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5 **Existential Escape of the Bored: A Review of Meaning-Regulation Processes Under**

6 **Boredom**

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Andrew B. Moynihan

University of Limerick

Eric R. Igou

University of Limerick

Wijnand A. P. van Tilburg

University of Essex

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1 Abstract

2 Boredom is a common, unpleasant emotion that conveys meaninglessness in life and compels
3 people to escape from this adverse existential experience. Within the paradigm of existential
4 social psychology frameworks, previous research found that bored people endorse cultural
5 sources of meaning as compensation against this state (i.e., nostalgia, political ideologies). In
6 recent years, another form of defence against meaning threats has been identified. An existential
7 escape hypothesis relating to boredom claims that people seek to avoid meaninglessness when
8 people encounter meaning threats such as boredom. By engaging in behaviours with low self-
9 awareness, people counteract awareness of their bored and meaningless self. In this article, we
10 review the current literature on boredom in light of such acts of existential escape. We also
11 provide suggestions for future research to highlight under which circumstances people are more
12 likely to engage in existential escape and identify phenomena that need to be tested within the
13 escape process.

14 *Keywords:* boredom, existential escape, meaning, self-regulation, existential psychology

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Existential Escape of the Bored: A Review of Meaning-Regulation Processes Under Boredom

Boredom is a common, unpleasant experience (Chan et al., 2018; Van Tilburg & Igou, 2017a) and refers to a distinct emotional state with a unique set of cognitions, feelings, and motivations (Goldberg, Eastwood, LaGuardia, & Danckert, 2011; Van Tilburg & Igou, 2012). Boredom is characterised by low or mixed levels of arousal (Leary, Rogers, Canfield, & Coe, 1986; Merrifield & Danckert, 2014) and in some cases may occur when there is a disparity between an individual's need for arousal and a lack of adequate environmental stimulation (Csikszentmihalyi, 2000; Kass & Vodanovich, 1990; Mikulas & Vodanovich, 1993). Boredom is also characterised by an inability to focus or engage attention (Danckert & Merrifield, 2016; Hunter & Eastwood, 2018). Accordingly, boredom involves experiencing restlessness and disinterest in one's predicament and motivates people to pursue more satisfactory goals (Barbalet, 1999; Eastwood, Frischen, Fenske, & Smilek, 2012; Leong & Schneller, 1993). Based on this notion, boredom has been portrayed as an unpleasant but ultimately functional emotion as it informs people of the mundaneness of their current circumstances and motivates people to escape from it in the pursuit of more worthwhile activity (e.g., Elpidorou, 2014, 2018a, 2018b, 2020; see also Bench & Lench, 2013, 2019; Van Tilburg & Igou, 2011, 2017a).

A key distinguishing feature of boredom is that it marks an appraised lack of meaning in one's present situation or even life in general (Chan et al., 2018; Fahlman, Mercer, Gaskovski, Eastwood, & Eastwood, 2009; Van Tilburg & Igou, 2012, 2017a). Bored people interpret their situation as purposeless and feel dissatisfied, restless, and unchallenged. In response, boredom serves the self-regulatory function of directing people's cognitions and behaviours toward addressing the lack of meaning at hand by pursuing more meaningful, satisfactory, or stimulating

1 activity (Elpidorou, 2014, 2018b, 2020; Van Tilburg & Igou, 2012, 2017a). In accordance with
2 research on meaning-regulation (e.g., Heine, Proulx, & Vohs, 2006), boredom promotes the use
3 of symbolic (i.e., cultural) sources of meaning as compensation for meaninglessness, such as
4 favouring one's in-group and derogating an out-group (Van Tilburg & Igou, 2011), inspiring
5 pro-social tendencies (Van Tilburg & Igou, 2017b), engaging in nostalgic reverie (Van Tilburg,
6 Igou, & Sedikides, 2013), affirming one's own political ideologies (Van Tilburg & Igou, 2016)
7 and affirmation of heroes (Coughlan, Igou, Van Tilburg, Kinsella, Ritchie, 2017). Meaning
8 systems such as religion can also serve as a buffer against boredom experiences (Van Tilburg,
9 Igou, Maher, Moynihan, & Martin, 2019).

10 **Existential Escape Hypothesis**

11 Defences against the meaninglessness of boredom are not limited to engagement with
12 sources of meaning, however. An alternative form of defence is based on one principle course of
13 action in motivation and self-regulation: avoidance (e.g., Folkman, Lazarus, Dunkel-Schetter,
14 DeLongis, & Gruen, 1986) and the avoidance of unpleasant thoughts and feelings in particular
15 (e.g., Baumeister, 1991). In existential psychology literature, Wisman (2006) proposed the
16 defence of 'losing the self' by engaging in behaviours that prevent adverse self-awareness
17 (Baumeister, 1988, 1990, 1991). By doing so, people can reduce awareness of a threat to
18 meaning in life as an alternative to affirming worldviews or bolstering the self to deal with
19 meaninglessness. According to this existential escape hypothesis, people may also use
20 behaviours not specific to culture but that are more evolutionarily and developmentally more
21 basic (e.g., eating, drinking, sex, anonymity in groups) to deal with existential anxieties. Wisman
22 calls these behaviours *presymbolic* as people can enact them with little involvement of the

1 symbolic capacities needed in the more advanced cultural world. Typically, hedonic and some
2 interpersonal behaviours function as presymbolic resources.

3 To delineate this point, Wisman (2006) notes that humans have skills that allow them to
4 survive in the physical and primitively social world, such as eating, reproducing, and being lazy
5 to conserve energy. Wisman proposes that in the early stages of human civilisation, humanity
6 was aware of some meaning threats such as one's mortality (e.g., Greenberg, Pyszczynski, &
7 Solomon, 1997). Accordingly, these presymbolic mechanisms may have been modified through
8 evolution to help people cope with meaning threats when symbolic capacities to regulate
9 meaning were not developed or available (Kesebir & Pyszczynski, 2012; see also Koole, Sin, &
10 Schneider, 2014; Tai, Zheng, & Narayanan, 2011).

11 Within the literature referring to escape processes, Wisman (2006) proposes that people
12 regulate self-awareness to avoid unpleasant existential concerns (e.g., challenges to meaning in
13 life). Presymbolic mechanisms are assumed to operate by reducing objective self-awareness and
14 thereby reducing attention to the meaning threat the self is facing. This contention builds on the
15 notion that the perception of meaning threats is founded on an awareness of one's own attributes
16 and needs (Kim, Seto, Davis, & Hicks, 2015; Sedikides & Skowronski, 1997, 2003; Skowronski
17 & Sedikides, 2019). An outline of this existential escape process is presented in Figure 1.

18 Objective self-awareness theory (Duval & Wicklund, 1972) posits that directing attention
19 towards the self initiates an evaluative process in which one's current state on a salient
20 dimension is compared with ideal standards for that dimension (e.g., Carver, 1975; Duval,
21 Duval, & Mulilis, 1992; Gollwitzer & Wicklund, 1985; Phillips & Silvia, 2005; Silvia & Duval,
22 2001; Wicklund & Duval, 1971). Discrepancies between the actual (e.g., meaningless) and ideal
23 self (e.g., meaningful) are perceived by people experiencing meaning threats (Arndt, Greenberg,

1 Simon, Pyszczynski, Solomon, 1998; Silvia, 2001; Taubman Ben-Ari & Noy, 2010). These
2 discrepancies arouse negative feelings and may motivate people to avoid self-awareness (Duval
3 & Wicklund, 1972). By abandoning the facility needed to perceive meaning threats (Kim et al.,
4 2015; Sedikides & Skowronski, 2003), escaping self-awareness could be an appropriate means to
5 counteract the meaninglessness signaled by threats such as boredom. Wisman (2006) proposes
6 that this existential escape process involves engaging in behaviours that dampen the adverse self-
7 awareness needed to perceive meaning threats (e.g., hedonic food consumption; Hirschberger &
8 Ein-Dor, 2005; alcohol consumption; Ein-Dor et al., 2014, Hull, 1981, Wisman, Heflick, &
9 Goldenberg, 2015; anonymity in groups; Wisman & Koole, 2003).

