



Are We Bored yet? A Lifespan Perspective on the MAC Model of Boredom and Cognitive Engagement

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Inevitably when I talk about boredom, the parents in the room perk up. Why, they want to know, are their kids so bored?

The glib answer I give is that kids get bored for the same reason the rest of us do—because they aren't able (or don't want) to focus on what they're doing. Like all emotions, boredom conveys information (Clore, Gasper, & Garvin, 2001). Just as anger's job is to tell us when someone has violated an important boundary, boredom's job is to alert us when we're not able to pay attention or find meaning in what we're doing. The underlying message? There's no value in continuing with what you're doing—at least not in its current form. Like all emotions, boredom comes in many shapes, from low arousal to high, from fatigue to agitation. But, like all emotions, what matters most in defining boredom is its causes: its inputs rather than its outputs, its function rather than its form (Barret, 2006; Clore & Robinson, 2012; Schachter & Singer, 1962).

The MAC model of boredom

So if kids get bored for the same reasons as the rest of us, why do the rest of us get bored? According to our Meaning and Attentional Components (MAC) model, boredom is an affective indicator of unsuccessful attentional engagement in valued goal-congruent activities (Westgate & Wilson, 2018). In simpler terms: we get bored when we aren't able to pay attention or can't find meaning in what we are doing. Attentional difficulties can result from both under-challenge and over-challenge; you can be bored because something is too hard or too easy, because both make it difficult to sustain attention (Westgate, 2018; Westgate, Wilson, & Gilbert, 2017). Likewise, meaning deficits occur when what we're currently doing doesn't match up with currently active and salient goals. It's not enough to be able to pay attention—and it's not enough to find meaning in what you're doing. You need both meaning and attention to avoid boredom, and experience interest or enjoyment instead.

We've found correlational evidence for the MAC model in over 14 studies totaling well over a thousand participants, showing that attention and meaning act as independent predictors of boredom, don't interact, and are not themselves highly correlated. But more importantly, we've produced boredom by manipulating attention and meaning experimentally. In an adaptation of the late UZH fellow Josua Schmeitzky's and UZH faculty Alexandra M. Freund's work, we've induced meaning deficits by offering or withholding charitable contributions designed to make the same task feel more or less meaningful—and doing so results in boredom. Likewise, we can vary attention by manipulating cognitive demands and available cognitive resources to induce states of under-challenge and over-challenge—and again, doing so results in boredom.

But it's not only that attention and meaning deficits result in boredom; they result in different types of boredom. Attentional boredom, for instance, is caused by attention deficits and characterized primarily by difficulty concentrating, mindwandering, and inattention. Meaningless boredom, on the other hand, is caused by meaning deficits and characterized by high arousal, feelings of sadness and loneliness, and distorted perceptions of time—but most of all by the desire to do something else. While these types of boredom may feel different, people spontaneously label both states as boredom, because they signal the same underlying problem: an inability to successfully engage in meaningful activity. That signal, and those feelings, have value. Like pain, boredom is not pleasant to experience—but that's exactly its purpose: to alert us to instances of behavior gone wrong and motivate us to make the changes necessary to fix boredom at its root.

Back to kids: A neglected (and bored) population

Are kids really that bored? We don't know. While considerable work has looked at dispositional differences in people's tendency to experience

