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Slowing time, shaping the future: The effect of mindfulness on intertemporal choice

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ABSTRACT

Consumers frequently face intertemporal choices that require trading off reward value against the delay before the reward is received. This research shows that mindfulness, defined as non-judgmental attention to and awareness of the present moment, increases consumers' preference for delayed gratification. This occurs because mindfulness slows the subjective passage of time duration, leading consumers to perceive the future as more expansive; in other words, they feel "time-rich." Consequently, they judge waiting for a larger reward as less costly, which makes the delayed option more attractive. Across six studies—two field investigations and four laboratory experiments, three of which used consequential behavioral measures—we provide convergent evidence for this effect and its underlying mechanism. The findings have practical implications both for consumers navigating trade-offs between immediate and delayed outcomes and for marketers designing more effective intertemporal incentives.

1. Introduction

A practice rooted in Buddhist psychology (Mick, 2017), mindfulness involves focusing purposeful attention on present moment experiences and consciousness (Brown & Ryan, 2003; Kabat-Zinn, 2015; Langer, 1992). Popularized in the West by Jon Kabat-Zinn in the 1980s, mindfulness has evolved into a multi-billion-dollar marketplace phenomenon (Globe Newswire, 2024). Meditation apps, mindful walking and eating practices, mindfulness clinics and retreats, and many other products and services package mindfulness for modern consumption (Bahl et al., 2016). Recently, marketers have also begun incorporating mindfulness cues to enhance advertising effectiveness (Errmann, 2025).

In light of these advances, marketing scholars have begun examining how mindfulness bolsters consumer self-regulation (Francke & Carrete, 2023; Gollwitzer & Sheeran, 2009; Heatherton & Baumeister, 1996). Empirical work shows that mindfulness curbs overeating, influences moral choices, and yields other self-regulatory gains (Hafenbrack et al., 2022; Lueke & Gibson, 2015; Orazi et al., 2019; Van De Veer et al., 2016). While these benefits are often attributed to stress reduction and stronger impulse control, underpinned by executive functions such as inhibition (Molina-Rodríguez et al., 2023; Short et al., 2016), additional mechanisms are emerging. Enhanced short-term memory (Errmann, 2025), more efficient resource allocation (Orazi et al., 2019), and shifts in

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information processing (Errmann et al., 2022) suggest that mindfulness shapes behavior through pathways extending well beyond stress regulation.

Drawing on these insights, we investigate how mindfulness influences intertemporal choice decisions, which involve trade-offs between the value of rewards and the delay before those rewards are gained (Amasino et al., 2019; Zauberman et al., 2009). Due to the prevalence of intertemporal choices in marketing strategies and tactics, these choices are frequently made by consumers. For example, a promotion for a credit card allows consumers to choose between immediate cash back and greater future returns through compounding (Fidelity, 2024). Similarly, Bridgestone Tires (2024) offers a choice between an immediate small rebate and a larger rebate later. Notably, within such choice decisions, consumers tend to prefer immediate benefits and discount the value of future benefits (Malkoc & Zauberman, 2018).

Against this backdrop, we posit that mindfulness shifts consumers toward a stronger preference for delayed gratification in intertemporal choices. We further argue that this effect arises from mindfulness's distinctive influence on the subjective experience of time, a core driver of intertemporal choice decisions (Malkoc & Zauberman, 2018). Time is not an objective constant; rather, it is reconstructed from attentional cues such as the number of sensory events registered per unit of clock time (Wittmann, 2015). By sharpening present moment awareness, mindfulness increases perceptual input per unit time (Kramer et al., 2013; Taylor, 2022), thereby slowing the felt passage of time (Block & Zakay, 1997; Thomas & Weaver, 1975). A slower temporal flow expands consumers' perception of the future; that is, they feel "time-rich" (Lang & Carstensen, 2002). This, in turn, reduces the perceived cost of delay and thus enhances the attractiveness of deferred rewards (Wittmann & Paulus, 2009; Löckenhoff & Carstensen, 2004). Across six studies, we provide convergent evidence for this effect and its underlying mechanism.