10 In a similar context regarding objective self-awareness (Duval & Wicklund, 1972), high
11 self-awareness can promote attributions of failure to the self (Duval & Silvia, 2002; Silvia &
12 Duval, 2001) but also defensive, external attributions for negative events in people's lives. When
13 people are discrepant from a standard, they make attributions for the cause of the discrepancy
14 and appraise the likelihood that the discrepancy can be reduced. If people believe that the
15 discrepancy can be reduced, people may attribute failure internally and attempt to change the
16 self. However, if the discrepancy cannot be reduced, such as if the discrepancy is too large or
17 unattainable, people can attribute failure externally to another cause as a defence mechanism.
18 This latter strategy promotes attempts to avoid self-awareness and reminders of the discrepancy
19 between the self and ideal standards (Silvia & Duval, 2001).

20 **Self-Esteem and Existential Escape**

21 In relation to self-awareness and the attribution of unmet standards to the self, self-esteem
22 is a resource that people also use to defend against threats to meaning in life (Heine et al., 2006;
23 Greenberg et al., 1986). Self-esteem is in part a culturally-based construction that entails viewing

1 oneself as living up to specific standards of value that are derived from culture (Arndt &
2 Goldenberg, 2010). These standards, embedded in cultural worldviews, imbue the world with
3 meaning (Heine et al., 2006). Major existential psychological frameworks such as the meaning
4 maintenance model (Heine et al., 2006) presuppose that individuals are motivated to achieve
5 self-esteem among other core needs so as to highlight one's value based on one's adherence to
6 cultural worldviews and thereby protect oneself from existential anxiety (e.g., Dechesne,
7 Pyszczynski, Arndt, Ransom, Sheldon, Van Knippenberg, & Janssen, 2003). As a result, people
8 who can affirm self-esteem, with available and salient resources, may not address perceived
9 meaninglessness by existential escape but instead by adhering to valued, cultural worldviews
10 (e.g., Ferraro, Shiv, & Bettman, 2005; Taubman Ben-Ari & Findler, 2005). For example,
11 Wisman et al. (2015) found that under mortality salience (a meaning threat), people low in self-
12 esteem had lower scores on measures of private self-awareness. Participants with low self-
13 esteem also scored lower on measures of implicit self-activation and were more likely to choose
14 to write about others than themselves. Finally, Wisman et al. (2015) found that participants with
15 low self-esteem consumed greater quantities of alcohol as an escape under mortality salience
16 (Landau & Greenberg, 2006 also showed that participants with high self-esteem pursued more
17 risky decisions in attempts to achieve excellence despite substantial risk of failure. In contrast,
18 people with low self-esteem were more risk averse). Accordingly, Wisman (2006) proposed that
19 people with strong, coherent worldviews manage meaning threats by worldview defence,
20 whereas if people feel incompetent to live up to or become increasingly aware of self-
21 discrepancies set by these cultural norms, they may enact escape behaviour. Therefore, Wisman
22 et al. (2015) reason that people with low self-esteem lack the means to bolster the self as a

1 defence and are more likely to engage in existential escape in response to meaning threats such
2 as boredom (see also Aspinwall & Taylor, 1993; Reed & Aspinwall, 1998).

3 **Existential Escape: An Advancement From Terror Management Theory**

4 Wisman (2006) developed the existential escape hypothesis, in part, to advance terror
5 management research. Terror management theory (Greenberg, Pyszczynski, & Solomon, 1986)
6 is based on the uniquely human capacity for self-awareness and premises that humans face a
7 unique existential dilemma: People are biologically and psychologically programmed to live but
8 they are also cognitively sophisticated enough to realise that they will eventually die. Objective
9 self-awareness theory has informed a lot of research in social psychology (Silvia & Duval,
10 2001), including terror management theory (Arndt et al., 1998). Mortality salience can be
11 interpreted as the recognition of a discrepancy between the self as a finite creature and people's
12 instincts to want to live (Arndt et al., 1998). This underlying assumption of terror management
13 theory (Greenberg et al., 1997) is consistent with the tenets of objective self-awareness theory
14 (Duval & Wicklund, 1972); directing attention towards the self initiates an evaluative process in
15 which one's current state on a salient dimension is compared with ideal standards. Indeed, high
16 levels of self-awareness can serve as an internal death reminder and highlight one's vulnerability
17 (Taubman Ben-Ari & Noy, 2010). That is, awareness of one's existence also relates to the
18 recognition that one will inevitably die and cease to exist (Silvia, 2001). If the estimated
19 probability of reducing that discrepancy is low, people will be motivated to abandon the situation
20 that promotes self-focused attention. As a result, self-awareness facilitates the fear of death and
21 heightens the existential anxiety it arouses.

22 Thus, the potential for terror in the face of this frightening contradiction must be
23 managed. Terror management theory specifies culture as the primary instrument through which

1 mortality salience is dealt with by imbuing life with meaning and providing standards of value
2 against which people can attain a sense of personal value and significance. Specifically, people
3 are posited to defend against mortality concerns with symbolic representation of the world (i.e.,
4 cultural worldviews) and the self (i.e., self-esteem derived from living up to standards of one's
5 cultural worldview; Greenberg et al. 1986).

6 Within the framework of terror management theory (Greenberg et al., 1997; Greenberg,
7 Arndt, Simon, Pyszczynski, & Solomon, 2000; Pyszczynski, Greenberg & Solomon, 1999), a
8 comparable concept to existential escapes was introduced. Specifically, proximal defences were
9 proposed to work directly to remove meaning threats from consciousness by distraction or
10 suppression (e.g., denying vulnerability to meaninglessness; Arndt, Greenberg, Solomon,
11 Pyszczynski, & Simon, 1997). Consequently, people who experience mortality salience in some
12 cases try to avoid stimuli that increase self-awareness and try to actively suppress awareness of
13 meaning threats (Arndt et al., 1998). It was argued that these defences only provide partial relief
14 as the effects of these defences are temporary (Arndt & Goldenberg, 2010). Existential escapes
15 according to Wisman (2006) extend beyond distraction or suppression by allowing people to
16 cope effectively with meaning threats (Goldenberg, Arndt, Hart, & Brown, 2005; Heatherton,
17 Polivy, Herman, & Baumeister, 1993; McGregor, Nash, Prentice, Hirsh, & Inzlicht, 2012).
18 Further, unlike proximal defences, Wisman et al. (2015) found that existential escape behaviours
19 (i.e., alcohol consumption) have also been shown to occur at the distal (i.e., non-conscious) level
20 of awareness of meaning threats. Wisman also notes that these hedonic and interpersonal
21 behaviours have previously been explained in terms of self-esteem enhancement or worldview
22 defence. However, some studies showed that individuals who experience meaning threats
23 occasionally engage in risky, hedonic behaviours even when their own beliefs or health are at

1 stake (Ferraro et al., 2005; Goldenberg et al., 2005; Taubman Ben-Ari & Findler, 2005) or might
2 affiliate with groups who have worldviews contrary to one's own (Wisman & Koole, 2003). In
3 sum, when meaning threats are salient, individuals might engage in certain hedonic or
4 interpersonal behaviours to dampen the meaninglessness signaled by meaning threats and
5 captured by self-awareness (e.g., Baumeister, 1991; Heatherton & Baumeister, 1991; Wisman,
6 2006). Hence, reducing self-focus may also reduce perceptions of meaninglessness (e.g., Arndt
7 et al., 1998; Silvia, 2001; Taubman Ben-Ari & Noy, 2010) and help people to escape from
8 meaning threats including boredom.

