired ability to anticipate the meaningfulness of potential future activities. The second hypothesis is that general life meaning will moderate the effect of state boredom on anticipatory meaning. The third hypothesis is that the Anticipatory Meaning Exercise (discussed in the subsequent section) will demonstrate satisfactory psychometric properties, and will consist of six distinct, yet related subscales. In addition to these three hypotheses, an exploration into the role of trait boredom will be conducted to determine whether trait boredom moderates the effect of state boredom on anticipatory meaning, or whether trait boredom is directly related to anticipatory meaning over and above state boredom.

Methods

Measures

All scales are provided in the appendix.

Meaning in Life Questionnaire. The Meaning in Life Questionnaire (MILQ; Steger, Frazier, Oishi, & Kaler, 2006) consists of two subscales. The “presence” subscale assesses the extent to which participants feel their lives are meaningful (Steger et al., 2006). The “search” subscale measures the degree to which participants are looking for meaning in their life (Steger et al., 2006). The MILQ has been shown to have high internal consistency, with Cronbach's alpha values ranging from .81 to .86 for the “presence” subscale, and .84 to .92 for the “search” subscale (Steger et al., 2006). The MILQ also correlates highly with related scales such as the

Life Regard Index (LRI; Battista & Almond, 1973) and the Purpose in Life test (Crumbaugh & Maholick, 1964; Steger et al., 2006), indicating convergent validity.

Boredom Proneness Scale. The Boredom Proneness Scale (BPS) measures trait boredom (Kass et al. 2001); more specifically, it measures an individual's susceptibility to or propensity towards boredom (Farmer & Sundberg, 1986). The BPS has been shown to have high internal consistency, with Cronbach's alpha values ranging from .79 to .84 (Vodanovich et al. 2005). The BPS has also been found to correlate with other measures of boredom, such as the Boredom Susceptibility Scale (ZBS; Zuckerman, 1979) and the Job Boredom Scale (JB; Lee, 1983), indicating convergent validity.

Multidimensional State Boredom Scale. The Multidimensional State Boredom Scale (MSBS) is used to measure state boredom. Whereas the BPS measures one's general tendency to become bored, the MSBS indicates whether or not someone is bored at the moment of measurement (Fahlman et al., 2011). Item examples include "I feel tense", "My mind is wandering", and "Time is dragging on" (Fahlman et al., 2011). The MSBS consists of 29 items, and responses are recorded along a 7-point Likert scale, ranging from 1 ("strongly disagree") to 7 ("strongly agree"). Higher scores on the MSBS indicate higher levels of state boredom. In the present experiment, a shortened version of the MSBS will be used (MSBS-8; Hunter, Dyer, Cribbie, & Eastwood, 2015). The MSBS has been shown to have high internal consistency, with a Cronbach's alpha of .94 (Fahlman et al., 2011). The MSBS also has construct validity, correlating significantly with related concepts such as trait boredom and life satisfaction (Fahlman et al., 2011).

Anticipatory Meaning Exercise. The Anticipatory Meaning Exercise (AMEx) was created by the authors for use in the present study. The AMEx is intended to evaluate an

individual's ability to anticipate the meaningfulness of potential activities. The exercise consists of a list of 56 activities, and participants are asked to "rate the following activities according to how **meaningful** you expect they would feel, if you were to complete them sometime in the **future**."

The AMEx was constructed according to four theoretical premises. The first premise is that *feelings of meaning are produced by engagement with the world*. Theoretical and empirical work has shown that the experience of meaning in life is continuously constructed and grounded in behaviour (Hicks & King, 2009; King & Hicks, 2006; Steger & Kashdan, 2007; Waterman, 1993).

The AMEx's second premise is that *the experience of meaning is highly motivating*. There is ample evidence that the search for meaning is a driving force in the lives of all people (Heine, Proulx, & Vohs, 2006; Klinger, 1998). Indeed some researchers have suggested that meaning is a basic human need, like food and shelter (Coleridge, 1993). The importance of meaning is further supported by research which shows what happens when one is deprived of meaning. Individuals who are lacking in meaning have been shown to be more likely to seek personal counselling (e.g. Crumbaugh & Maholick, 1964; Frenz et al., 1993; Pearson & Sheffield, 1974), use illicit substances (e.g. Harlow et al., 1986; Newcomb & Harlow, 1986; Padelford, 1974; Shean & Fechtmann, 1971), and exhibit antisocial behaviour (Addad, 1987; Reker, 1977; Shek, 1997).

The AMEx's third premise is that *people perform behaviours based on the expected outcome of those behaviours*. Research has demonstrated that people form and pursue goals according to the expected outcome of those goals (Brunstein, 1993; Emmons, 1986; Oishi & Diener, 2001). Furthermore, there is increasing evidence that goal pursuit involves a strong

affective component—we pursue goals not only because of an expected material outcome, but also because we anticipate that a specific emotional experience will accompany that outcome (Mellers & McGraw, 2001; Slovic, Finucane, Peters, & MacGregor, 2007). For example, some individuals might cook their own meals not only because it is cheaper, and because it holds the promise of food as a reward, but also because such activities are accompanied by a feeling of pride or agency.

The fourth and final premise of the Anticipatory Meaning Exercise is that *the activities that people find meaningful can be grouped into a finite number of categories*. Although what is meaningful is a subjective judgment (Davis & Hicks, 2013; Hicks & King, 2009; Klinger, 1977), research has shown that there is a large degree of overlap in what people find meaningful, and that sources of meaning can be grouped according to certain broad themes (Battista & Almond, 1973; Baum, 1990; Debats, 1999; Klinger, 1977, Lukas, 1986). Therefore, although the Anticipatory Meaning Exercise is not all encompassing, it should produce scores that give a general impression of what each individual person finds meaningful.

The AMEx was constructed through a series of steps. First, relevant literature on meaning (e.g. Heine, Proulx, & Vohs, 2006; Hicks & King, 2009; King & Hicks, 2006; Klinger, 1998; Waterman, 1993) and feelings about the future (e.g. Brunstein, 1993; Oishi & Diener, 2001; Mellers & McGraw, 2001; Slovic, Finucane, Peters, & MacGregor, 2007) was reviewed. Second, an initial pool of 84 items was generated and grouped according to common themes (e.g. social activities, achievement-related activities, etc.).