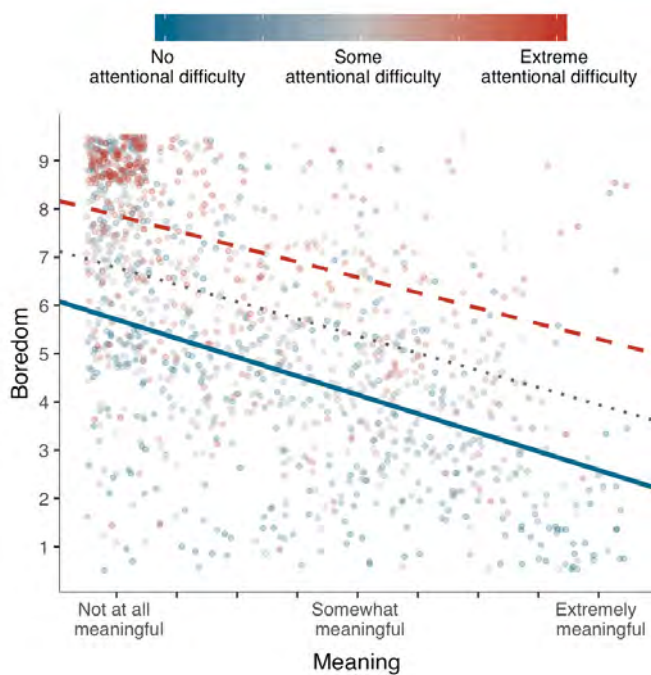


Figure 1. Attention and meaning independently predict boredom in a cross-sectional sample pooled across 14 studies (adapted from Westgate & Wilson, 2018).

boredom more often or more intensely, it is also important to understand why all people experience boredom at times—something that trait boredom measures predict only weakly, if at all (Westgate, 2018). Indeed, the best available estimates suggest that stable individual differences account for only about a fifth of the variance in people’s day-to-day boredom, with almost 80% due to situational and contextual factors (Chin, Markey, Bhargava, Kassam, & Loewenstein, 2017). Yet there has been very little empirical work on state boredom, and almost none of it in children or teens.

Certainly kids are bored at school (Pekrun, Goetz, Daniels, Stupnisky, & Perry, 2010; Pekrun, Hall, Goetz, & Perry, 2014). But is that a developmental issue? College students are bored in college classes, and adults are bored at work; boredom in highly constrained environments is common across the lifespan (Chin et al., 2017). That children and teens are bored at school may say more about their schools than about them. For instance, in a cross-sectional experience sampling study, 392 students reported being bored 32% of the time at school and 23% of the time at home; rates differed little from 5th through 9th grade (Larson & Richards, 1991). Likewise, LIFE fellow Jessica Taggart has found little difference between preschool-aged children and college

students in experimental studies of how much they enjoy intentionally trying to “think for pleasure”—both children and young adults found it equally boring (Taggart & Lillard, 2017). Complicating the issue is that children’s conceptions of emotions (including boredom) shift over time. Childhood emotions increase in complexity from simple “good–bad” evaluations to more mature adult conceptualizations, particularly as verbal knowledge develops, and what boredom means to a three-year-old may fundamentally differ from what it means to you or me (Nook, Sasse, Lambert, McLaughlin, & Somerville, 2018).

Expression versus experience: “I’m bored”

Why then might we believe that children and teens may experience boredom more often? Anecdotal, they are certainly more likely to complain of boredom. But expressing emotion is not the same as experiencing emotion (Barrett, Adolphs, Martinez, Marsella, & Pollak, in press; Gendron, Crivelli, & Barrett, 2018). You may feel happy, but not say so, if doing so would be unhelpful or undesirable, such as when attending a despised academic rival’s funeral. And you may not feel happy despite claiming to be so, such as at the wedding of a former romantic partner. Emotion expression has as much to do with social communication as it does experience.

Adults, unlike children and teenagers, often seem less willing to admit to boredom. Why? One yet-to-be-tested hypothesis, that follows theoretically from the MAC model, deals with control. Children and teens often have relatively little control over their daily activities, their daily schedules, the food they eat, and the clothes they wear. And while control is not a direct cause of boredom, it is a significant moderator (Troutwine & O’Neal, 1981) that may make it difficult to fix underlying attention and meaning deficits. I hypothesize that there are four primary routes to alleviating boredom: (1) regulating cognitive demands, (2) regulating cognitive resources, (3) regulating goal value, and (4) switching activities. The first three address problems with underlying attention and meaning deficits, respectively; the final route alleviates boredom by changing activities entirely, which has the added potential of resolving attention and meaning deficits simultaneously. All four routes are substantively harder, if not impossible, to use when you lack basic control over your environment and your own activities.