9 **The Current Review**

10 This review assesses the current state of existential escape research on boredom. We
11 accumulate a body of evidence from hitherto loosely related studies to suggest that boredom,
12 when interpreted as a meaning threat, can promote responses that are geared towards avoiding
13 the self and the associated conflict. This is complementary to established research, showing that
14 affirming cultural worldviews might be alternative means to deal with boredom and its
15 characteristic sense of meaninglessness (e.g., Van Tilburg & Igou, 2011, 2016). Our review
16 allows us to understand some of the underlying mechanisms that explain boredom's relationships
17 with hedonic and interpersonal behaviours using existential psychological perspectives.
18 Previously, boredom has been linked with impulse control deficits (Leong & Schneller, 1993),
19 unhealthy and binge eating (Cleobury & Tapper, 2014; Stickney & Miltenberger, 1999), and
20 risk-taking (e.g., dangerous driving; Kass, Beede, & Vodanovich, 2010; Kılıç, Van Tilburg, &
21 Igou, 2020), among others (see Elpidorou, 2018a). By assessing different studies, we outline the
22 key roles of perceptions of meaninglessness as an underlying explanatory variable and self-
23 awareness as a qualifier of these effects when they are forms of existential escape. More broadly,

1 we contribute to boredom's place as a meaning threat within existential psychology, considering
2 that some of boredom's effects (i.e., on hedonic and interpersonal behaviours) have previously
3 been explained by other, complementary factors (e.g., trying to engage attention, Hamilton,
4 Haier, & Buchsbaum, 1984; seeking challenge or sensation; Dahlen, Martin, Ragan, & Kuhlman,
5 2004; Mercer & Eastwood, 2010). Accordingly, we focus on boredom as a meaning threat in our
6 review, given the lack of a synthesis on this research topic, in comparison to reviews on boredom
7 using other perspectives (e.g., attentional theories, Eastwood et al., 2012).

8 The value of this review for the field of social psychology is that it provides a discussion
9 on another type of defence against meaning threats than what has already been extensively
10 investigated in previous social psychological research (e.g., Pyszczynski et al., 1999). The
11 existential escape hypothesis (Wisman, 2006) provides a viable framework to expand on earlier
12 social psychological models such as terror management theory (e.g., Greenberg et al., 1997) and
13 the meaning maintenance model (Heine et al., 2006). Wisman (2006) notes that the existential
14 escape hypothesis provides a framework that can account for several anomalies within terror
15 management theory (Greenberg et al., 1997; Wisman & Koole, 2003) and synthesises a wide
16 range of theoretical perspectives into one comprehensive framework of existential self-
17 regulation. Furthermore, the majority of previous research on existential escape used mortality
18 salience as a candidate meaning threat (e.g., Wisman et al., 2015; Wisman & Koole, 2003;
19 Wisman & Shrira, 2015). Based on meaning threats shared foundation of meaninglessness
20 (Heine et al., 2006), the processes of existential escape (Wisman, 2006) may also be applicable
21 to how people deal with other meaning threats such as boredom (Van Tilburg & Igou, 2017).
22 Boredom is a common, everyday emotion (Chan et al., 2018) that is associated with many
23 interpersonal, social, and health consequences (Elpidorou, 2018a), indicating that boredom is a

1 worthwhile area of study for social psychologists, among others. As many of boredom's
2 correlates can be conceptualised as acts of escape relating to the self (e.g., Heatherton &
3 Baumeister, 1991; Twenge, Catanese, & Baumeister, 2003) and given that a review on boredom
4 research using the existential escape hypothesis (Wisman, 2006) framework is lacking, this
5 review is merited and timely.

6 In our review, we begin by briefly discussing early research that used the framework of
7 the existential escape hypothesis regarding mortality salience. Next, we discuss how boredom
8 was incorporated into the field, based on its links with behaviours that involve low self-
9 awareness (e.g., Baumeister, DeWall, Ciarocco, & Twenge, 2005; Twenge et al., 2003). We
10 outline our research on food consumption and impulsiveness as means of escaping from
11 boredom, while highlighting the roles of adverse self-awareness and meaninglessness in these
12 relationships. Afterwards, we present ideas for alternative means of existential escape that might
13 occur in response to boredom (e.g., sex, conformity, 'dark' flow). Finally, we present boundary
14 conditions under which the existential escape effects of boredom likely occur, we discuss the
15 long-term effectiveness of escape as a coping strategy, and we highlight some practical
16 applications of this field. We believe that appraising and discussing existential escape research
17 on boredom in this way provides a thorough and critical synthesis of the present state of
18 research, offering good directions for future research and practical applications.

19 **Existential Escape From Boredom**

20 Early research on the existential escape hypothesis (Wisman, 2006) was conducted using
21 mortality salience as a candidate meaning threat. Among the findings from this research were
22 that people who are aware of their mortality are more likely to sit with others, as opposed to
23 sitting alone. Critically, this occurred even if the group members threatened participants'

1 worldviews, a source of symbolic meaning (Wisman & Koole, 2003). As part of a replication
2 study, Wisman and Shrira (2006) further noted that participants were unwilling to increase
3 contact with confederates. That is, participants sought to lose themselves in a group rather than
4 defend or attack their own worldviews (i.e., use their symbolic self-awareness). Later, Wisman
5 and Shrira (2015) found that brief exposure to putrescine, a chemical compound produced by the
6 breakdown of fatty acids in the decaying tissue of dead bodies, can function as a chemosensory
7 warning signal, activating threat management responses (i.e., walking away quicker from
8 experimental settings; completing more escape-related word-stem completion tasks). Finally,
9 Wisman et al. (2015) found that these escape behaviours in response to mortality salience were
10 more likely among people low in self-esteem and could be exhibited through behaviours such as
11 less implicit self-activation, choosing to write about others rather than the self, and alcohol
12 consumption.

13 Bored people similarly have a strong desire to escape from their unpleasant
14 circumstances (Elpidorou, 2014, 2020). Accordingly, our research on existential escape was
15 conducted using boredom as a meaning threat. Boredom is associated with several hedonic and
16 impulsive behaviours such as unhealthy eating (Crockett, Myhre, & Rokke, 2015), aggression
17 (Dahlen et al., 2004; Rupp & Vodanovich, 1997; Van Tilburg, Igou, Maher, & Lennon, 2019),
18 substance abuse (Lee, Neighbors, & Woods, 2007), unsafe driving (Dahlen, Martin, Ragan, &
19 Kuhlman, 2005), pathological gambling (Blaszczynski, McConaghy, & Frankova, 1990), and
20 sexual behaviours (Gana, Trouillet, Martin, & Toffart, 2001; see also Elpidorou, 2018a).
21 Interestingly and in line with existential escape theorising, engaging in stimulating, hedonic
22 activities while bored (e.g., Kass & Vodanovich, 1990; Mercer & Eastwood, 2010; Mikulas &

1 Vodanovich, 1993) may serve the function of avoiding meaninglessness and adverse self-
2 awareness (e.g., Seib & Vodanovich, 1998) associated with boredom.

3 **Consumption**

4 We conducted the first study that investigated the effect of boredom on existential escape
5 behaviours, specifically unhealthy eating (Moynihan et al., 2015). Previous research on mortality
6 salience by Hirschberger and Ein-Dor (2005) found that participants whose mortality was made
7 salient subsequently consumed more candies. Furthermore, this increase in consumption
8 effectively buffered against mortality salience; subsequent efforts to regulate meaning through
9 symbolic means (e.g., cultural adherence) were non-existent. Similarly, Ferraro et al. (2005)
10 found that participants who had low self-esteem in a certain respect (i.e., their physical
11 appearance) decided to eat a more indulgent, unhealthy snack (chocolate cake) than a healthier
12 alternative (fruit salad) following mortality salience. Boredom has also been linked with
13 unhealthy and emotional eating in previous research (Cleobury & Tapper, 2014; Crockett,
14 Myhre, & Rokke, 2015; Koball, Meers, Storfer-Isser, Domoff, & Musher-Eizenman, 2012), yet,
15 to our knowledge, had not been interpreted within the existential escape model previously. Since
16 eating distracts people from unpleasant self-awareness (Heatherton & Baumeister, 1991;
17 Heatherton, Striepe, & Wittenberg, 1998; Wheeler, Adams, & Keating, 2001), we investigated
18 whether eating functions as a means of existential escape from boredom in our first set of studies
19 on boredom and the existential escape hypothesis (Wisman, 2006).