Third, other scales related to meaningful activity were consulted, to ensure that the AMEx items sufficiently covered different types of meaningful activity. These scales include the Meaning in Life Questionnaire (Steger et al., 2006), Life Regard Index (Battista & Almond,

1973), Purpose in Life Test (Crumbaugh & Maholick, 1964), Occupational Value Assessment with Predefined Items (Oval-pd; Eklund, Erlandsson, & Persson, 2003), Hedonic and Eudaimonic Motives for Activities Scale (HEMA; Huta & Ryan, 2010), Meaningful Activity Wants and Needs Assessment (Eakman, 2013), Comprehensive Meaningful Work Scale (Lips-Wiersma & Wright, 2012), The Work and Meaning Inventory (WAMI; Steger, Dik, & Duffy, 2012), and the Engagement in Meaningful Activities Survey (EMAS; Goldberg, Brintnell, & Goldberg, 2002). After comparing the AMEx to these conceptually similar scales, items were grouped according to six factors—“Helping”, “Social”, “Achievement”, “Self”, “Pleasure”, and “Spiritual”. Helping items include such activities as “Paying for someone else’s meal” and refer to activities where one is actively assisting, facilitating, or showing kindness to another person. Social items include such activities as, “Making a new friend” and refer to activities where one is forming relationships or performing social behaviours. Achievement items include such activities as, “Solving a complicated problem” and refer to activities where one is overcoming a challenge, enjoying the fruits of one’s labours, or engaging in enjoyable, effortful work. Self items include such activities as “Developing a new skill or ability” and refer to activities that pertain to self-development and self-actualization. Pleasure items include such activities as “Going to a concert” and refer to activities where one is enjoying some hedonic pursuit. Spiritual items include such activities as “Going to a place of worship” and refer to religious, patriotic, or nostalgic activities. As previously stated, this six-factor structure was created in an attempt to account for the highly subjective nature of meaning—different people find different things meaningful.

Finally, items were removed if they had high skew, high kurtosis, or unacceptably low item-total correlations. Item-total correlations below $r = 0.3$ were deemed to be unacceptably

low. Skew and kurtosis were calculated within experimental groups, so that any potential distributional differences across experimental groups could be identified. The majority of the AMEx items were significantly negatively skewed (63% in the boredom group, 57% in the non-boredom group). Given the prevalence of skewness, removing all significantly skewed items was not an acceptable solution. Therefore, the top 25% most skewed items were selected for possible removal. These items were only considered for removal if they were skewed in both experimental groups. It is important to note that this may exaggerate any potential experimental effect; however, the opposite approach (removing items if they were skewed in *either* group) may have obscured any potential experimental effect. Given the preliminary nature of this research, preserving any potential experimental effect was of central importance. Any items that demonstrated excessive kurtosis in both experimental groups were removed. In total 28 items were removed, yielding a 56 item scale.

Pilot Scale Items. During the course of the procedure, participants responded to items from two in-development scales. The first scale was designed to provide researchers with a brief method of evaluating participants' level of valence and arousal. Such a measure would be ideally suited to the evaluation of experimental manipulations. In order to assess the quality of these items, and evaluate their potential use as brief manipulation checks, they were used in the present study to assess participants' state boredom (alongside the MSBS-8).

Prior research has indicated that individuals in a state of boredom typically have low levels of arousal (e.g. Berlyne, 1960; Hill & Perkins, 1985; Mikulas & Vodanovich, 1993). Thus, in the present study, we expect that participants will report low arousal. Given the strongly aversive nature of boredom, participants in the boredom condition are expected to report low valence on this in-development scale.

The second scale was designed to evaluate participants' present motivational state, and was modeled after Gray and McNaughton's revised Reinforcement Sensitivity Theory. Gray and McNaughton's (2000) three-system model proposes that personality is governed by three independent systems: the fight-flight-freeze system (responsible for avoidance and escape behaviours); the behavioural activation system (responsible for approach behaviours/sensitivity to reward), and the behavioural inhibition system (responsible for resolving goal conflict between behavioural activation and fight-flight-freeze, and is associated with worry and rumination). Gray and McNaughton's model of personality proposes that one's position on these axes is a key determinant of behaviour. Thus, in theory there should be state-level manifestations of the behavioural inhibition, behavioural activation, and fight-flight-freeze systems that indicate which system is dominant in a given situation. For example, an individual might have a dominant *trait level* fight-flight-freeze system, but have a low level of *state* fight-flight-freeze in a situation that is safe and familiar.

We make no firm hypotheses regarding the association between state boredom and state motivation. However, it is important to note that prior research on state boredom and trait motivation is most consistent with the notion that state boredom will correspond to elevated state behavioural inhibition (Mercer-Lynn, Bar, & Eastwood, 2014).

The results obtained using these two in-development scales will be used solely for scale development, and thus should be considered separately from the rest of the paper.

Procedure

Upon arriving at the laboratory, participants were briefed on their involvement in the experiment. Informed consent was obtained from all individual participants included in the study. Following this, participants filled out a basic demographic questionnaire.

Participants subsequently completed the Meaning in Life Questionnaire and the Boredom Proneness Scale. Participants were then randomly assigned to either a boredom or control condition. Participants in the boredom condition were tasked with watching 25 minutes of *Easy English: Using numbers and money*, a video used to teach English as a second language (Video Tutor, Inc., 1995). Participants in the non-boring condition watched a 25 minute clip from the action film *Speed* (de Bont, 1994). Two additional boredom inductions were employed to complement the movie manipulation. The first altered participants' perception of time, and the second affected their perception of choice. Time perception has been previously established as an effective boredom induction (London & Monello, 1974). Participants in the non-boredom condition were told that their film was 30 minutes long, and participants in the boredom condition were told that their film was 20 minutes long. Due to the disparity between the perceived and actual length of these clips, participants in the boredom condition were made to feel as if time was passing slowly and participants in the non-boredom condition were made to feel that time was passing quickly. Manipulation of the perception of choice has also been demonstrated to be an effective boredom induction (Troutwine & O'Neal, 1981). Participants in the non-boredom condition were provided with oral summaries of two apparently different video clips and were asked to choose which one they wanted to see. In reality, regardless of choice, all participants in the non-boredom condition viewed the same video clip. Participants in the boredom condition were informed that, although they would normally be allowed to choose between two clips, the laboratory was experiencing technical difficulties, and only one film was available.

Participants subsequently completed researcher generated items designed to measure their valence, arousal, behavioural inhibition, behavioural activation, and fight-flight-freeze

system. Finally, participants completed the short form of the Multidimensional State Boredom scale (MSBS-8) and the Anticipatory Meaning Exercise.

Participants

Participants were recruited using York University's Undergraduate Research Participant Pool. 232 participants completed the procedure. Participants were removed if they failed to respond to more than 50% of the study items. Eight participants were removed for this reason. Additionally, one participant provided atypically low responses on the Meaning in Life Questionnaire (average item response: 1.4 on a 7 point scale) and the Anticipatory Meaning Exercise (average item response: 1.9 on a 7 point scale). This indicates an extreme sense that their life was not meaningful, the absence of a desire to pursue a meaningful life, and a near-complete inability to anticipate the meaningfulness of potential activities. It is unlikely that a participant from the normative population would produce such scores; therefore, this participant was removed from the analysis. The final sample consisted of 223 participants—151 women, 71 men, and 1 participant who did not identify a gender. Participants also reported their age and ethnicity. Participants had ages ranging from 17 to 57, with a mean age of 20.6 and a median age of 20. 55 participants identified as South Asian (25%), 39 identified as White (17.4%), 35 identified as Arab/West Asian (16%), 28 identified as Black (13%), 17 identified as Chinese (7.5%), 15 identified as Filipino (6.5%), 14 identified as Other (6.2%), 8 identified as South East Asian (3.5%), 4 identified as Korean (1.8%), 4 identified as Latin-American (1.8%), 3 did not identify an ethnicity (1%), and 1 identified as Japanese (0.4%).