Our findings contribute to three streams of literature. First, we contribute to the literature on mindfulness and its effect on consumer behavior (Hafenbrack et al., 2014, 2022; Lueke & Gibson, 2015; Van De Veer et al., 2016) by demonstrating that mindfulness promotes delayed gratification by reshaping consumers' temporal inferences. Second, by linking mindfulness to both the felt passage of time and future time perspective, we extend research on time perception (Löckenhoff & Carstensen, 2004; Noulhiane et al., 2007; Shalev & Morwitz, 2013). Third, by identifying a novel antecedent and mechanism that fosters delayed gratification, we contribute to the literature on intertemporal choice decisions (Malkoc & Zauberman, 2018).

2. Theoretical framework

2.1. Mindfulness and intertemporal choices

Mindfulness has been defined as the cultivation of "non-judgmental, present-centered awareness in which each thought, feeling, or sensation that arises in the attentional field is acknowledged and accepted as it is" (Bishop et al., 2004, p. 232). It has also been described as the experience of being fully aware of the present moment, in which individuals notice new information and remain sensitive to context (Brown & Ryan, 2003; Langer, 1992). Mindfulness can refer to a personality trait that indicates the extent to which an individual focuses on the present as part of their attentional habits (Brown & Ryan, 2003). It can also refer to a situational state heightened by mindfulness interventions, such as meditation or breathing exercises (Brown et al., 2007; Tanay & Bernstein, 2013).

Mindfulness has been conceptualized both as a unidimensional construct, characterized by open attention to and awareness of the present moment (Brown & Ryan, 2003), and as a multifaceted construct comprising skills such as the ability to focus on and observe present moment experiences with attention and to refrain from judging them (Baer et al., 2004). While conceptual models vary, most agree that mindfulness enhances sustained attentional focus on moment-to-moment experience without judgment (Van De Veer et al., 2016), distinguishing it from constructs such as impulse control (Heatherton & Baumeister, 1996).

This attentional stance yields a range of domain-specific self-regulatory outcomes (see Web Appendix Table H1). Mindful consumers, for example, regulate caloric intake more effectively by attending to bodily—rather than environmental—cues (Van De Veer et al., 2016). In other domains, mindfulness was found to reduce automatic social biases (Lueke & Gibson, 2015) and attenuate guilt responses during moral decision making (Hafenbrack et al., 2022). In each case, mindfulness's present-centered attention shapes judgment and behavior, though the underlying mechanisms vary by context. Importantly, although mindfulness is often linked to stress reduction and lower impulsivity via parasympathetic activation (Chin et al., 2019), it can also exert influence through other pathways. Most relevant to the present research, mindfulness expands attentional resources, thereby increasing informational input per unit time and sharpening evaluation (Wittmann & Schmidt, 2013; Taylor, 2022). These attentional shifts, in turn, can affect how consumers process and interpret information (Hafenbrack et al., 2014; Zhang et al., 2021).

Building on these insights, we address a critical question: How does mindfulness reshape time perception and, consequently, intertemporal choice? In an intertemporal choice, consumers trade off a smaller, immediate reward against a larger, delayed one, balancing reward magnitude against time to receipt (Pyone & Isen, 2011). Immediate gratification is compelling because it offers instant liquidity, greater certainty, and seemingly lower effort (Loewenstein et al., 2003). By contrast, delayed gratification promises a larger payoff but imposes the psychological cost of waiting (O'Donoghue & Rabin, 1999). Because the cost of delay is subjectively construed, it plays a quintessential role in determining the attractiveness of a deferred reward (Weber & Johnson, 2009). That is, the higher the perceived cost of waiting, the less appealing the delayed option.

Against this backdrop, we propose that mindfulness heightens consumers' preference for delayed gratification by reducing the subjective cost of waiting. Our theorizing draws on two key dimensions of time perception: subjective time passage (Block & Zakay, 1997; Thomas & Weaver, 1975; Matthews & Meck, 2016; Zakay & Block, 2004) and future time perspective (Lang & Carstensen, 2002; Löckenhoff & Carstensen, 2004), as follows.