20 In our first study (Moynihan et al., 2015), we used a diary procedure to examine people's
21 state boredom in their everyday lives and whether increases in state boredom predicted increased
22 food intake. In Study 1, 33 people from Limerick city, Ireland completed a pencil and paper-
23 based diary study over 7 days. Initially, participants were asked to record their demographics,

1 including their height and weight, and a shortened measure of the ‘boredom proneness scale’
2 (Gordon, Wilkinson, McGrown, & Jovanoska, 1997) to assess their individual proclivities to
3 experience boredom. The participants also completed the ‘positive and negative affect scale’
4 short-form (Watson, Clark, & Tellegen, 1988). Over the next week, participants completed three
5 items each evening that assessed how bored and stressed participants felt during each day, as
6 well as how enjoyable they found each day. The participants kept track of their daily food and
7 drink intake using the 7-days EPIC-Norfolk diary (Bingham et al., 2001). This highly detailed
8 food diary consists of a booklet with separate sections for participants to record their daily food
9 and drink consumption. Participants were requested to be as detailed as possible in their records
10 and the booklets contained colour pictures of various food and drink types and amounts to aid
11 their assessment of the portions they consumed. Following our data collection, we decoded the
12 participants’ food and drink consumption into daily amounts of energy (in kilocalories), fat,
13 carbohydrate, and protein (all in grams) using an aid by McGuire and Beerman (2007) to
14 calculate the food and drinks’ compositions.

15 Our week-long diary study showed that daily state boredom predicted increased
16 kilocalorie, fat, carbohydrate, and protein consumption (Table 1). Specifically, when
17 participants’ level of state boredom rose by its standard deviation, participants consumed
18 approximately 100 extra kilocalories, equivalent to the energy content of a scrambled egg or
19 banana. Likewise, with every standard deviation increase in state boredom, approximately 5
20 additional grams of fat, 10 additional grams of carbohydrates, and 3 extra grams of protein were
21 consumed. These levels of consumption were equivalent to the fat content of a cookie, the
22 carbohydrate content of a packet of candies, and the protein content of a cup of mushrooms
23 respectively. These effects remained significant controlling for stress, enjoyment, and individual

1 differences in boredom proneness, positive affect, negative affect, and body mass index.
2 Therefore, our hypothesis that state boredom predicts increased consumption was supported in
3 this diary study, offering real-life empirical evidence of the existential escape process regarding
4 boredom.

5 Next, we complemented our diary study by testing the causal relationship between state
6 boredom and eating through lab experimentation. Specifically, we investigated if the adverse
7 state of self-awareness that bored people experience motivates them to eat as a means of
8 existential escape. We predicted that people high in dispositional self-awareness, who are
9 particularly prone to introspection, would be more likely to engage in existential escape in
10 response to boredom. Here, we manipulated participants' state boredom and subsequently
11 measured their food preferences at different levels of objective self-awareness. Seventy-nine
12 participants from the University of Limerick, Ireland were recruited. First, our participants
13 completed a measure of objective self-awareness using Fenigstein, Scheier, and Buss's (1975)
14 'self-consciousness scale.' Next, we randomly assigned our participants to one of two conditions
15 of a between-subjects experiment. Our boredom manipulation consisted of a simple puzzle in
16 which participants had to connect different objects while adhering to basic rules. In the low
17 boredom condition, several pictures of cows and chickens were depicted and needed to be
18 connected by drawing a line to a trough or coop, respectively. As part of our instructions, 'paths'
19 or 'canals' in the puzzle were not to be crossed and there was a limit to the amount of animals
20 that could be connected to each trough or coop. In the high boredom condition, the puzzle was
21 identical, except that the cows, chickens, troughs, and coops were replaced with circles,
22 rectangles, triangles, and squares, respectively. A pilot test confirmed that the task involving the
23 shapes was significantly more boring than the puzzle with the farm animals. After completing

1 the boredom manipulation, participants indicated their desire to snack after completing the
2 puzzle as well as their wish to eat something healthy.

3 Supporting our hypothesis, we found that the high (vs. low) boredom task increased
4 participants' desire to snack as opposed to eating something healthy, especially among
5 participants high in objective self-awareness. Specifically, we found that participants' desire to
6 snack under high levels of boredom was more pronounced for people high in objective self-
7 awareness. Yet, no significant association was found between objective self-awareness and
8 snacking desire among those in the low boredom condition (Figure 2). There was no significant
9 interaction between the boredom manipulation and objective self-awareness on participants'
10 desire to eat something healthy. In sum, our results indicated that boredom fosters the desire to
11 snack, rather than eat healthily, especially among those high in objective self-awareness. These
12 findings were in line with the tenets of the existential escape hypothesis (Wisman, 2006).

13 Boredom also encourages people to seek sensation (e.g., Dahlen et al., 2004; Kass &
14 Vodanovich, 2000). Consistent with existential escape theorising, 'exciting' food may be a
15 potent distraction from boredom and its inherent meaninglessness by providing an intense
16 appearance or taste (see Craeynest, Crombez, Koster, Haerens, & De Bourdeauhuij, 2008;
17 Hirschberger & Ein-Dor, 2005; McGregor et al., 2012). Accordingly, in our final study
18 (Moynihan et al., 2015; Study 3), we tested whether high (vs. low) levels of boredom increased
19 the participants' consumption of unhealthy foods (i.e., candies) but also the consumption of more
20 exciting, healthy foods (cherry tomatoes) among people high in objective self-awareness. Hence,
21 we investigated whether the sensation seeking aspect of boredom also promotes eating healthy
22 and exciting foods as a means of existential escape, especially among people high in objective
23 self-awareness.

1 Forty-four students initially completed the ‘self-consciousness scale’ as a measure of
2 objective self-awareness (Fenigstein et al., 1975). Subsequently, our participants were randomly
3 assigned to one of two conditions of a between-subjects experiment. The participants were either
4 manipulated to be bored by watching a video on fish farming or instead watched a sad video on
5 dolphin abuse in the control condition. Before the film started, participants were presented with
6 three separate bowls of candies (an exciting, unhealthy food), cherry tomatoes (an exciting,
7 healthy food), or crackers (an unexciting, healthy food). In a pilot test, fourteen participants rated
8 the crackers as significantly less exciting than the candies and the cherry tomatoes, whereas there
9 was no significant difference in how exciting the participants rated the candies and cherry
10 tomatoes. Prior to watching the film, participants were told that they could eat as many or as few
11 of the foods provided during the study. After watching the movies, our participants reported how
12 boring and sad the films were and how bored and sad they felt.