Results and Discussion

Statistical Assumptions

Unless otherwise noted, all statistical assumptions were met.

Missing Data

Participants were free to leave any or all questions blank. After removing participants with more than 50% missing data, the total proportion of missing data was 0.004%. The absence of any identifiable pattern to this missingness suggests that the omitted data was “missing at random”, or “missing completely at random” (Allison, 2002; Royston, 2004).

Single imputation using predictive mean matching is the most appropriate method for dealing with missing data in a dataset where the total proportion of missing data is small, and the data is missing at random or missing completely at random (Schafer, 1999). Readers interested in familiarizing themselves with imputation are encouraged to read one of the numerous available primers (e.g. Donders, van der Heijden, Stijnen, & Moons, 2006; Schafer, 1999). Missing data for the boredom and non-boredom groups were imputed separately, to ensure that any potential group differences did not interfere with accurate imputation of missing values.

Trait Measures

A significant negative Pearson product-moment correlation was found between the Boredom Proneness scale, and the Meaning in Life Questionnaire, $r = -0.34$, $p < .0001$. This finding is consistent with prior research (Fahlman et al., 2009; Melton & Schulenberg, 2007)

Experimental Manipulation

A Welch Two Sample t-test was conducted to determine whether the boredom and non-boredom groups reported significantly different state boredom following the experimental manipulation. A Welch Two Sample test was used because variances in MSBS total scores were

unequal across experimental groups. The results of this t-test indicate that the experimental manipulation was highly effective, $t = 6.5$, $df = 200$, $p < .0001$, $d = .87$. Participants in the boredom group were significantly more bored ($M = 36.87$, $SD = 11.06$) compared to participants in the control group ($M = 28.3$, $SD = 8.52$).

Table 1: Valence, Arousal, and State Motivation Across Experimental Groups

	Mean (Boredom)	Mean (Control)	Wilcox Rank-Sum Test Statistic	p	r
Valence	7.59	9.08	4200	<.0001***	-.28
Arousal	5.72	9.97	2000	<.0001***	-.59
Behavioural Inhibition	9.72	11.31	4900	.007**	-.18
Behavioural Activation	11.72	14.2	3700	<.0001***	-.34
Fight, Flight, Freeze	8.16	7.66	6600	.4	-.06

Table 1 summarizes the results of several Wilcoxon rank-sum sign tests comparing the valence, arousal, and state motivation of boredom and non-boredom participants. Wilcoxon rank-sum sign tests were used because all five variables yielded statistically significant Shapiro-Wilk normality test values, indicating significant deviations from normality. As Table 1 shows, participants in the boredom condition had significantly lower valence and arousal; additionally, there was a non-significant difference between participants in the boredom condition and participants in the non-boredom condition with respect to their state fight-flight-freeze. Finally, participants in the boredom condition reported significantly lower behavioural inhibition and behavioural activation than non-bored participants.

The finding that participants in the boredom condition reported lower behavioural inhibition scores than those in the non-boredom condition is open to interpretation. Although these analyses were purely exploratory, this finding is somewhat surprising given prior research indicating a link between trait boredom and high trait behavioural inhibition. It may be that the

researcher generated items did not accurately measure the construct of behavioural inhibition. It could also be that Gray and McNaughton's theory of personality does not apply to state-based questions. However, it is also possible that although *trait* boredom is positively associated with *trait* behavioural inhibition, *state* boredom is negatively associated with *state* behavioural inhibition. This may be the case because behavioural inhibition is responsible for avoidance and escape behaviours. Behavioural inhibition items from Carver and White's (1994) oft used "BIS/BAS Scales" include, "I feel pretty worried or upset when I think or know somebody is angry at me" and "If I think something unpleasant is going to happen to me I usually get pretty 'worked up'." Individuals who endorse such items indicate greater emotional sensitivity, and are thus more prone to experiencing boredom. However, it may be that individuals in a state of boredom do not feel "on edge" so much as they feel drained of energy and interest.

One additional possibility is that the participants in the non-boredom condition have significantly higher behavioural inhibition and behavioural activation scores because they watched a clip from an exciting action movie. Given that behavioural inhibition and behavioural activation are independent systems (Gray & McNaughton, 2000), it is possible for participants to both feel on guard/tense/anxious while also feeling decisive/eager/compelled to act. Therefore, it may not be that participants in the boredom condition have markedly *lowered* behavioural inhibition and behavioural activation scores, rather, it may be that participants in the non-boredom condition have markedly *elevated* scores.

For the purposes of the present study, it is not important which of the above interpretations is correct. However, future versions of these in-development state motivation items should account for the possibility that state and trait motivation may be differentially related to various emotional states. Careful consideration will have to be paid to determine

whether these discrepancies reflect legitimate differences between state and trait motivation, or whether they are an artifact of poor item construction.

State Boredom and the Anticipatory Meaning Exercise

A Welch Two-Sample t-test was conducted to determine whether the boredom manipulation had a significant effect on subsequent Anticipatory Meaning Exercise scores. A Welch Two Sample t-test was used because variances in AMEx total scores were unequal across experimental groups. The boredom group ($M = 286.3$, $SD = 47.73$) and the control group ($M = 278.7$, $SD = 41.34$) did not provide significantly different responses on the Anticipatory Meaning Exercise, $t = 1.3$, $df = 210$, $p = .2$, $d = .17$. Furthermore, a Pearson product-moment correlation revealed that participants' state boredom and their AMEx scores were unrelated, $r = -.01$, $p = .9$. Thus, support was not found for the primary hypothesis of this paper—that individuals in a state of boredom have an impaired ability to anticipate the meaningfulness of potential activities.

Moderation Analyses

A multiple regression was conducted to determine whether meaning in life moderated the relationship between state boredom and participants' total scores on the Anticipatory Meaning Exercise. As Table 2 shows, the results of this analysis indicated that no such moderation effect occurred.

Table 2: Meaning in Life Moderation

	B	Standard Error of B	b	<i>p</i>	<i>sr</i> ²
Intercept	188.04	52.96		<.001***	
MSBS	.094	1.50	.0225	.950	
MILQ	1.97	1.01	0.402	.052	
MSBS*MILQ	.0002	.028	0.000	.993	.0002
				F(3,219) = 14.1, $p < .0001$	
					$R^2 = 0.162$

A second multiple regression was conducted to determine whether trait boredom moderated the relationship between state boredom and participants' total scores on the Anticipatory Meaning Exercise. Table 3 shows that trait boredom did not moderate the relationship between state boredom and AMEx scores. However, trait boredom did significantly predict AMEx scores, over and above state boredom.

