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Boredom: Under-aroused and restless

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ABSTRACT

Boredom is a common experience associated with a range of negative outcomes. Debate remains as to whether boredom should be considered a high or low arousal state. We employed passages of text to induce either boredom or interest and probed self-reported levels of boredom, arousal, and restlessness. Results replicated known associations between mind-wandering and state boredom (i.e., mind-wandering was highest for the boredom mood induction). Reports of sleepiness (a proxy for arousal level) were highest for the boring induction. While restlessness was not different for the boring and interesting inductions when they were performed first, restlessness was significantly higher for the boredom induction when it was experienced last. We discuss these results within the context of the debate regarding boredom and arousal.

1. Introduction

Boredom is a common human experience characterised as unpleasant, and associated with a range of negative outcomes including depression (Goldberg, Eastwood, LaGuardia, & Danckert, 2011), a lack of life meaning (Fahlman, Mercer, Gaskovski, Eastwood, & Eastwood, 2009), excessive gambling (Mercer & Eastwood, 2010), and substance abuse (LePera, 2011). We define boredom as a disengaged state in which the individual is motivated to be engaged with their environment, but for whom all attempts to do so fail (Eastwood, Frischen, Fenske, & Smilek, 2012). Experienced as negatively valenced, this description highlights a prominent cognitive component of boredom – attentional failures (Eastwood et al., 2012; see also Carriere, Cheyne, & Smilek, 2008; Cheyne, Carriere, & Smilek, 2006). Indeed, research has consistently demonstrated objective behavioural consequences of both state and trait boredom such that sustained attention is clearly impaired (Damrad-Frye & Laird, 1989; Hunter & Eastwood, 2016; Malkovsky, Merrifield, Goldberg, & Danckert, 2012).

The confluence of a strong motivation to engage and failures to satisfy that desire is a recipe for frustration and agitation. One of the earliest descriptions of boredom, based on a psychoanalytic case study (Greenson, 1953), suggested the state could be cast as either apathetic or agitated. We would argue that the former subtype proposed by Greenson – apathetic boredom – is merely apathy (Goldberg et al., 2011). By our own definition, when bored we are *motivated* to engage, a condition precluded by the notion of apathy. Instead, we and others have described boredom as a unitary construct characterised as a restlessness borne of unsatisfactory engagement (Merrifield & Danckert, 2014).

Casting boredom as a kind of restlessness is hardly novel. Sir Francis Galton once informally measured 'fidget' during a lecture attended in the late 1800s. To his eye, when people were bored they exhibited significantly more 'sway' in their posture, and fidgeted more frequently which he took to be a clear index of restlessness (Galton, 1885). We and others have substantiated this description of boredom by showing an increase in autonomic arousal associated in people reporting being in a bored state (Berlyne, 1960; Jang, Park, Park, Kim, & Sohn, 2015; London, Schubert, & Washburn, 1972; Lundberg, Melin, Evans, & Holmberg, 1993; Martin, Sadlo, &

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Stew, 2006; Merrifield & Danckert, 2014; Ohsuga, Shimono, & Genno, 2001).

This characterisation of boredom as a high arousal state is far from uncontroversial with some suggesting that boredom is more consistently associated with low arousal properly attributed to situations lacking in stimulation (Barmack, 1939; Geiwitz, 1966; Mikulas & Vodanovich, 1993; Pattyn, Neyt, Henderickx, & Soetens, 2008; Russel, 1980; Vogel-Walcutt, Fiorella, Carper, & Schatz, 2012; see also Westgate & Wilson, in press in which the literature on boredom and arousal is shown to be fairly evenly split between the high and low arousal camps). Barmack (1939) even goes so far as to suggest that boredom more closely approximates the physiological state of sleep! This claim fits well with self-reports that consistently associate boredom with low arousal (Van Tilberg & Igou, 2011). While it is possible that self-reports reflect a hindsight bias – when evaluated retrospectively we associate boredom with doing nothing and cast it as under-arousing – it is plausible that the subjective feeling and physiological signatures are not identical, or at the very least, are not static. In other words, differences in the subjective feelings associated with being bored and the accompanying physiological signature may chart distinct stages of the experience. When we first notice being bored we are likely in an underarousing, monotonous circumstance. As we try extricate ourselves from this, arousal levels should rise. More importantly, those arousal levels should hit a peak when our efforts to engage in stimulating activities fail, accompanied by feelings of restlessness (note: the association between boredom and restlessness is ubiquitous in studies of leisure boredom in teens; e.g., Spaeth, Weichold, & Silbereisen, 2015). Now we're bored and we can't get out of it! These failures may in turn lead to some form of helplessness better characterised as a low arousal state. The point here is that state boredom is dynamic and may best be thought of as both a high *and* low arousal experience (Eastwood et al., 2012; Fahlman, Mercer-Lynn, Flora, & Eastwood, 2013).