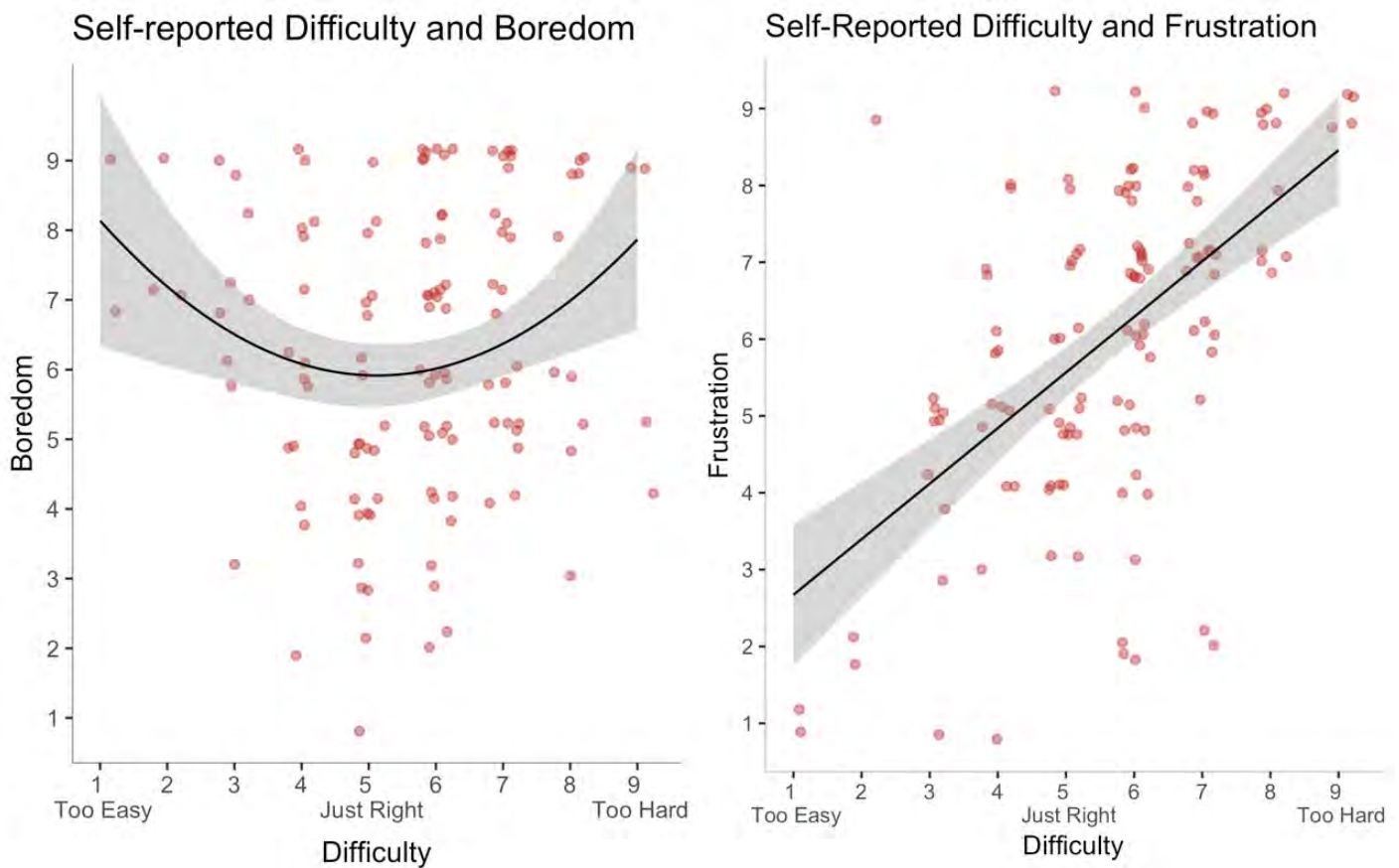


Figure 2. Both overchallenge and underchallenge result in boredom due to inattention (distinct from frustration) in an air traffic control simulation (adapted from Westgate & Wilson, 2018).