2.2. Subjective time passage

Subjective time passage refers to how consumers experience the duration of time. Previous research shows that the subjective estimations of time duration may vary among consumers and diverge from the passage of clock time (Block & Zakay, 1997; Fraisse, 1984; Matthews & Meck, 2016; Zakay & Block, 2004). For instance, Shalev and Morwitz (2013) show that time is experienced as passing faster (slower) when consumers count down (upward) while using a product. This effect is attributed to consumers becoming more aroused when counting downward, which diverts attention away from the passage of time and, therefore, makes time feel faster (Block & Zakay, 1997; Thomas & Weaver, 1975). An important implication of these findings is that the attention consumers pay to the passage of time can be a critical determinant of whether it feels faster or slower.

Mindfulness appears to have a similar effect. In one experiment, Kramer et al. (2013) showed that listening to a mindfulness meditation exercise led participants to classify subsequent stimulus durations as "long" more often than for an identical task prior to the mindfulness exercise, while participants who listened to a neutral recording showed no change in their responses. In a similar vein, Droit-Volet et al. (2015) found that, unlike the familiar sensation of time "flying," mindful states raise the informational density of the present without evoking the negative affective responses (e.g., boredom, frustration), making time feel slower.

From a theoretical standpoint, because mindfulness heightens attention to present moment experiences, including the experience of time, mindful individuals are likely to pay more attention to the passage of time. By enhancing sustained attention to ongoing experience (Brown & Ryan, 2003), mindfulness increases the granularity and informational richness of perceptual input (Langer, 1992)—in other words, it leads individuals to register more "units" of experience per moment (Taylor, 2022). Thus, we expect mindfulness to slow the subjective experience of time.

2.3. Future time perspective

The second time perception dimension central to our theorizing is future time perspective (Carstensen & Lang, 1996). It is important to note that prior research has used the term in divergent ways to capture different aspects of how people construe the future and connect it to the present (see Kooij et al., 2018, for a review). In our research, we adopt the conceptualization of future time perspective developed by Carstensen and Lang (1996) and Lang and Carstensen (2002), which refers to whether people feel time-rich or time-poor. An expansive future time perspective conveys the sense of having ample time remaining—that is, feeling time-rich. This expansive view encourages people to prioritize goals with long-term benefits, such as acquiring knowledge or cultivating relationships that may prove valuable later (Lang & Carstensen, 2002; Löckenhoff & Carstensen, 2004). By contrast, a limited future time perspective signals that time is running out, shifting priorities toward immediate goals such as pursuing emotionally meaningful experiences with short-term payoffs (Lang & Carstensen, 2002).

These goal-selection effects arise, at least in part, because consumers with an expansive future time perspective appraise the cost of waiting differently. When people feel time-rich, time is a resource they are more willing to spend (Ebert & Prelec, 2007; Lempert & Phelps, 2016), making waiting feel less onerous. Imagine two students: one has a month to finish an assignment, the other only a week. A three-day research phase feels modest to the first but burdensome to the second. Similarly, a fixed delay should appear less costly to consumers with an expansive future time perspective than to those with a limited one. Because perceived delay cost is pivotal in judging a delayed reward's attractiveness (Weber & Johnson, 2009), an expansive future time perspective should increase preference for delayed gratification.

Building on this logic, we propose that the slow passage of time induced by mindfulness prompts consumers to adopt a more expansive future time perspective and, consequently, a stronger preference for delayed gratification. Supporting this link, individuals with a limited future time perspective (e.g., older adults) often report that time passes more quickly (Carstensen et al., 2003; Kennedy et al., 2001). We posit the inverse: when time feels slower—because mindfulness sustains present moment attention and enriches perceptual granularity (Langer, 1992)—people should feel more time-rich, thereby reducing the perceived cost of delay in intertemporal choice.