Table 3: Trait Boredom Moderation

	B	Standard Error of B	b	<i>p</i>	<i>sr</i> ²
Intercept	419.67	46.53		< .001	
MSBS	-2.25	1.41	-.541	.111	
BPS	-1.77	.56	-0.622	.002**	
MSBS*BPS	.031	.02	.011	.055	.016

F(3,219) = 6.15, *p* < .001
R² = .078

In conclusion, neither trait boredom nor general meaning in life significantly moderated the relationship between state boredom and anticipatory meaning. This is unsurprising, given the low Pearson product-moment correlation between participants' scores on the MSBS and their responses on the AMEx ($r = -.01$, $p = 0.9$).

Trait boredom did predict anticipatory meaning, over and above state boredom. Therefore, there is preliminary evidence that trait boredom has a direct relationship with anticipatory meaning. If anticipatory meaning is indeed the mechanism by which boredom becomes a persistent problem, then this finding suggests that trait boredom may play a key role in the development of persistent boredom. Therefore, rather than state boredom "evolving" into persistent boredom, it may be that individuals high in trait boredom have a tendency to misevaluate the meaningfulness of potential activities, irrespective of whether or not they happen to find themselves in a classically boring situation.

If true, this has positive and negative implications for the fight against boredom. On the

one hand, we may rest easier knowing that a tedious meeting or a particularly dull conversation are unlikely to lead to a prolonged bout of boredom. On the other hand, these results suggest that certain individuals may be more at risk for experiencing persistent boredom, and that this vulnerability may be related to dispositional variables (which have traditionally proved challenging to change).

Evaluation of the Anticipatory Meaning Exercise

Psychometric properties. The AMEx was found to have a Cronbach's alpha of .95, indicating high internal consistency. Indeed, Cronbach's alpha values in this range indicate that the items on the AMEx may be redundant with one another. It is likely that this redundancy is in part a product of the skewness of the items.

Association with theoretically related measures. The AMEx was found to have a significant positive correlation with the Meaning in Life Questionnaire, $r = .41, p < .001$. This correlation represents a medium to large effect size. This relationship indicates preliminary evidence of convergent validity for the AMEx. The AMEx was also found to have a significant negative correlation with the Boredom Proneness Scale, $r = -.24, p < .001$. It is interesting that the AMEx was not associated with *state* boredom, but is significantly associated with *trait* boredom. There may be many potential reasons for this, including A) individuals who have a "boredom prone" disposition have an impaired ability to anticipate the meaningfulness of potential activities, and B) the association between the AMEx and the BPS is an artifact of the relationship between the AMEx and the MILQ, because the MILQ and BPS are associated.

Factor structure. Because of the substantial skewness in the AMEx's items, the distribution of AMEx items was not multivariate normal. Therefore, the planned confirmatory factor analysis could not be conducted. Robust estimation, transformation of individual AMEx

items, and bootstrapping were unable to address the observed non-normality.

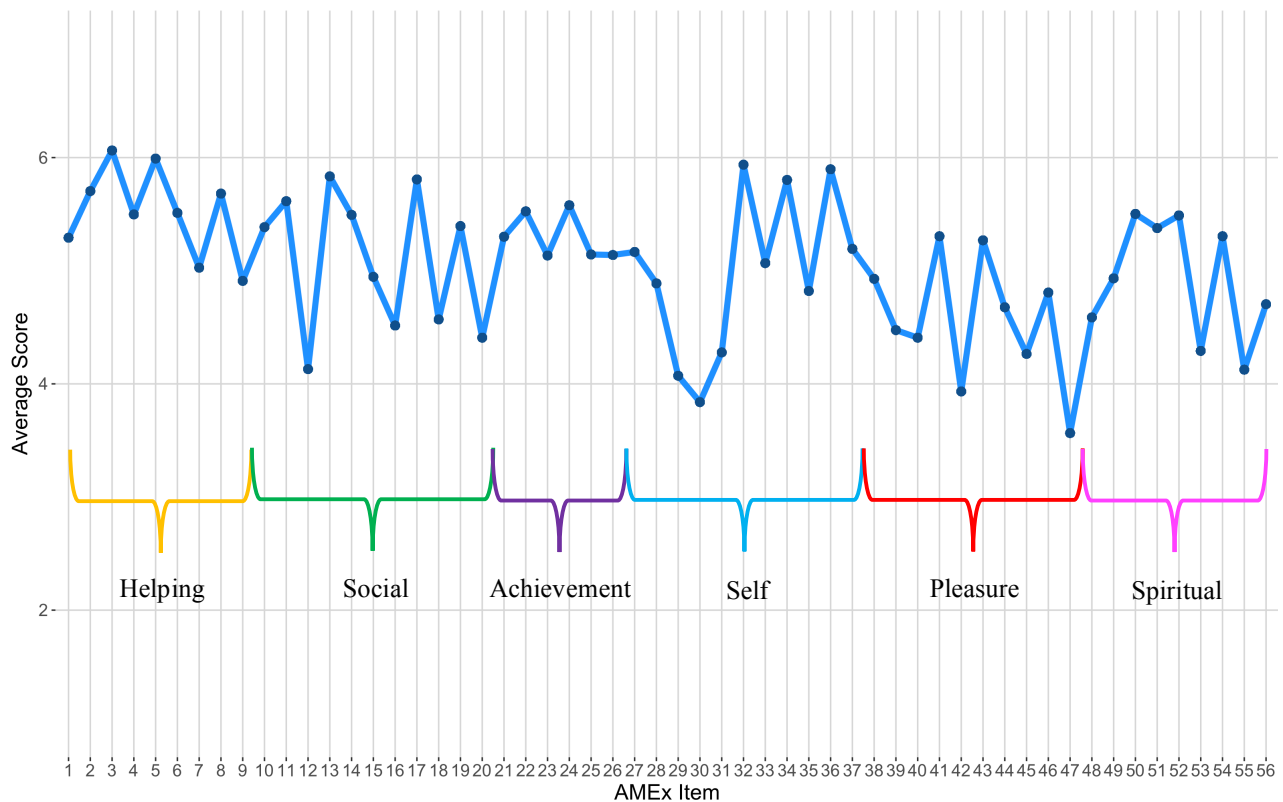
Table 4: Correlations Between AMEx Items and MSBS Total Score