Children and teenagers may be more likely to experience boredom precisely because they lack access to those boredom regulation strategies and therefore may be more likely to (correctly) attribute their boredom to external environmental constraints. In contrast, adults, who generally do control their own activities, may tend to attribute boredom more to dispositional causes—something about who you are, not about what you are doing. If so, adults may be reluctant to admit to boredom out of fear that others will see them as responsible for the feelings they’re expressing. In other words, adults may resist admitting they are bored out of fear of being labeled as “boring” people. Children and teenagers may feel more comfortable admitting boredom, because it says less about them and more about the situation (and the adults) who chose to put them there. In other words, when people have little control over their situations, expressions of boredom may be an accusation not an admission, aimed at those seen as responsible for causing and fixing that boredom. The same may be true for adults when placed in highly constrained environments, such as those found in the military, prison, or certainly highly-regimented workplaces.

Why kids get bored: Developmental challenges for meaning and attention

To the extent that children and teenagers really are more bored, and not only simply more likely to admit to it, why would that be? To date there is no empirical evidence but again the MAC model offers some hypotheses: if children (or teens) are more easily bored, it should be traceable to underlying developmental challenges they face in attention or meaning-making. Let’s look at attention first. Certainly, attention regulation is a developmental process that unfolds over time—we get better at it (to a point) as we grow (Betts, McKay, Maruff, & Anderson, 2006; Rebok, Smith, Pascualvaca, Mirsky, Anthony, & Kellam, 1997), and as we do we should experience attentional lapses less regularly and be bored less often as a result. The very fact that cognitive capacity changes over time may make it particularly difficult for children and teens to dial in on activities that are appropriately challenging to their current ability and resource level. Like shoe sizes and growing feet, the shoe that fit yesterday may no longer fit today.

More intriguingly, boredom in children and teenagers may stem from an underlying lack of the elaborated goal structures and values that largely scaffold meaning for adults. While even young children may experience meaning as the result of coherence (or the sense that one understands the way the world works and why things happen), the other components of meaning—significance and purpose—may emerge only over time. Significance, or the sense of intrinsic value and worth, requires knowledge and endorsement of what those values are; purpose, or the sense of contributing to a larger goal, requires elaborated consciously-endorsed goals. Feeling that one's activities are contributing to valued goals requires all three. Without a firm goal compass to steer by, children and teenagers may be left to stumble upon meaningful activities beyond those provided by caregivers. Boredom itself may, in turn, be a means to shaping those very values and goals, as a child leans on feelings of boredom-as-information to learn what matters to the child and what does not. In this way, boredom may be an obnoxious but necessary feedback system by which children develop a sense of values and elaborate goal structures.

Hope on the horizon: Does life gets less boring?

Does that mean we get less bored as we age? Maybe! In a large-scale experience sampling study of Americans, older adults were slightly less likely to be bored in their everyday lives than younger adults (Chin et al., 2017). And we see the same thing in experimental lab studies where participants are asked to intentionally think for pleasure: although for the most part older adults enjoy thinking at about the same level as younger adults, to the extent they differ it's that older adults find it slightly less boring (Wilson, Westgate, Buttrick, & Gilbert, in press). And when we look at why, we see that it's because older adults are better at paying attention and tend to adopt goals more congruent with thinking for pleasure than younger adults do. The same processes may unfold in everyday life. Just as with children and teenagers, to the extent that older adults are less bored, it's likely due to developmental or situational changes in their ability to pay attention and find meaning in everyday life.

Cognitively, although adults may experience age-related decline (Salthouse, 2009), they may

have the added advantage of years of practice and skill in relevant domains that offset such changes; with the added benefit that unpracticed but cognitively undemanding activities may be a better attentional fit and thus more enjoyable and interesting than they would have been previously. They may also have the monetary and social freedom to choose activities that offer a better fit for their cognitive resources, whatever those may be. The ability to self-select into certain environments and activities is an underrated distal cause of boredom; experience-sampling estimates suggest that type of activity accounts for up to a third of the variance in boredom during everyday life, and may partially account for boredom differences in age and income (Chin et al., 2017).

If this hypothesis—that older adults are more motivated and discriminating in their choice of activities—sounds familiar, it should be. It's consistent with and derives from Laura Carstensen's work on the socioselectivity hypothesis, and has implications for not only attention but also meaning-making in older adults (Carstensen, 1995). To the extent that older adults prioritize activities with greater personal meaning over extrinsic benefits, they may experience not only greater meaning in life but greater meaning in the moment—and thus less boredom (Steger, Oishi, & Kashdan, 2009).