13 In line with our hypothesis, we found that participants in the boredom condition were
14 significantly more likely to eat greater quantities of candy, that is exciting unhealthy food, at
15 higher levels of self-awareness, consistent with existential escape theorising. This was in contrast
16 to participants who had lower levels of self-awareness in the boredom condition. Further, the
17 effects did not extend to a control condition in which participants watched a sad video on dolphin
18 abuse. At the same time, participants manipulated to be bored by watching the video on fish
19 farming were also significantly more likely to eat greater quantities of tomatoes, an exciting,
20 *healthy* food at higher levels of self-awareness, consistent with existential escape theorising. This
21 was in contrast to participants who had lower levels of self-awareness in the boredom condition.
22 Further, the effects did not extend to a control condition in which participants watched the sad
23 video on dolphin abuse. These results are displayed in Figures 3a and 3b. Critically, this increase

1 in eating did not extend to unexciting, healthy food (crackers) in the boredom condition. In sum,
2 our studies showed that boredom, a threat to meaning in life (Van Tilburg & Igou, 2017a),
3 promotes eating as a means to escape from adverse self-awareness, associated with that meaning-
4 threat. Our findings were consistent with the tenets of the existential escape hypothesis (Wisman,
5 2006) and incorporated both boredom and eating into the existential escape framework.
6 Specifically, boredom promotes eating unhealthy foods such as during snacking as a means of
7 existential escape but eating exciting, healthy foods are also functional, given that boredom also
8 promotes sensation-seeking.

9 **Impulsiveness**

10 In other existential psychological research on consumption, Friese and Hoffman (2008)
11 showed that mortality salience increased eating as a function of higher scores on an implicit
12 measure of impulsiveness (the implicit association test; Karpinski & Steinman, 2006). Some
13 scholars speculated that these kinds of eating behaviours and other hedonic acts may be
14 expressions of the impulsiveness bred by meaning threats such as boredom (e.g., Gerritsen,
15 Toplak, Sciaraffa, & Eastwood, 2014). Indeed, recent research by Kılıç et al. (2020) highlighted
16 that both trait and state boredom are associated with increased risk-taking across various
17 domains (e.g., health and safety, recreational, gambling). Further, an interaction was noted in that
18 research such that the relationship between self-control and risk-taking was reduced at higher
19 levels of boredom, suggesting that boredom might involve risk-taking by virtue of reducing
20 people's capacity or willingness to exercise self-control. Following our research on boredom and
21 eating, we proposed that impulsiveness in response to boredom (Mercer-Lynn, Flora, Fahlman,
22 & Eastwood, 2013; Watt & Vodanovich, 1992) partly stems from people's attempts to escape
23 from meaninglessness (Moynihan, Igou, & Van Tilburg, 2017a). In this regard, we argued that

1 the effect of boredom on impulsiveness would be stronger for people with a high (vs. low) self-
2 awareness disposition.

3 To test these hypotheses, we initially conducted two cross-sectional studies. In our first
4 study, 100 participants completed measures of state boredom (Van Tilburg & Igou, 2012),
5 perceived meaningfulness in life (Van Tilburg & Igou, 2011), and state impulsiveness, using a
6 modified version of the Barrett impulsiveness scale – Version 11 (BIS-11; Patton, Stanford, &
7 Barrett, 1995). In previous research, the BIS-11 was associated with behavioural expressions of
8 impulsivity such as risk-taking, aggression, alcohol consumption, drug-taking, drink driving
9 (Dahlen et al., 2004; Stanford, Greve, Boudreanx, Mathias, & Brumbelow, 1996), binge-eating
10 (Nasser, Gluck, & Geliebter, 2004), sensation-seeking, disinhibition, difficulty with executive
11 functioning, and problems sustaining attention (Stanford et al., 2009); it also differentiates
12 between normal and clinical samples known to be more impulsive (Patton et al., 1995). As
13 expected, we found that perceived meaningfulness significantly explained at least part of the
14 relationship between state boredom and impulsiveness (i.e., an indirect relationship; Figure 4).

15 Following this, we conducted a conceptual replication of this study, substituting Van
16 Tilburg and Igou's (2012) state boredom measure with the multi-dimensional state boredom
17 scale (MSBS; Fahlman, Mercer-Lynn, Flora, & Eastwood, 2011). This is an extensively
18 validated measure of state boredom and consists of five subscales: disengagement, high arousal,
19 inattention, low arousal, and time perception. In a pilot test, we found that each subscale from
20 this measure correlated positively and significantly with perceptions of meaningfulness in life
21 (Van Tilburg & Igou, 2012, 2017a). In our main study, consisting of 201 participants, perceived
22 meaningfulness in life was again measured using Van Tilburg and Igou's (2011) perceived
23 meaningfulness scale, while a modified version of the BIS-11 (Patton et al., 1995) served as a

1 state measure of impulsiveness. Consistent with our first study, we found significant indirect
2 relationships between each state boredom subscale with state impulsiveness via perceived
3 meaningfulness in life (Table 2). That is, each state boredom subscale predicted increased
4 impulsiveness in response to higher perceptions of meaningfulness in life (with marginal
5 significance regarding the high arousal subscale).

6 For our next study, we investigated the relationships between state boredom, perceived
7 meaningfulness, and a behavioural measure of impulsivity known as a temporal discounting
8 task. A temporal discounting task is an implicit measure of impulsiveness. Temporal discounting
9 refers to the tendency for individuals to prefer immediate rewards compared to rewards received
10 after a delay, even if the magnitude of the delayed reward is larger. We recruited two hundred
11 and ninety four participants for this study from the online data collection platform *MTurk*. For
12 remuneration, participants received at least \$0.28. In this study, participants were initially told
13 that they would be asked to make a choice between two options on four separate occasions. As
14 part of the temporal discounting task, participants were first asked if they wanted to wait for two
15 minutes to receive an extra \$0.08 bonus that would involve completing a short task (e.g., word
16 search puzzles, writing a short story that accompanied pictures) or skip this question in exchange
17 for a \$0.01 bonus. Four trials of this task were completed in which the bonus for waiting
18 decreased by \$0.02 per trial. Afterwards, participants were asked to what extent they found the
19 two-minute waiting tasks boring and meaningless. The results supported our hypothesis that
20 boredom and perceived meaningfulness were positively associated with impulsive responses on
21 this task (i.e., participants more often skipped the tasks and declined the higher bonus payments).

22 Finally, we conducted a follow-up experiment. Critically, in this experiment, we included
23 a measure of trait self-awareness. Again, self-awareness highlights meaning threats' adverseness

1 by comparing one's current (meaningless) state with ideal standards, thereby making the need to
2 deal with meaninglessness more pressing (e.g., Wisman, 2006). As a result, we predicted that the
3 effect of boredom on impulsiveness via meaninglessness would be stronger for people with a
4 high (vs. low) self-awareness disposition, in line with the existential escape hypothesis. In this
5 experiment, one hundred and sixteen participants initially completed a trait measure of self-
6 awareness (Govern & Marsch, 2001). Our chosen scale endorsed the type of self-awareness used
7 in self-regulation and has been used in previous research to test how people deal with adverse
8 self-awareness associated with meaning threats in the context of existential escape (Wisman et
9 al., 2015). Subsequently, participants completed a reference-transcribing task to induce either
10 high or low levels of state boredom (Van Tilburg & Igou, 2011; Van Tilburg, Igou, & Sedikides,
11 2013). Participants in the low boredom condition transcribed, in typing, one academic reference
12 on cement, whereas participants in the high boredom condition transcribed ten references. This
13 manipulation had been validated in previous research and fosters differences in boredom but
14 does not seem to affect sadness, anger, or frustration (Van Tilburg & Igou, 2012). After
15 completing the task, participants indicated how bored they felt (Van Tilburg & Igou, 2011, 2012;
16 Van Tilburg et al., 2013) and also completed a measure of state meaninglessness (Van Tilburg &
17 Igou, 2013). Finally, participants answered a state measure of the Barrett impulsiveness scale
18 (Patton et al., 1995).

19 As expected, our manipulation significantly induced boredom and meaninglessness;
20 participants in the high boredom condition reported significantly higher levels of state boredom
21 and meaninglessness than those in the low boredom condition. Furthermore, manipulated state
22 boredom significantly predicted increased impulsiveness via meaninglessness, replicating our
23 earlier cross-sectional findings. Finally, we tested whether self-awareness moderated the indirect

1 relationship such that those participants who reported greater self-awareness were more likely to
2 endorse impulsiveness when bored. As expected, when our model was supplemented with self-
3 awareness as a moderator, we found significant conditional indirect effects in a moderated
4 mediation model (Figure 5). Specifically, the effect of state boredom on increased impulsiveness
5 in response to perceived meaninglessness was significant at high, but not low, levels of self-
6 awareness (Table 3). Therefore, impulsiveness in response to boredom seems to be enacted to
7 address the meaninglessness signaled by boredom, the perception of which is enhanced under
8 conditions of greater self-awareness, consistent with the tenets of the existential escape
9 hypothesis (Wisman et al., 2015).