Intriguingly, at first glance, an alternative prediction is also possible: mindfulness could reduce preference for delayed gratification if a slower felt passage of time makes waiting for a future reward feel longer and thus breeds impatience. This logic aligns with evidence that protracted waiting erodes willingness to defer gratification (Kim & Zauberman, 2009; Romero et al., 2019; Zauberman et al., 2009). However, such impatience is unlikely when consumers are mindful, provided that mindfulness broadens future time perspective. Restlessness from longer waits hinges on perceiving time as scarce—people grow uneasy when they believe the delay will cause "time to run out" (Ebert & Prelec, 2007). If mindfulness instead leaves consumers feeling time-rich, as per our theorization, then

those scarcity concerns should diminish and sensitivity to waiting longer should decline. Consistent with this account, we find that lengthening the actual waiting period affects mindful participants significantly less than those in the control condition, thereby amplifying mindfulness's positive effect on delayed gratification (Study 4a). These findings support our contention that mindfulness increases willingness to wait by lowering the perceived cost of delay, consistent with the predicted effect of an expansive future time perspective.

In summary, we argue that intertemporal choice is shaped by subjective time perception and the psychological cost of delay (Amasino et al., 2019; Lempert & Phelps, 2016). By slowing subjective time and fostering a sense of time-richness, mindfulness makes delayed rewards feel less costly and thus more attractive. Formally:

H1: Mindful (vs. control) consumers will show a greater preference for delayed gratification in an intertemporal choice.

H2: The effect of mindfulness (vs. control) on delayed gratification in an intertemporal choice is the result of mindful consumers a) adopting a more expansive future time perspective, which is b) induced by a subjective feeling that time passes more slowly.

3. Overview of studies

We test our hypotheses across six studies, each building on the last, replicating results, and addressing remaining issues (Table 1). Studies 1a and 1b provide field evidence: Study 1a observes naturally occurring mindfulness, whereas Study 1b heightens mindfulness via a commercial promotion, and both assess subsequent intertemporal choices. Study 2 replicates the effect in a controlled lab setting, boosting internal validity and demonstrating that future time perspective mediates the effect beyond stress-reduction. Study 3 embeds mindfulness cues in an advertisement for a financial product and shows a serial-mediation path through subjective time passage and future time perspective, even after controlling for alternative explanations such as construal level (Fujita et al., 2006; Malkoc & Zauberman, 2006) and impulsivity (Baumeister, 2002). Study 4a reveals that mindfulness's positive impact on delayed gratification grows as waiting time lengthens, because mindful (vs. control) consumers are more willing to wait longer for the same reward. These findings support our future time perspective account: feeling time-rich reduces the perceived cost of waiting time. Study 4b complements these results by showing that the mindfulness effect does not change across different reward magnitudes.

Table 1
Summary of studies.

Dependent variables (DV) and Statistics	Independent variable	
	Control	**Mindful**
Study 1a (N = 87, field study)	$N = 45$	$N = 42$
DV: $5 gift card immediately vs. $10 gift card after a week	35.6 % (16/45)	69.0 % (29/42)
Mindfulness → delayed gratification: $\chi^2(1) = 9.75$, $p = 0.002$, $\varphi = 0.33$		
Study 1b (N = 163, field study)	$N = 92$	$N = 71$
DV: 10 CNY coupon now or 15 CNY coupon after two weeks	51.1 % (47/92)	77.5 % (55/71)
Mindfulness → delayed gratification: $\chi^2(1) = 11.90$, $p < 0.001$, $\varphi = 0.27$		
Study 2 (N = 250, 51 % female, M_{age} = 39.75, SD = 11.96, CloudResearch connect)	$N = 125$	$N = 125$
DV: Chance to win a $50 bonus immediately or a $70 bonus in 10 weeks	33.6 % (42/125)	54.4 % (68/125)
Mindfulness → delayed gratification: $\chi^2(1) = 10.97$, $p < 0.001$, $\varphi = 0.21$		
Mindfulness → future time perspective → delayed gratification:		
B = 0.11, *SE* = 0.05, 95 % CI [0.03, 0.23]		
Study 3 (N = 250, 50 % female, M_{age} = 40.42, SD = 13.34, CloudResearch connect)	$N = 127$	$N = 123$
DV: $20 bonus on opening the account or a $30 bonus four months after opening the account	38.6 % (49/127)	57.7 % (71/123)
Mindfulness → delayed gratification: $\chi^2(1) = 9.17$, $p = 0.002$, $\varphi = 0.19$		
Mindfulness → subjective time passage → future time perspective → delayed gratification:		
B = 0.06, *SE* = 0.02, 95 % CI [0.01, 0.12]		
Study 4a (N = 500, 53.5 % female, M_{age} = 52.49, SD = 16.22, Qualtrics panel)	$N = 250$	$N = 250$
DV: Chance to win $100 after the survey closed or $200 in three or six months	25.0 % (31/124)	38.1 % (50/131)
Control: B = −0.41, $t(498) = -2.45$, $p = 0.014$	12.7 % (16/126)	38.6 % (46/119)
Mindful: B = 0.01, $t(498) = 0.08$, $p = 0.937$		
Mindfulness: B = 0.52, $t(498) = 4.87$, $p < 0.001$		
Waiting time: B = −0.20, $t(498) = -1.89$, $p = 0.059$		
Mindfulness × waiting time: B = 0.21, $t(498) = 1.99$, $p = 0.047$		
Study 4b (N = 500, 50 % female, M_{age} = 43.23, SD = 12.87, Qualtrics panel)	$N = 250$	$N = 250$
DV: Chance to win $100 after the survey closed vs. $125 or $150 in three months	35.6 % (89/250)	46.8 % (117/250)
Mindfulness: B = 0.23, $t(497) = 2.50$, $p = 0.012$		
Reward amount: B = 0.24, $t(497) = 2.68$, $p = 0.007$		
Mindfulness × reward amount: B = 0.12, $t(497) = 1.36$, $p = 0.173$		