A word on retirement

Which is not to say the second half of the lifespan doesn't offer its own challenges. While it is certainly true that retirement offers many people a chance to engage in meaningful intrinsically-rewarding activities they were unable to in their working days, it's also true that retirement involves a substantial shift in everyday life routines, relationships, and reward structures. These changes, if not navigated successfully, can threaten people's sense of coherence, significance, and purpose, and result in meaning deficits and profound boredom. Indeed, boredom is a major problem in retirement communities and nursing homes (Bossé, Aldwin, Levenson, & Workman-Daniels, 1991; Mor, Sherwood, & Gutkin, 1986; Tarkin, 2011). And bored people do not always respond in adaptive ways. Many activities that offer short-term relief from boredom, such as gambling (Mercer & Eastwood, 2010), substance use (Lee et al., 2007), or electric shocks (Wilson et

al., 2014), come at a long-term cost. Others, like mindless television viewing or social media use, are less immediately harmful but not exactly beneficial either. Importantly, none are sustainable because they do nothing to address the underlying deficits at the root of such boredom. Given this, targeted interventions that boost meaning may be particularly helpful for reducing boredom in retirees and others who have abruptly lost goals that formerly structured meaning in their daily lives.

A special challenge: Alzheimer's disease and other forms of dementia

Another potential challenge comes from age-related cognitive decline, especially in the case of Alzheimer's disease and other forms of dementia that involve substantial memory loss. While typical aging does not have to be boring, for the many reasons I outlined earlier, people living with dementia may face special challenges in sustaining and regulating attention, coupled with a decline in executive function that makes it difficult to recognize and address such difficulties. It may be difficult to adapt activities to changing cognitive resources (including procedural and declarative memory), especially when such change is not constant and can fluctuate not only across but within days. Calibrating demand to fluctuating resources is critical for attentional fit, and the failure to do so may manifest as distressing inattention and boredom, particularly if formerly rewarding activities are now too challenging for successful cognitive engagement.

This can also pose a threat to meaning, if the activities from which people formerly drew meaning now exceed their current capacities. A number of interventions for people with dementia focus on finding cognitively appropriate substitutes for cognitively demanding activities that previously acted as sources of meaning in people's lives. For instances, mechanical robot pets may serve as a safe substitute for living animals (Wada & Shibata, 2007), and specifically modified texts adapt books specifically for people with dementia to make reading simpler and more achievable (Freudenheim, 2010; Riedner, 2015). Activity modifications that simplify hobbies, and memory aids that provide cognitive support for engaging in them, likewise adapt meaningful activities to better fit current abilities (Boyd, Payne, Hutcheson, & Bell, 2014).

Other common interventions focus on creating new activities that are both meaningful and cognitively accessible, by matching demands to the person's level of functioning. For instance, memory wallets and personalized interest and hobby albums feature photos and text that can be modified and simplified over time as cognitive functioning declines (Bourgeois, 1990). All of these interventions, by making alternative sources of meaning accessible and allowing for continuity in meaningful activities and hobbies via appropriate modification, should not only increase meaning but decrease boredom, and accompanying maladaptive responses like excessive daytime sleeping.

It's okay to be bored

We all—kids, seniors, faculty, graduate students—get bored. What boredom tells us and why changes across the lifespan, but its fundamental message remains the same: what you're doing right now isn't working. You either can't pay attention, because it's too hard or too easy—or you don't want to, because you can't find meaning in it.

So what do I tell those parents in Q&A? Yes, your kids are bored—but boredom isn't bad. Boredom is a signal. It's a canary in a coal mine, an early warning system that alerts you before you go off the rails, and gives you time to fix it. Let your kids be bored. Let yourself be bored. It's what you do with the feeling that matters.

“Die Langeweile ist der Traumvogel, der das Ei der Erfahrung ausbrütet”

– Walter Benjamin (1936), p. 46

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Nesting barnacle goose, perhaps a dream bird hatching the egg of experience (Benjamin, 1936).