AMEx Item	Spearman Rank-Order Correlation	<i>p</i>	AMEx Item	Spearman Rank-Order Correlation	<i>p</i>
1	-0.01586	0.8	29	0.08759	0.2
2	-0.1831	0.006**	30	0.01513	0.8
3	-0.07914	0.2	31	0.0274	0.7
4	-0.1085	0.1	32	-0.1286	0.06
5	-0.03488	0.6	33	0.02837	0.7
6	-0.1065	0.1	34	0.04175	0.5
7	0.01176	0.9	35	-0.1233	0.07
8	0.01986	0.8	36	-0.02961	0.7
9	-0.1432	0.03*	37	0.04527	0.5
10	0.03231	0.6	38	0.06318	0.3
11	-0.01344	0.8	39	0.07699	0.3
12	-0.06573	0.3	40	0.03916	0.6
13	-0.08919	0.2	41	0.1598	0.02*
14	0.04193	0.5	42	0.03326	0.6
15	0.1599	0.02*	43	0.1011	0.1
16	0.002038	1	44	0.07662	0.3
17	0.001944	1	45	0.04591	0.5
18	-0.09396	0.2	46	0.1003	0.1
19	0.02947	0.7	47	0.02276	0.7
20	-0.07075	0.3	48	0.07184	0.3
21	0.0298	0.7	49	-0.07543	0.3
22	-0.1064	0.1	50	0.006699	0.9
23	-0.0007846	1	51	0.002192	1
24	-0.01898	0.8	52	-0.01836	0.8
25	-0.08333	0.2	53	-0.04595	0.5
26	-0.06333	0.3	54	-0.01282	0.8
27	-0.007626	0.9	55	-0.0475	0.5
28	-0.1244	0.06	56	-0.1056	0.1

Evaluation of individual items. Spearman rank-order correlations were conducted between each individual AMEx item and participants' total MSBS score in order to determine whether certain items were better able to tap into the hypothesized relationship between boredom and anticipatory meaning. The results of this analysis can be found in Table 4. As Table 4 demonstrates, none of the items were strongly associated with state boredom scores.

Response Profile. Participants' responses for each AMEx item were averaged, and plotted on a line chart (Figure 1). Figure 1 demonstrates the pervasive negative skew throughout the AMEx. Additionally, variability within and across subscales is relatively slight. Thus, it appears that, on average, participants consistently anticipated that the activities listed in the AMEx would feel meaningful, if they were to complete them at some point in the future.

Figure 1: Average AMEx Response Profile



General Discussion

The Problem of Persistent Boredom

The primary purpose of this study was to test the hypothesis that individuals in a state of boredom have an impaired ability to anticipate the meaningfulness of potential activities. If true, this would be a crucial step forward in helping us understand how boredom sometimes becomes a persistent problem, and may inform efforts to develop effective boredom interventions.

However, our results did not support this hypothesis—scores on the AMEx were nearly identical across experimental groups.

This finding is intriguing not only because it indicates a lack of support for the central hypothesis of interest, but because it seemingly contradicts a wealth of research on emotion and prediction more generally. Work in this area has established that people routinely use their feelings as a source of information when making predictions about the future (Gilbert, Gill, & Wilson, 2002; Loewenstein & Lerner, 2003; Mellers, Schwartz, Ho, & Ritov, 1997; Schwarz, 2010). More specifically, it has been suggested that people frequently make decisions by creating a mental image of the various outcomes of that decision and evaluating their visceral reaction to that image (Gilbert, Gill, & Wilson, 2000; Rolls, 1999; Taylor, Pham, Rivkin, & Amor, 1998). Research on *affective forecasting* has shown that people consistently overestimate the permanence of negative affective states (Gilbert, Pinel, Wilson, Blumberg, & Wheatley, 1998; Loewenstein & Frederick, 1997). Specific affective forecasting biases such as the *projection bias* (the tendency to “underappreciate the effects of changes in their states, and hence falsely project their current preferences...onto their future preferences” [Loewenstein, O’Donoghue, & Rabin, 2000, p. 2]) and *mental contamination* (the process by which judgments, emotions, or behaviors are influenced in unwanted ways, by, for example, one’s current emotional state [Wilson & Brekke, 1994; Wilson & Gilbert, 2003]) have highlighted the frequency with which humans rely on their current feelings when making predictions about the future.

Considering the above research, as well as the fact that boredom has been repeatedly associated with feelings of meaninglessness (e.g. Barbalet, 2000; Bargdill; Brisset & Snow, 1993; Drob & Bernard, 1987; Fiske & Maddi, 1961; Frankl, 1984; Fromm, 1972; Maddi, 1970; Melton & Schulenberg, 2007; Svendsen, 2005; van Tilburg & Igou, 2012; van Tilburg & Igou,

2017a), it is surprising that state boredom does not have *any* impact on predictions about meaning.

One potential reason why our data did not support our hypothesis is that other, more powerful biases may have been at play. Research on affective forecasting has provided compelling evidence that people tend to be overly optimistic about the emotional impact of positive events, and overly pessimistic about the emotional impact of negative events (Loewenstein & Frederick, 1997; Ubel et al. , 2001; Schkade & Kahneman, 1998). For example, Gilbert, Pinel, Wilson, Blumberg, and Wheatley (1998) found that assistant professors who received tenure were less happy immediately after hearing the good news than they expected, and professors who did not receive tenure were less unhappy than they expected immediately after learning of their failure (Gilbert et al., 1998). After 5 years participants were essentially equivalent in terms of happiness (Gilbert et al., 1998). Given people's propensity to overestimate the impact of emotional events, it is possible that participants in our study overestimated the extent to which engagement in a given activity would provide them with a sense of meaningfulness. This overestimation may have been strong enough to obscure any potential diminution effect the boredom manipulation may have had on people's expectations about the meaningfulness of potential activities.

Another possible explanation is that participants in the present study were not actually making affective forecasts. Loewenstein & Schkade (1997) have mentioned that research on affective forecasting is fraught with methodological problems. Chief among them is the possibility that for any given prediction, participants may "save the effort of introspecting about their current feelings and instead simply report their prior predictions" (Loewenstein & Schkade, 1997, p. 5). It may be that participants relied more on preconceived notions of what constitutes a

meaningful activity, rather than affective predictions based on their current emotional state. In the words of Loewenstein & Schkade, “there is a real risk that ‘cold’ paper-and-pencil ratings fail to capture the ‘hot’ dimensions of feeling states” 1997, (p. 6-7).

A third possible reason why we did not find support for our hypothesis is that persistent boredom does not “evolve” out of normal, everyday episodes of boredom. Instead individuals high in “trait boredom” are uniquely susceptible to making pessimistic predictions about the meaningfulness of potential activities, which in turn leads to decreased engagement in meaningful activity and, thus, prolonged and eventually persistent boredom.

A fourth possible reason why we did not find support for our hypothesis is that meaning may not be the mechanism by which boredom becomes a persistent problem. In this paper research has been reviewed which suggests that A) boredom can commonly become a persistent problem (e.g. Brisset & Snow, 1993; Greenson, 1953; Heron, 1957; Iso-Ahola & Weissinger, 1987; Maltzberger, 2000; Smith, 1981), and B) boredom is closely associated with an absence of meaning (e.g. Barbalet, 2000; Frankl, 1984; Fromm, 1972; Maddi, 1970; Melton & Schulenberg, 2007; van Tilburg & Igou, 2012). However, the present study was the first to suggest that these two separate findings might be related. The fact that we were unable to find any such relation suggests that persistent boredom and the existential features of boredom may be largely independent. Recent research has lent support for the possibility that feelings of meaning may not be as critical to the mechanics of boredom as previously thought. In an unprecedented longitudinal study of boredom, Chin, Markey, Bhargava, Kassam, and Loewenstein (2016) concluded that their findings were more consistent with cognitive models of boredom, and less consistent with existential and arousal models. Specifically, they found that participants reported boredom most commonly in situations where it is more difficult to engage and sustain attention

(for example, at work or while studying), rather than in situations that are marked by an absence of meaning (Chin et al., 2016). It is worth noting that the researchers did not directly measure the experience of meaning, but their assertion that “time spent studying or at work is not obviously less meaningful than time at a gym, restaurant, or outdoors” (p. 8) is reasonable.