4. Study 1a

Studies 1a and 1b provide initial evidence for our prediction that mindfulness increases delayed gratification by testing this effect in real-world field settings and employing consequential consumer decisions. Study 1a was conducted in collaboration with a community group in a large city in New Zealand that organizes weekly mindfulness walking meditation classes for first-timers. Drawing on this naturalistic mindfulness intervention (Gotink et al., 2016), we investigate how mindfulness influences consumer decisions involving an intertemporal choice.

4.1. Participants and procedure

This field study was conducted in May 2024. A total of 87 adults participated in exchange for a gift card that could be used at various online retailers. It employed a one-factor, two-level (mindfulness: mindful, control) between-subjects design. The participants were recruited during four mindfulness walking meditation classes for first-timers, which took place across two consecutive weekends.

Two classes ($N = 42$) were assigned to the mindful condition and two classes ($N = 45$) to the control condition. The detailed content and recruitment schedule are given in Web Appendix A. In each class, a mindfulness instructor (blind to our hypotheses) offered participants a digital gift card for participation in the class. The participants could choose between receiving a $5 gift card on the day of the class or a $10 gift card that would be emailed to them a week later. To test whether mindfulness increases delayed gratification, this choice was offered either before the mindfulness class (control condition) or after the class was completed (mindful condition).

4.2. Results

Delayed gratification We coded the participants' choice as '0' if they chose the immediate $5 gift card and '1' if they chose the $10 gift card a week later. We then examined the proportion of participants who chose the delayed $10 gift card across the two experimental conditions. As expected, more participants chose delayed gratification in the mindful condition (69.0 % [29/42]) than in the control condition (35.6 % [16/45], $\chi^2(1) = 9.75$, $p = 0.002$, $\varphi = 0.33$).

5. Study 1b

Study 1b corroborates the findings of Study 1a in a commercial context, in a situation where companies may prefer that their customers choose delayed gratification. We collaborated with a local bakery in a large city in China to implement a promotion that heightened mindfulness and involved the bakery's customers in making an incentive-compatible intertemporal choice. The objective of this promotion was to encourage customers to revisit the bakery.

5.1. Participants and procedure

This field study was conducted in March 2024. A total of 163 bakery customers participated in exchange for a coupon redeemable at the bakery. It employed a one-factor, two-level (mindfulness: mindful, control) between-subjects design. A research assistant (blind to our hypotheses) was present at the bakery and invited customers, before they made any purchase, to watch a food-related video on a tablet in exchange for a coupon redeemable at the bakery as a token of appreciation. Participants could choose between a coupon worth 10 CNY redeemable immediately or a 15 CNY coupon to be sent to their phone number through the store's customer relationship management (CRM) system after two weeks. Thus, the delayed gratification option encouraged participants to return to the bakery.