10 **Additional Existential Escape Candidates: Sex, Conformity, and ‘Dark’ Flow**

11 **Sex.** Eating behaviour and impulsivity in response to boredom have been studied from
12 the perspective that they may serve as existential escape mechanisms (Moynihan et al, 2015;
13 Moynihan et al., 2017a). However, researchers in existential psychology have examined a range
14 of behaviours that are enacted in response to meaning threats. An emerging area for future
15 research is sex as a means of existential escape. Previous research, within the framework of
16 terror management theory (Greenberg et al., 1997), showed that people experience uneasiness
17 about the physical aspects of sex when mortality (another meaning threat) is salient. Sex can
18 highlight the physical aspects of people’s existence and people’s inevitable mortality
19 (Goldenberg, Heflick, & Cooper, 2008; Goldenberg, Pyszczynski, McCoy, Greenberg, &
20 Solomon, 1999; Landau et al., 2006). As a result, people primed with mortality salience are
21 motivated to avoid thinking and acting in ways that highlight the physical aspects of sex to
22 obscure the links between corporeality and death (e.g. Goldenberg, Cox, Pyszczynski,

1 Greenberg, & Solomon, 2002; Goldenberg, Hart, Pyszczynski, Warnica, Landau, & Thomas,
2 2006; Goldenberg, McCoy, Pyszczynski, Greenberg, & Solomon, 2000).

3 However, sex may also be used as a stimulating and distracting activity in response to
4 boredom. Boredom proneness has been associated with engagement in sexual activities (e.g.,
5 masturbating, watching pornography; Gana et al., 2001), sex addictions (Chaney & Bialock,
6 2006; Chaney & Chang, 2005), and sexual compulsivity (Carnes, 2001; Chaney & Burns-
7 Wortham, 2014). Sex also enables people to disassociate from uncomfortable and unpleasant
8 emotions (Paul & Shim, 2008; Reid, Carpenter, Spackman, & Willes, 2008; Reid, Harper, &
9 Anderson, 2009; Taubman, 2004). Interestingly, in our recent paper (Moynihan, Igou, & Van
10 Tilburg, 2021), we found that boredom susceptibility, associated with feelings of
11 meaninglessness in life, predicted increased interest in sexual sensation seeking and endorsing a
12 more open socio-sexual orientation (i.e., favourability towards casual, uncommitted sex).
13 Further, this relationship was statistically mediated by using sex as a coping mechanism to deal
14 with unpleasant affective states. Therefore, increased interest in hedonic forms of sex may be one
15 way to cope with boredom as a meaning threat. These findings are contrary to people's
16 unfavourable attitudes to hedonic forms of sex under mortality salience. Accordingly, we believe
17 that sex as an existential escape from the meaninglessness of boredom is an interesting and
18 important development for future research.

19 **Conformity.** Our other research on escape behaviours outlined that conformity can also
20 be used to deal with the meaning threat: disbelief in free will (Moynihan, Igou, & Van Tilburg,
21 2019). Anonymity in social settings, exemplified through social behaviours including certain
22 types of conformity, can be used to deal with adverse self-awareness and perceptions of
23 meaninglessness, consistent with the existential escape model (Wisman & Koole 2003; Wisman

1 & Shrira, 2006). Certain types of conformity are associated with dealing with stressors,
2 withdrawing oneself and one's effort to deal with stressful circumstances (e.g., Asch, 1952), and
3 low levels of deliberation and control (Alquist, Ainsworth, & Baumeister, 2013; Epley &
4 Gilovich, 1999; see also Gudjonsson & Sigurdsson, 2003). Furthermore, conformity engenders a
5 loss of self-awareness in these forms (Diener, 1979; Mullen, 1991; Zimbardo, 2007).
6 Simultaneously, disbelief in free will diminishes the recruitment of cognitive resources for self-
7 regulation and volition (Lynn, Muhle-Karbe, Aarts, & Brass, 2014; Lynn, Van Dessel, & Brass,
8 2013; Rigoni, Kuhn, Sartori, & Brass, 2011; Rigoni, Pourtois, & Brass, 2015) and lessens
9 people's feelings of responsibility and accountability (Clark et al., 2014; Stillman & Baumeister,
10 2010; Tetlock, 1983). Accordingly, the above-mentioned types of conformity can be used as a
11 strategy to deal with feelings of diminished responsibility (Tetlock, Skitka, & Boettger, 1989) by
12 selecting less demanding choices (Rigoni et al., 2011), as is the case under disbelief in free will.
13 Furthermore, previous research showed that life appears meaningless without believing in free
14 will. Belief in free will subsumes a sense of control (an important source of meaning; Heine et
15 al., 2006) people have over their lives (Bergner & Ramon, 2013), their ability to set meaningful
16 goals (Crescioni, Baumeister, Ainsworth, Ent, & Lambert, 2016), and achieve other sources of
17 meaning (e.g., belongingness; Moynihan, Igou, & Van Tilburg, 2017b). As a result, in our other
18 existential escape research, we predicted that conformity, involving low levels of self-awareness,
19 may be one pragmatic solution to deal with disbelief in free will as a meaning threat. Indeed,
20 Wisman and Koole (2003) previously found that conformity, involving low levels of self-
21 awareness, can be used as a means of existential escape from mortality salience.

22 In our free will belief research, we showed that when people read a text by Nobel prize
23 winning scientist Francis Crick that argued against the existence of free will, participants

1 experienced greater threats to their free will beliefs and also to their sense of meaning in life than
2 participants who read a general essay on consciousness. In our second study, people who
3 experienced greater meaninglessness in life also reported greater tendencies to conform. In
4 particular, meaninglessness was more strongly related to types of conformity that reduced
5 people's feelings of self-awareness, consistent with the tenets of the existential escape hypothesis
6 (Wisman 2006). Finally, we found that disbelief in free will produced greater conformity in
7 response to perceptions of meaninglessness, especially for people who felt very self-aware.
8 Likewise, we believe conformity as a candidate means of existential escape from
9 meaninglessness offers interesting directions for future boredom research.

10 **'Dark' flow.** Wisman (2006) has also considered flow (Csikszentmihalyi, 2000) as a
11 form of existential escape. Flow is defined as a state "in which people are so involved in an
12 activity that nothing else seems to matter; the experience itself is so enjoyable that people will do
13 it even at great cost, for the sheer sake of doing it" (Csikszentmihalyi, 1990, p. 4). Critically, the
14 experience also involves a loss of self-consciousness (Csikszentmihalyi, Abuhamdeh, &
15 Nakamura, 2005). In recent years, some researchers have termed certain instances of flow "dark
16 flow," given the state's possible negative consequences (e.g., Dixon et al., 2019). "Dark flow"
17 also refers to a highly-absorbing, enjoyable experience (Dixon et al., 2017). Yet, the loss of self-
18 reflection and underestimation of risk experienced during "dark flow" may lead to greater
19 engagement in high risk, immersive, yet enjoyable activities such as problem gambling (Dixon et
20 al., 2014) and risky sports (Partington, Partington, & Olivier, 2009; Schüler & Nakamura, 2013).
21 Similarities can be noted between "dark flow" and some forms of existential escape. Both
22 concepts refer to means of coping with painful emotional experiences and absorbing, immersive,
23 pleasurable activities that draw attention away from the self. Both concepts may also carry

1 substantial risk and promote addiction (e.g., Csikszentmihalyi, 2002; see also Baumeister, 1988;
2 Wisman et al., 2015). Hence, considering the role of “dark flow” within the existential escape
3 process may be an interesting extension for future research.