A fifth possibility is that persistent boredom is less common than expected. We did not measure participants’ boredom at numerous time points; thus, we cannot say whether their boredom persisted for some time after the manipulation. However, it is noteworthy that the most compelling evidence for the existence of persistent boredom comes from the study of more severe cases of boredom (e.g. Bargdill, 2000; Bergler, 1945; Fenichel, 1934; Greenson, 1953; Smith, 1981), which suggests that persistent boredom may be rare. Research has yet to determine the frequency with which boredom becomes a persistent problem. It is possible that predictions about meaning do play an important role in prolonging the experience of boredom, but only in severe cases. Alternatively regular, everyday boredom may only become a persistent problem in specific situations. It is also possible that persistent boredom has little to do with regular, everyday boredom, and is instead more closely associated with certain dispositional variables, such as trait boredom.

A final possible reason why we did not find support for our hypothesis is that the Anticipatory Meaning Exercise did not perform as expected. More specifically, it may be that the AMEx failed to elicit responding that was sufficiently variable to detect differences between bored and non-bored participants. These, and other possible concerns, are discussed below.

Critiquing the Anticipatory Meaning Exercise

In addition to attempting to answer a critical question about persistent boredom, this paper was written for the purpose of evaluating a newly developed measure—the Anticipatory

Meaning Exercise or “AMEx”. Our results indicate that the AMEx is a promising measure with significant flaws.

The AMEx’s most critical flaw is that it does not elicit variable responding. In the present sample, the majority of the items on the AMEx were highly skewed. Even after the most seriously skewed items were removed, our sample was still highly non-normal. This skewness was a major obstacle—it prevented us from testing the hypothesized factor structure of the AMEx, it obscured any impact the boredom manipulation may have had on the ability to accurately anticipate meaning, and it yielded a scale that was so internally consistent that it bordered on redundancy. There are three possible reasons for why the AMEx does not, in its current form, elicit variable responding. The first is that the activities listed are so meaningful that a disproportionate number of participants rate them as highly meaningful. For example, items such as, “Protecting someone who is being bullied” and “Turning over a new leaf” may be so blatantly meaningful that most participants answered them in the same way. Thus, a revised scale with more moderate activities may be more informative. The second is that participants were not provided with sufficient response options. Participants were provided with a 7 point Likert scale, and the following scale labels were used: 1 (“Not meaningful at all”), 4 (“Somewhat meaningful”), and 7 (“Extremely meaningful”). Given that the items on the AMEx were designed to represent meaningful activity, it may be more appropriate to use “Somewhat meaningful” as the lower end of the scale (“1”) rather than the middle (“4”). If revised in this way, the AMEx might provide a more granular picture of participants’ predictions about the meaningfulness of potential activities. The third possibility is that people’s predictions about the meaningfulness of potential activities may be more invariant than expected.

While the AMEx has serious flaws, the findings of the present study have also yielded

some partial support for the validity of the AMEx. For example, the AMEx was found to be significantly associated with both the Boredom Proneness Scale and the Meaning in Life Questionnaire. The fact that the AMEx did not appear to be sensitive to momentary changes in mood, but was significantly associated with trait-level scales, indicates that the AMEx in its current form may be closer to a measure of personality or disposition.

Evaluating Measures of Valence, Arousal, and State Motivation

As demonstrated in Table 1, participants manipulated into a state of boredom reported significantly lower valence and arousal compared to controls. Thus, our valence and arousal items performed as expected. These brief measures may be of particular use in measuring changes in emotional state, such as those that occur after an experimental manipulation.

Table 1 also shows that our measures of state motivation, adapted from Gray and McNaughton's (2000) revised Reinforcement Sensitivity Theory, were sensitive to the boredom manipulation. However, the items did not perform precisely as expected—most notably participants in the boredom condition reported *lower* behavioural inhibition than controls. As discussed, these findings may speak to differences between state and trait motivation or, alternatively, poor item quality.

Although the valence, arousal, and state motivation items used in this study demonstrated potential use in further studies, additional work is required. Most pressing the totals for each measure were significantly non-normal. This non-normality is likely a product of the small number of items used, as well as the implementation of a Likert scale. In future studies, it would be beneficial to increase the number of items used (while keeping each measure as short as possible). There may also be value in using a visual analogue scale instead of Likert scale items; such a scale is more likely to capture the continuous, normal distribution hypothesized to

underlie valence, arousal, and state motivation. If the Likert-scale format is retained, it is advisable to either use a five-point scale (Revilla, Saris, & Krosnick, 2014) or change the response options from an “Agree-Disagree” format to an “Item-Specific Response” format (Saris, Revilla, Krosnick, & Shaeffer, 2010).

Future Directions

This study failed to find support for the hypothesis that state boredom corresponds to an impaired ability to anticipate the meaningfulness of potential activities. It is still possible that feelings of meaninglessness are a crucial component of the process by which boredom becomes a persistent problem, but that the methods used in this paper were unable to identify that relationship. Specifically, it may be that the Anticipatory Meaning Exercise was unable to measure differences between bored and control participants because its items were so highly skewed. Future versions of the AMEx should include moderate items that are more likely to elicit variable responding. Different scale labels may also be helpful in detecting potential differences. More detailed instructions may help ensure that participants do not simply rely on prior predictions about the meaningfulness of a given activity, and instead engage in the more effortful process of making predictions based on their current affective state. For example, participants could be instructed to “Respond based on how you are currently feeling. Focus on your emotions and what they are telling you—right now—about how meaningful this activity would feel if you were to complete it sometime in the future.” It may also be useful to reduce the number of items on the AMEx—consciously imagining the emotional impact of future activities can be challenging, and participants may be more likely to rely on “prior predictions” if the scale is onerously long. Once a set of well performing items has been identified, versions of the AMEx with varying numbers of items can be administered to determine the ideal length of the scale.

If additional research on anticipatory meaning is conducted, it is advised that the accuracy of the predictions that participants make be measured. In the present study we did not follow participants after their predictions to determine whether they avoided activities they predicted would feel meaningless, or whether they actually found activities as meaningful as they expected. Without prolonged behavioural observation, it cannot be said whether predictions about the meaningfulness of potential future activities actually have an impact on future behaviour.

Alternative answers to the problem of persistent boredom, such as those provided by cognitive models, should be subjected to empirical study. Such a study would track participants' boredom, attentional performance, and behaviour before, and at several time points after, a boredom manipulation. Researchers are cautioned to use brief, nonobtrusive measures of attentional performance, as there is some evidence that traditional lab-based attention tasks may themselves be boring, thus complicating interpretations about the effect of boredom on attentional ability (Hunter & Eastwood, 2016).