To test whether mindfulness increases delayed gratification, participants watched either a mindful eating video (mindful condition) or a general food-related video (control condition). A separate pretest ($N = 200$; 48.36 % female, $M_{age} = 29.10$, $SD = 6.95$) with participants from Credamo confirmed that viewing the mindful (vs. control) video elicited a higher level of state mindfulness ($M_{\text{mindful}} = 5.44$, $SD = 0.69$; $M_{\text{control}} = 4.87$, $SD = 0.91$, $t(198) = -4.96$, $p < 0.001$, $d = -0.70$), rated using the 21-item measure from Tanay and Bernstein (2013) on a 7-point scale (1 = strongly disagree, 7 = strongly agree; $\alpha = 0.93$; see Web Appendix B). A detailed description of the recruitment procedure and schedule is provided in Web Appendix B. No minimum purchase was required for participation in the study or to redeem a coupon.

5.2. Results

Delayed gratification We coded the participants' choice as '0' if they chose the immediately redeemable 10 CNY coupon and '1' if they chose the 15 CNY coupon redeemable after two weeks. We then examined the proportion of participants who chose the delayed 15 CNY coupon across the two experimental conditions. As expected, more participants chose delayed gratification in the mindful condition (77.5 % [55/71]) than in the control condition (51.1 % [47/92], $\chi^2(1) = 11.90$, $p < 0.001$, $\varphi = 0.27$).

6. Study 2

Study 2 extends the results of Studies 1a and 1b in three ways. First, it replicates the effect of mindfulness using an incidental manipulation of state mindfulness (Hafenbrack et al., 2022) to mitigate possible external confounding factors present in our field studies. Second, it tests the mediating role of future time perspective. Third, it demonstrates that the effect of mindfulness on delayed

gratification via future time perspective holds above and beyond a comprehensive set of alternative emotional and expectancy mechanisms. Specifically, we measured perceived stress (Cohen, Kamarck, & Mermelstein, 1983), reward uncertainty (Shi et al., 2021), reward risk (Avagyan et al., 2022), anxiety (Lin et al., 2020), and momentary affect (Watson, Clark, & Tellegen, 1988). Each has prior links to intertemporal choice or closely related valuation processes and could plausibly account for our effects. Mindfulness interventions commonly reduce stress and related negative affect (reviewed in Creswell, 2017), and future time perspective shows negative associations with anxiety in meta-analytic work (Kooij et al., 2018); thus, higher stress or anxiety might be expected to lower delayed gratification. Perceived uncertainty and risk can increase discounting (e.g., external uncertainty elevates discounting; Chapman, 1998; and uncertainty/certainty considerations are implicated in intertemporal valuation). Therefore, if mindfulness merely shifted expectancies, it could mimic a future time perspective effect. Finally, affective states influence patience (e.g., negative emotions often increase preference for immediate rewards; positive affect can promote waiting; Kim & Zauberman, 2013), so including momentary affect helps rule out mood-based alternatives. By measuring these variables, we clarify that mindfulness predicts delayed choice specifically via future time perspective rather than through general changes in stress, anxiety, expectancy, or mood.

6.1. Participants and procedure

A total of 250 participants located in the U.S. (51 % female; $M_{age} = 39.75$, $SD = 11.96$) were recruited using CloudResearch Connect (Litman et al., 2021). This study employed a one-factor, two-level (mindfulness: mindful, control) between-subjects design.

To test whether mindfulness increases delayed gratification, we employed the state mindfulness manipulation from Hafenbrack et al. (2022). In the mindful condition, participants listened to an 8-minute recording of a focused breathing meditation (https://youtu.be/4RCvzyD3yyo) created by a professional mindfulness meditation instructor. In the control condition, participants listened to an 8-minute recording (https://youtu.be/H2x2qxps-ks) recited by the same speaker, which instructed them to think of whatever came to mind. They were then asked to write a response describing how they felt about the video.