The current study intended to examine the relationship between self-reports of state boredom and measures intended to track changes in subjective feelings of high and low arousal. To do this we induced the states of boredom and interest separately by having people read either boring or interesting passages of text, and used experience probes to evaluate state boredom, mind-wandering, restlessness and sleepiness. The latter two probes were intended to provide an index of subjective perception of arousal levels, whereas the mind-wandering probe served as a measure of attentiveness. While different terms could have been chosen to index the state of underarousal, we adopted 'sleepiness' to directly examine Barmack's claim that boredom approaches sleep in terms of arousal. In addition, there is some ecological validity to asking about sleepiness during a session of reading – that is, we have all had the experience of getting drowsy while reading, even when engaged by the material. In addition to probing levels of mind-wandering, we also measured blink rates as an indirect indication of attention failure. We expected to replicate findings showing that increased levels of mind-wandering and blink rates are associated with off task processing and boredom. With respect to self-reported levels of arousal, we expected that if boredom is best characterised as a low arousal state then ratings of sleepiness should track with ratings of boredom. That is, as boredom rises so should self-reported levels of sleepiness. The converse would be true if boredom was a uniquely high arousal state – in this instance, ratings of restlessness should rise with rising levels of boredom. A third possibility is that boredom is best thought of as both a high and low arousal experience – at least subjectively. In this instance we would expect self-reports of both sleepiness *and* restlessness to rise with rising levels of state boredom. Our focus here is primarily on state boredom. Nevertheless, we included measures of trait boredom for exploratory purposes.

2. Method

2.1. Participants

Twenty-eight undergraduates (12 females; mean age = 19.5 years; SD = 1.52 years) from the University of Waterloo participated in exchange for course credit. Data from three participants was excluded due to difficulties capturing eye-tracking for two participants and a failure to complete the session for the third participant. Thus all data were conducted on a sample of twenty-five participants (10 females; mean age = 19.56 years; SD = 1.58 years). All participants had normal or corrected to normal vision. Participants completed a modified version of the Boredom Proneness Scale (Farmer & Sundberg, 1986) online approximately 1–8 weeks prior to completing the in-lab portion of the experiment. This shortened BPS (sBPS) consists of 8 questions measured on a 7-point Likert scale, where high scores indicate high boredom proneness (Struk, Carriere, Cheyne, & Danckert, 2017). Two groups of participants were pre-selected on the basis of these scores: a high boredom prone (HBP) group consisting of participants with sBPS scores greater than one standard deviation from the mean of a larger sample (n = 2662, mean sBPS score = 25.95, SD = 9.32) and a low boredom prone (LBP) group whose sBPS scores were lower than one standard deviation from the mean. The protocol was approved by the University of Waterloo's Office of Research Ethics and participants gave written consent prior to participating.

2.2. Materials and design

Each participant was asked to read both a boring and an interesting story, with story order counterbalanced. Self-reported state boredom, mind-wandering, restlessness, and sleepiness were measured using experience sampling methods during the task. In addition, we measured blink rate in epochs prior to these self-reports. Prior research has demonstrated a strong association between mind-wandering and blink rate such that mind-wandering episodes are associated with higher blink rates (Smilek, Carriere, & Cheyne, 2010). More specifically, Smilek et al. (2010) suggested that when the mind wanders, attention is shifted inward, reflective of reduced attention to external stimuli. Any reduction in attention may be manifested as blocking stimulation of the visual receptors simply by the closing of the eyelids. It can also be argued that during tasks requiring attention to external visual stimuli, people are more likely to *suppress eye blinks* to maintain contact with the stimuli presented. When attentional resources are shifted to internal thoughts, control over blink suppression is attenuated, thus leading to an increase in blink rates. Any link between blink rate and