Furthermore, additional empirical research is required on the phenomenon of persistent boredom. Future studies may wish to examine A) the frequency with which normal, everyday episodes of boredom become persistent (including not at all), B) whether certain causes of boredom (e.g. monotonous situations, unstructured leisure, cognitively demanding tasks) are more likely to lead to persistent boredom than others, and C) whether episodes of persistent boredom are more likely to lead to deleterious behaviour. Longitudinal experience sampling methods may be useful in this endeavour.

Finally, a consensus must be reached on the issue of trait boredom. The results of the present study suggest that trait boredom may be implicated in the problem of persistent boredom.

However, without a widely agreed upon definition of trait boredom, the precise nature of trait boredom's role in persistent boredom cannot be ascertained. As has been done before (e.g. Struk, Carriere, Cheyne, & Danckert, 2015; Vodanovich & Watt, 2016), we call for increased collaboration and innovation on the issue of trait boredom. It may be that an entirely new definition is required.

Conclusion

This paper attempted to unravel the mystery of persistent boredom by testing the hypothesis that individuals in a state of boredom have an impaired ability to anticipate the meaningfulness of potential activities. Our findings did not support this hypothesis. However, like the phenomenon itself, the quest for a more fulsome understanding of boredom persists. Future work is required to determine the causes, prevalence, and consequences of persistent boredom. Additional work must be done to determine whether feelings of meaning are an intrinsic part of the mechanics of boredom, or are a more tertiary component of the boredom experience. Furthermore, different models of boredom—such as the cognitive model—hold tremendous potential for providing alternative answers to the problem of persistent boredom. Several researcher generated measures used in this study demonstrated significant potential for use in future studies, providing that certain specific revisions are made.

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Erlbaum

Appendix

Boredom Proneness Scale (Farmer & Sundberg, 1986)

	1	2	3	4	5	6	7
1. It is easy for me to concentrate on my activities.	Highly disagree						Highly agree
2. Frequently when I am working I find myself worrying about other things.	Highly disagree						Highly agree
3. Time always seems to be passing slowly.	Highly disagree						Highly agree
4. I often find myself at “loose ends”, not knowing what to do.	Highly disagree						Highly agree
5. It is easy for me to concentrate on my activities.	Highly disagree						Highly agree
6. Having to look at someone’s home movies or travel slides bores me tremendously.	Highly disagree						Highly agree
7. I have projects in mind all the time, things to do.	Highly disagree						Highly agree

8.	1	2	3	4	5	6	7
I find it easy to entertain myself.	Highly disagree						Highly agree
9.	1	2	3	4	5	6	7
Many things I have to do are repetitive and monotonous.	Highly disagree						Highly agree
10.	1	2	3	4	5	6	7
It takes more stimulation to get me going than most people.	Highly disagree						Highly agree
11.	1	2	3	4	5	6	7
I get a kick out of most things I do.	Highly disagree						Highly agree
12.	1	2	3	4	5	6	7
I am seldom excited about my work.	Highly disagree						Highly agree
13.	1	2	3	4	5	6	7
In any situation I can usually find something to do or see to keep me interested.	Highly disagree						Highly agree
14.	1	2	3	4	5	6	7
Much of the time I just sit around doing nothing.	Highly disagree						Highly agree
15.	1	2	3	4	5	6	7
I am good at waiting patiently.	Highly disagree						Highly agree
16.	1	2	3	4	5	6	7
I often find myself with nothing to do, time on my hands.	Highly disagree						Highly agree

17.	1	2	3	4	5	6	7
In situations where I have to wait, such as a line I get very restless.	Highly disagree						Highly agree
18.	1	2	3	4	5	6	7
I often wake up with a new idea.	Highly disagree						Highly agree
19.	1	2	3	4	5	6	7
It would be very hard for me to find a job that is exciting enough.	Highly disagree						Highly agree
20.	1	2	3	4	5	6	7
I would like more challenging things to do in life.	Highly disagree						Highly agree
21.	1	2	3	4	5	6	7
I feel that I am working below my abilities most of the time.	Highly disagree						Highly agree
22.	1	2	3	4	5	6	7
Many people would say that I am a creative or imaginative person.	Highly disagree						Highly agree
23.	1	2	3	4	5	6	7
I have so many interests, I don't have time to do everything.	Highly disagree						Highly agree
24.	1	2	3	4	5	6	7
Among my friends, I am the one who keeps doing something the longest.	Highly disagree						Highly agree

25.	1	2	3	4	5	6	7
Unless I am doing something exciting, even dangerous, I feel half-dead and dull.	Highly disagree						Highly agree
26.	1	2	3	4	5	6	7
.It takes a lot of change and variety to keep me really happy.	Highly disagree						Highly agree
27.	1	2	3	4	5	6	7
It seems that the same things are on television or the movies all the time; it's getting old.	Highly disagree						Highly agree
28.	1	2	3	4	5	6	7
When I was young, I was often in monotonous and tiresome situations.	Highly disagree						Highly agree

**The Meaning in Life Questionnaire
(Steger, Frazier, Oishi, & Kaler, 2006)**

MLQ Please take a moment to think about what makes your life feel important to you. Please respond to the following statements as truthfully and accurately as you can, and also please remember that these are very subjective questions and that there are no right or wrong answers. Please answer according to the scale below.

Absolutely Untrue 1	Mostly Untrue 2	Somewhat Untrue 3	Can't Say True or False 4	Somewhat True 5	Mostly True 6	Absolutely True 7
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1. _____ I understand my life's meaning.
2. _____ I am looking for something that makes my life feel meaningful.
3. _____ I am always looking to find my life's purpose.
4. _____ My life has a clear sense of purpose.
5. _____ I have a good sense of what makes my life meaningful.
6. _____ I have discovered a satisfying life purpose.
7. _____ I am always searching for something that makes my life feel significant.
8. _____ I am seeking a purpose or mission for my life.
9. _____ My life has no clear purpose.
10. _____ I am searching for meaning in my life.

MLQ syntax to create Presence and Search subscales:

Presence = 1, 4, 5, 6, & 9-reverse-coded

Search = 2, 3, 7, 8, & 10

Multidimensional State Boredom Scale (MSBS-8 Items Bolded)
(Fahlman, Mercer-Lynn, Flora, & Eastwood, 2011)

Instructions: Please respond to each question indicating how you feel right now about yourself and your life, even if it is different from how you usually feel. Use the following choices: 1 = *Strongly disagree*; 2 = *Disagree*; 3 = *Somewhat disagree*; 4 = *Neutral*; 5 = *Somewhat agree*; 6 = *Agree*; and 7 = *Strongly agree*.