Participants were then informed that as a token of appreciation for their participation, they would be entered into a draw to win a cash bonus. If they won, they could choose to receive a $50 cash bonus immediately after the survey closed or a $70 cash bonus in 10 weeks. We asked them to choose between these two options. Each participant's future time perspective was then assessed using Lang and Carstensen's (2002) nine-item measure: "Many opportunities await me in the future," "I expect that I will set many new goals in the future," "My future is filled with possibilities," "Most of my life lies ahead of me," "My future seems infinite to me," "I could do anything I want in the future," "There is plenty of time left in my life to make new plans," "I have the sense that time is running out" (reverse-scored), and "There are only limited possibilities in my future" (reverse-scored), on 7-point scales (1 = very untrue to 7 = very true; $\alpha = 0.91$). For each participant, we averaged the ratings to obtain their future time perspective score, with higher values reflecting a more expansive future time perspective.

After this, participants completed the same state mindfulness scale used in Study 1b ($\alpha = 0.94$). Perceived reward uncertainty and perceived reward risk were each measured with a single item, following prior research (Avagyan et al., 2022; Carvalho et al., 2008). Uncertainty was assessed with "How certain or uncertain are you about getting this reward?" (adapted from Shi et al., 2021), and risk with "How much risk do you anticipate in getting this reward?" (adapted from Avagyan et al., 2022); both were rated on 7-point scales (1 = very uncertain/very high risk to 7 = very certain/very low risk).

Perceived stress was assessed using the four-item perceived stress scale (Cohen, Kamarck, & Mermelstein, 1983): "Right now, do you feel unable to control important things in your life?," "Right now, do you feel confident in your ability to handle your personal problems?" (reverse-scored), "Right now, do you feel things are going your way?" (reverse-scored), and "Right now, do you feel difficulties are piling up so high that you cannot overcome them?" Items were rated on 7-point scales (1 = strongly disagree to 7 = strongly agree; $\alpha = 0.77$), averaged to form a composite stress score.

Perceived anxiety was measured using three items adapted from Lin et al. (2020): "I am worried," "I am anxious," and "I am nervous," each rated on a 7-point scale (1 = strongly disagree to 7 = strongly agree; $\alpha = 0.95$).

Finally, momentary affect was assessed with the 10-item Positive and Negative Affect Schedule (Watson, Clark, & Tellegen, 1988). Participants rated five positive adjectives (e.g., "Enthusiastic," "Alert") and five negative adjectives (e.g., "Distressed," "Irritable") "right now" on 7-point scales (1 = strongly disagree to 7 = strongly agree; α positive affect = 0.88, α negative affect = 0.94). Positive and negative affect scores were averaged separately. Full item listings and descriptive statistics (including correlations among all Study 2 measures) are provided in Web Appendix C. Finally, participants reported demographic information and were debriefed.

6.2. Results

Manipulation check Participants in the mindful (vs. control) condition reported a higher level of state mindfulness ($M_{\text{mindful}} = 5.65$, $SD = 0.71$; $M_{\text{control}} = 5.14$, $SD = 1.14$, $t(248) = -4.23$, $p < 0.001$, $d = -0.53$).

Delayed gratification We coded the participants' choice as '0' if they chose the $50 reward obtainable immediately and '1' if they chose the $70 reward at the end of ten weeks. We then examined the proportion of participants who chose the delayed $70 reward across the two experimental conditions. As expected, more participants chose delayed gratification in the mindful condition (54.4 % [68/125]) than in the control condition (33.6 % [42/125], $\chi^2(1) = 10.97$, $p < 0.001$, $\varphi = 0.21$).

Mediation via future time perspective Participants in the mindful (vs. control) condition viewed their future time as being more expansive ($M_{\text{mindful}} = 5.07$, $SD = 1.01$; $M_{\text{control}} = 4.44$, $SD = 1.46$; $t(248) = -3.97$, $p < 0.001$, $d = -0.50$). A mediation analysis (PROCESS Model 4 with 5,000 bootstrap samples; Hayes, 2017) showed that future time perspective mediated the effect of mindfulness on delayed gratification (B = 0.11, SE = 0.05, 95 % CI [0.03, 0.23]). Full mediation results are reported in Web Appendix C.