4 **Strategies and Boundary Conditions**

5 Some researchers have questioned under which conditions different strategies (e.g.,
6 escaping or bolstering the self) are selected to defend against meaning threats (e.g., Arndt &
7 Goldenberg, 2010; Kesebir & Pyszczynski, 2012; Wisman et al., 2015). Within the broader
8 coping literature, escape-avoidance strategies tend to be used more in high-stake conditions (e.g.,
9 threats to self-esteem) and in situations which people appraise as having to be accepted due to a
10 lack of control, people feel over certain stressors (i.e., a form of emotion-focused coping;
11 Folkman et al., 1986). For instance, the terror management literature suggests that people
12 initially seek to avoid meaning threats (e.g., by distraction, suppression) when they first become
13 consciously aware of them (Arndt et al., 1997; Greenberg et al., 2000). Also, people with low
14 self-esteem are more likely to become preoccupied with distressing emotions, which makes them
15 more likely to disengage from reality when they feel uneasy and incapable of dealing with
16 meaning threats (Carver, Scheier, & Weintraub, 1989; Gudjonsson & Sigurdsson, 2003).

17 **Self-Esteem**

18 By its nature of serving as a resource (e.g., Aspinwall & Taylor, 1993, 1997; Reed &
19 Aspinwall, 1998), people can use self-esteem psychologically to defend against meaning threats
20 (Heine et al., 2006; Greenberg et al., 1986). Those who can affirm self-esteem, with available
21 and salient resources, may not address perceived meaninglessness by escape (e.g., Ferraro et al.,
22 2005; Taubman Ben-Ari & Findler, 2005; Wisman et al., 2015). Wisman (2006) proposed that
23 people with strong, coherent worldviews manage meaning threats by worldview defence,

1 whereas if people feel incompetent to live up to or become increasingly aware of self-
2 discrepancies set by these cultural norms, they may enact escape behaviours. For instance, if
3 people become aware of a meaning threat and available worldview defences relate to insecure
4 aspects of the self, they may instead engage in existential escape if they have the opportunity to
5 avoid this distress (e.g., Heatherton et al., 1993; Heatherton et al., 1998; Wheeler et al., 2001).
6 Indeed, people who lack self-esteem or feel insecure in a certain respect (e.g., their physical
7 appearance) do not use those resources under meaning threats (e.g., Goldenberg et al., 2000), in
8 particular, if they have the opportunity to escape this aversive state (Goldenberg et al., 2005).

9 Wisman et al. (2015) reason that people with low self-esteem lack the means to bolster
10 the self as a defence. Addressing the meaninglessness captured by self-awareness through escape
11 may be easier than affirming self-esteem as the latter would require a sense of adverse self-
12 awareness in the context of meaning threats (e.g., Wisman & Koole, 2003). Accordingly,
13 Wisman et al. suggest that people with high self-esteem are more likely to strive to reduce the
14 discrepancy between their current (e.g., meaningless) selves and their standards (e.g.,
15 meaningful), whereas people low in self-esteem are more likely to engage in existential escape.

16 **Self-Objectification**

17 In conjunction, variables such as self-objectification might have an impact on escape acts
18 such as consumption in response to boredom. Self-objectification refers to the extent to which
19 people measure their self-worth by evaluating their physical appearance against a culture's set
20 standards (Fredrickson, Roberts, Noll, Quinn, & Twenge, 1998). Self-objectification has
21 frequently been associated with low self-esteem (Fredrickson & Roberts, 1997). Following the
22 reasoning outlined above, people who are bored and who score highly on measures of self-
23 objectification would be assumed to act more unhealthily (e.g., by increased consumption), as

1 drawing attention to an insecure aspect of the self, in the context of meaning threats, may
2 motivate people to escape from this adverse state. This is because people who self-objectify may
3 feel insecure in their capacity to achieve cultural standards of value (Fredrickson et al., 1998).
4 This theorising is consistent with previous self-objectification research showing that people who
5 scored high on self-objectification consumed more under ego distress (e.g., Heatherton, Herman,
6 & Polivy, 1991; Heatherton et al., 1993). In our pilot data (Moynihan, Igou, & Van Tilburg,
7 2017c), we found a significant interaction between a boredom manipulation (Van Tilburg &
8 Igou, 2011), self-awareness (Govern & Marsch, 2001), and self-objectification (Fredrickson et
9 al., 1998) on increased endorsement of unhealthy behaviours. Specifically, participants who were
10 manipulated to be bored and who scored highly on measures of self-awareness and self-
11 objectification were more likely to act unhealthily. This result was consistent with previous
12 research (e.g., Heatherton et al., 1991; Heatherton et al., 1993). Thus, boredom may lead
13 insecure, self-objectifying people to relinquish their impulses and engage in distracting, hedonic
14 behaviour to address the perceived meaninglessness of and adverse self-awareness associated
15 with boredom (Heatherton et al., 1991; Heatherton et al., 1993; Heatherton et al., 1998; Polivy,
16 Heatherton, & Herman, 1988).

17 **Body-Esteem**

18 Additionally, the effect of body-esteem, defined as people's satisfaction with their bodies
19 that meet standards of value, on acts such as consumption or sex in response to boredom could
20 also be investigated as a potential moderator (Franzoi & Shields, 1984). In earlier research,
21 Ferraro et al. (2005) found that females under mortality salience with higher body-esteem chose
22 to eat healthier produce to bolster the self. Regarding existential escape, boredom might interact
23 with high body-esteem ratings to predict decreased unhealthy consumption at higher levels of

1 body-esteem (see also Carver & Scheier, 1982; Goldenberg et al., 2000) and thereby promote the
2 use of symbolic resources to deal with existential anxiety (see also Taubman, Florian, &
3 Mikulincer, 1999). Indeed, in our pilot data (Moynihan, Igou, & Van Tilburg (2017d), we found
4 that a boredom manipulation (Van Tilburg & Igou, 2011) significantly interacted with body-
5 esteem ratings (Franzoi & Shields, 1984) to predict decreased unhealthy consumption at higher
6 levels of body-esteem (see also Carver & Scheier, 1982; Goldenberg et al., 2000). Therefore, the
7 effects of body-esteem on hedonic responses to meaning threats may also extend to boredom.
8 Simultaneously, Goldenberg et al. (2000) also found that people find the physical aspects of sex
9 more appealing in response to mortality salience if they are able to affirm their body esteem to
10 defend against that meaning threat. As a result, it is likely that people who score highly on body
11 esteem would be less likely to engage in certain forms of escape (e.g., consumption) or
12 alternatively may do so as a symbolic gesture to bolster the self (e.g., physical aspects of sex).

13 **Coping Styles**

14 An important direction for future research is to investigate the link between existential
15 escape strategies and coping responses in general (see Arndt & Goldenberg, 2010; Crockett et
16 al., 2015). Coping has two major functions: to regulate stressful emotions (emotion-focused
17 coping) and alter the troubled person-environment relationship causing the distress (problem-
18 focused coping; Folkman & Lazarus, 1985). Problem-focused coping is used more in situations
19 that are appraised as changeable, whereas emotion-focused coping occurs in encounters
20 appraised as unchangeable (Folkman & Lazarus, 1980; Folkman et al., 1986). An example of
21 emotion-focused coping includes escape-avoidance coping where people choose not to focus on
22 the troubling situation. On this, it would be valuable to consider individual coping styles to
23 identify those most vulnerable to and to learn about the mechanisms that promote escape

1 behaviours. For example, Ferraro et al. (2005) found that a choice between a healthy and
2 unhealthy food following mortality salience was significantly moderated by coping salience;
3 those participants primed with a low coping salience chose the unhealthy option to a significantly
4 greater extent. Likewise, Arndt, Routledge, and Goldenberg (2006) found that people who scored
5 highly on adaptive coping styles were more likely to report healthier behavioural intentions in
6 response to mortality salience. It also seems plausible that people who commonly use avoidant
7 coping strategies (e.g., repression) may be more likely to engage in existential escape than those
8 who do not (e.g., sensitizers who tend to use approach behaviours; Byrne, 1961). That is,
9 individual differences in general coping strategies may qualify escape behaviours and should be
10 investigated more in future research.