- 1. Time is passing by slower than usual.**
2. I am stuck in a situation that I feel is irrelevant.
- 3. I am easily distracted.**
4. I am lonely.
5. Everything seems to be irritating me right now.
6. I wish time would go by faster.
7. Everything seems repetitive and routine to me.
8. I feel down.
- 9. I seem to be forced to do things that have no value to me.**
- 10. I feel bored.**
11. Time is dragging on.
12. I am more moody than usual.
13. I am indecisive or unsure of what to do next.
14. I feel agitated.
15. I feel empty.
16. It is difficult to focus my attention.
17. I want to do something fun, but nothing appeals to me.
18. Time is moving very slowly.
19. I wish I was doing something more exciting.
20. My attention span is shorter than usual.
21. I am impatient right now.
- 22. I am wasting time that would be better spent on something else.**
- 23. My mind is wandering.**
- 24. I want something to happen but I'm not sure what.**
25. I feel cut off from the rest of the world.
26. Right now it seems like time is passing slowly.
27. I am annoyed with the people around me.
- 28. I feel like I'm sitting around waiting for something to happen.**
29. It seems like there's no one around for me to talk to.

Scoring

- MSBS Total Score: sum of all 29 items
 Disengagement subscale: Items 2, 7, 9, 10, 13, 17, 19, 22, 24, 28
 High Arousal subscale: Items 5, 12, 14, 21, 27
 Inattention subscale: Items 3, 16, 20, 23
 Low Arousal subscale: Items 4, 8, 15, 25, 29
 Time Perception subscale: Items 1, 6, 11, 18, 26

Anticipatory Meaning Exercise (Unpublished)

Instructions: In a moment, you will be asked to rate activities in terms of how *meaningful* they might feel. It is important to remember that what a person believes to be meaningful can vary. For example, some people might believe that activities involving helping others are meaningful. Someone else might find activities that are fun or make them happy to be meaningful. Others might think that activities related to success or achievement are meaningful. Others might find meaning in activities that bring them closer to God, Allah, Gaia, or some kind of Higher Power. Many activities can be considered meaningful. Ultimately, a meaningful activity is one that fits with a person's beliefs about their life meaning and purpose.

Please read the following list of activities. For each activity on the list, think about how meaningful it would feel to complete that activity *sometime in the future*. It is important that you think about the future, rather than remembering a time in the past when you may have done that activity. Please rate the activity in terms of how meaningful you expect that activity would feel *for you*, rather than how meaningful you think it should be, or how meaningful other people might find it.²

Helping

1. Helping a friend move into a new apartment/home
2. Doing a big favour for someone
3. Protecting someone who is being bullied
4. Returning a lost item to someone
5. Cheering someone up when they are upset
6. Offering your seat to someone on the bus/subway/train
7. Paying for someone else's meal
8. Volunteering at a homeless shelter
9. Giving someone who is lost directions

Social

10. Making a new friend
11. Having a lively conversation with someone
12. Attending a party
13. Re-connecting with an old friend
14. Going on a great date
15. Sharing a secret with someone
16. Telling a really funny joke
17. Getting out of a bad relationship
18. Collaborating with others on a project

² AMEx items listed here are grouped under their appropriate subscale. In the experimental procedure, items were presented in random order. Additionally, each activity was presented using the following format, "**Doing a big favour for someone** would feel..." Participants responded using a 7 point Likert scale; the following labels were used: 1 ("Not meaningful at all"), 4 ("Somewhat meaningful"), and 7 ("Extremely meaningful").

19. Going out to dinner with friends
20. Joining a club

Achievement

21. Keeping a new years resolution
22. Solving a complicated problem
23. Making something from scratch
24. Completing a project on time or ahead of time
25. Working very intently on a project
26. Getting into a “rhythm” or “groove” while working

Self

27. Learning to play a musical instrument
28. Attending an interesting lecture
29. Trying a strange new food
30. Going to an art gallery
31. Painting a picture
32. Developing a new skill or ability
33. Finding a new hobby
34. Visiting a foreign country
35. Telling a story about yourself or your life
36. Breaking a bad habit
37. Turning over a new leaf

Pleasure

38. Reading a really good book
39. Watching a great movie or television show
40. Playing a fun game
41. Listening to a great piece of music
42. Going to see a play or other dramatic performance
43. Relaxing on the beach
44. Going to a concert
45. Drinking something tasty
46. Having a delicious meal
47. Smelling something fragrant

Spiritual

48. Going to a place of worship
49. Cheering for your team or country at an event
50. Looking through an old yearbook or family photo album
51. Learning about your ancestry
52. Recalling a cherished memory
53. Singing your country’s national anthem
54. Completing a rite of passage (e.g. completing a pilgrimage or some personal task/journey)
55. Wearing your country’s colours
56. Reciting a personal creed or set of beliefs

Brief Measure of Valence and Arousal (Unpublished)³

Instructions: Please respond to each question indicating how you feel right now, even if it is different from how you usually feel.

Valence

Right now I am feeling:

	1	2	3	4	5	6	7
Very negative							Very positive

Right now I am feeling:

	1	2	3	4	5	6	7
Very unpleasant							Very pleasant

Arousal

Right now I have:

	1	2	3	4	5	6	7
Little energy							A lot of energy

Right now I am feeling:

	1	2	3	4	5	6	7
Very sluggish							Very alert

³ In the experimental procedure, valence and arousal items were presented in alternating order in an attempt to prevent participants from sensing a common theme among the items.

State Motivation Scale (Unpublished)⁴

Instructions: Please respond to each question indicating how you feel right now, even if it is different from how you usually feel. Use the following choices: 1 = *Strongly disagree*; 2 = *Disagree*; 3 = *Somewhat disagree*; 4 = *Neutral*; 5 = *Somewhat agree*; 6 = *Agree*; and 7 = *Strongly agree*.

Behavioural Activation

1. I feel decisive
2. I feel eager
3. I feel compelled to act

Behavioural Inhibition

1. I feel on guard
2. I feel tense
3. I feel anxious

Fight-Flight-Freeze System

1. I feel afraid
2. I feel like running away
3. I feel like hiding

⁴ As with the valence and arousal items, items on the three separate subscales of the State Motivation Scale were presented in alternating order.

Movie Manipulation Scripts

Boring Movie Script

For the next part of the study you will be watching a 20 minute clip of a video on the computer. After the video, you will be asked a few memory questions about its content, so please pay attention so that you can get as many correct answers as possible. I will warn you that you may not enjoy the film as it is well below your level of understanding. We did have videos that we were asking people to choose from, including a more interesting video, but we are having technical difficulties with the other video on one of the computers. Because it is important that things are kept consistent for everyone today, you don't have a choice, and you have to watch this one. In exactly 20 minutes, the video will stop. Once it stops, just let me know.

Non-boring Movie Script

For the next task you will be watching a 30 minute clip of a video on the computer. After the video, you will be asked a few memory questions about its content, so please pay attention. You can watch one of two videos – I will read a brief description of the video, and then you tell me which you would like.

Video A Description

The first clip is from a film about a young SWAT team specialist who must outsmart a revengeful maniac before he gets himself killed.

Video B Description

The second clip is from a film about a group of people who are stranded, taken hostage, and will do anything to save themselves and each other.