11 **Practical Implications for Boredom's Existential Escape**

12 By identifying the underlying psychological mechanisms that influence health and social
13 behaviours from an existential escape perspective, important real-world applications can be
14 derived from this research (e.g., Bell & McBride, 2010; Koball et al., 2012). Indeed, boredom
15 proneness is associated with greater symptom reporting of a variety of physical and
16 psychological health issues (e.g., obsessive-compulsive thoughts, somatisation, interpersonal
17 sensitivity, depression, and anxiety; Sommers & Vodanovich, 2000). Martin, Sadlo, and Stew
18 (2012) suggested that individual practices or public health programmes might modify some
19 maladaptive, hedonic behaviours initiated to deal with boredom. Indeed, a number of researchers
20 (Chaney & Burns-Wortham, 2014; Reid, Li, Gilliland, Stein, & Fong, 2011) suggested that
21 learning alternative coping mechanisms to regulate affect such as boredom may diminish
22 maladaptive, hedonic practices (e.g., sexual acts) and co-morbid meaningless experiences (e.g.,

1 lack of social connectedness, poor self-esteem; Chaney & Dew, 2003; Reid, Carpenter, & Lloyd,
2 2009).

3 In relation, dietary and healthy lifestyle interventions such as implementation intentions
4 were developed to specify where, when, and how to act to obtain health improvement goals
5 (Gollwitzer, 1999), with a particular emphasis on what factors initiate those behaviours, which
6 may include boredom. Increasing evidence shows that implementation intentions are very
7 successful in replacing unhealthy eating and unhealthy behaviours (e.g., Adriaanse, de Ridder, &
8 de Wit, 2009). Thus, the dynamics of the effects of boredom on unhealthy behaviours as
9 identified in the existential escape literature may hold promise for future intervention designs.

10 More broadly, Mercer-Lynn, Hunter, and Eastwood (2013) found that although trait
11 boredom was associated with hedonic acts such as problem gambling and alcohol abuse,
12 impulsiveness had stronger relationships with these constructs. These researchers suggest that
13 boredom may play a role in the development or exacerbation of variables such as impulsiveness
14 that in turn promote psychosocial problems (Friese & Hoffman, 2008; see also Dahlen et al.,
15 2005; Stanford et al., 1996; Tice, Bratslavsky, & Baumeister, 2001). In this regard, Dixon et al.,
16 (2014) note that the impulsive nature of gambling (e.g., in slots play), which involves
17 intermittent rewards, may curtail rumination on the self and lead to the underestimation of risk in
18 people's escape activities (e.g., Schüler & Pfenninger, 2010). Indeed, Dixon et al. found that
19 people at high-risk for gambling problems preferentially endorsed items measuring 'dark flow,'
20 in which attention is focused on the task at hand. Perceived meaninglessness and self-awareness
21 likely play roles if this process takes place as a form of existential escape (Moynihan et al.,
22 2017a). As such, identifying people most prone to boredom, meaninglessness, and to engaging in
23 existential escape (e.g., prompted by impulsiveness) might be beneficial for clinical intervention

1 (Gerritsen et al., 2014) given the relationship these variables have with constructs that promote
2 potentially harmful means of existential escape and addiction.

3 **Long-Term Effectiveness of Escape**

4 Related to these practical applications, engaging in existential escape may be a
5 spontaneous response that serves to address meaninglessness when symbolic mechanisms to
6 regulate meaning are not readily available or if people feel highly incompetent or low in self-
7 esteem to affirm symbolic sources of meaning (e.g., Kesebir & Pyszczynski, 2012; McGregor et
8 al., 2012). Existential escape may not be functional, however, for long-term adjustments given its
9 potentially harmful consequences (i.e., consumption) and may not solve a problem in the long-
10 term (Wisman et al., 2015). Although hedonic and interpersonal behaviours such as
11 impulsiveness, consumption, and conformity can reduce self-awareness (e.g., Goldenberg et al.,
12 2005; Heatherton & Baumeister, 1991; Hirschberger & Ein-Dor, 2005; Wisman & Koole, 2003),
13 there is a lack of research in the current literature that tests the long-term effectiveness of escape
14 behaviours. Wisman et al. suggest that the effects may only be short-term; thoughts about
15 meaninglessness and self-awareness may rise to consciousness again following escape (Arndt et
16 al., 1997; Elpidorou, 2018a; see also Arndt & Goldenberg, 2010). Thus, more longitudinal
17 research is required to assess if existential escape defends against meaning threats effectively in
18 the long-term. Indeed, longitudinal research has particular relevance for the practical applications
19 of findings from existential escape research.

20 In relation, most existential escape studies, with the exception of Wisman et al., (2015)
21 and Wisman and Shrira (2015), did not test whether the dependent measures used actually allows
22 people to escape self-awareness, the facility that highlights the meaninglessness of meaning
23 threats. Although the desire to escape self-awareness has been associated with endorsing escape

1 behaviours (e.g., Heatherton & Baumeister, 1991; Twenge et al., 2003), we believe that more
2 research should be conducted in this regard. Interestingly, in one of our pilot studies on boredom
3 and impulsiveness (Moynihan et al., 2017a, Study 3a), we found a significant difference in self-
4 awareness between participants who completed a state self-awareness scale before completing an
5 impulsiveness measure. Those participants in the high boredom condition, associated with more
6 meaningfulness, recorded significantly lower self-awareness than those in the low boredom
7 condition, perhaps indicating people's wishes to escape from adverse self-awareness under
8 boredom. More evidence is required to confirm whether escape actually occurs.

9 **Conclusion**

10 Boredom is a common, unpleasant experience (Van Tilburg & Igou, 2012, 2017a). It is a
11 functional emotion since it informs people of the presence of meaningfulness and promotes
12 escape from these situations (Chan et al., 2018; Van Tilburg & Igou, 2017a; see also Elpidorou,
13 2014, 2018a, 2018b, 2020). Previous research on boredom highlighted that boredom promotes
14 the use of symbolic (i.e., cultural) sources of meaning as compensation against this adverse,
15 meaningless experience (e.g., identifying with in-groups, Van Tilburg & Igou, 2011). We
16 summarised a growing area of research, informed by the existential escape hypothesis (Wisman,
17 2006), suggesting that bored people may also seek to downplay their self-awareness as the
18 inherent meaningfulness of boredom is captured by people's self-awareness (Sedikides &
19 Skowronski, 1997, 2003). Examples of strategies used to achieve this goal from our research
20 include consumption (Moynihan et al., 2015), impulsiveness (Moynihan et al., 2017a), and other
21 strategies noted in literature on existential processes (e.g., types of conformity, Moynihan et al.,
22 2019; Wisman & Koole, 2003). In our review, we highlighted the key roles of perceived
23 meaningfulness and adverse self-awareness in these relationships and presented ideas for

1 alternative means of existential escape that might occur in response to boredom (e.g., sex,
2 conformity, dark flow). Finally, we presented boundary conditions under which the existential
3 escape effects of boredom likely occur (e.g., when bored people have low self-esteem), we
4 discussed the lack of research on the long-term effectiveness of escape as a coping strategy, and
5 we highlighted some practical applications of this field. We believe that appraising and
6 discussing existential escape research on boredom, which to our knowledge has not been
7 conducted previously, provides a thorough and critical synthesis of the present state of research,
8 offering a good outline for future research.

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