Next, we examined whether mindfulness influenced any of our alternative mechanisms. Mindful and control participants did not differ on perceived reward uncertainty ($M_{mindful} = 3.71$, $SD = 1.86$; $M_{control} = 3.54$, $SD = 1.90$, $t(248) = -0.73$, $p = 0.461$, $d = -0.09$), perceived reward risk ($M_{mindful} = 5.47$, $SD = 1.71$; $M_{control} = 5.57$, $SD = 1.61$, $t(248) = 0.45$, $p = 0.649$, $d = 0.05$), anxiety ($M_{mindful} = 3.00$, $SD = 1.63$; $M_{control} = 3.10$, $SD = 1.75$, $t(248) = 0.47$, $p = 0.637$, $d = 0.06$), positive affect ($M_{mindful} = 5.14$, $SD = 1.07$; $M_{control} = 5.01$, $SD = 1.16$, $t(248) = -0.91$, $p = 0.361$, $d = -0.11$), or negative affect ($M_{mindful} = 2.49$, $SD = 1.59$; $M_{control} = 2.39$, $SD = 1.38$, $t(248) = -0.52$, $p = 0.600$, $d = -0.06$). Participants in the mindful condition did, however, report lower perceived stress than those in the control condition ($M_{mindful} = 3.19$, $SD = 1.09$; $M_{control} = 3.57$, $SD = 1.23$, $t(248) = 2.54$, $p = 0.012$, $d = 0.32$).

When perceived stress was entered as a covariate in the mediation of mindfulness → future time perspective → delayed gratification, the indirect effect via future time perspective remained significant (B = 0.06, SE = 0.04, 95 % CI [0.01, 0.16]). A parallel mediation model including both future time perspective and perceived stress confirmed that both indirect paths were significant (FTP: B = 0.08, SE = 0.04, 95 % CI [0.01, 0.20]; Stress: B = 0.04, SE = 0.03, 95 % CI [0.01, 0.11]) with the effect through future time perspective being twice as large. These results show that future time perspective explains the effect of mindfulness on delayed gratification over and above stress reduction.

Adding all alternative mechanisms (perceived uncertainty, risk, anxiety, affect, and stress) as simultaneous covariates produced an indirect effect via future time perspective that remained significant (B = 0.09, SE = 0.04, 95 % CI [0.02, 0.20]).

7. Study 3

Study 3 accomplishes three objectives. First, it integrates mindfulness cues into a financial product advertisement and tests whether such a mindful ad can promote delayed gratification. Second, it directly measures subjective time passage, enabling a test of our theorized serial pathway from mindfulness to delayed choice via slower felt time and a more expansive future time perspective. Third, it rules out plausible state-dependent alternatives by measuring participants' momentary construal mindset and impulsivity after ad exposure. Prior work shows that mindfulness can transiently increase high-level construals (Chan & Wang, 2019) and reduce impulsivity (Dixon et al., 2019); both could independently promote delayed choice. To address this, we adapted the Behavior Identification Form to assess participants' construal mindset in the moment (Fujita et al., 2006) and used items from Puri's impulsivity scale to capture their current impulsivity (Puri, 1996). In addition, because the decision was embedded in a financial advertisement, we measured participants' financial literacy to ensure that domain knowledge did not account for the observed effects. Including these measures ensures that the findings are not artifacts of mindset shifts, impulse control, or domain knowledge, but rather reflect the theorized time-based mechanism.

7.1. Participants and procedure

A total of 250 participants located in the U.S. (50 % female; $M_{age} = 40.42$, $SD = 13.34$) were recruited using CloudResearch Connect (Litman et al., 2021). This study employed a one-factor, two-level (mindfulness: mindful, control) between-subjects design.

Participants were told that they would complete several unrelated tasks. In the first task, they evaluated an advertisement for a financial product. To test whether mindfulness increases delayed gratification, we created two advertisements. In the mindful condition, participants viewed a 45-second "mindful money"' advertisement (https://youtu.be/KDY-rxihQX8?si = tZ-8fCVfRbcZWmEL) from a fictitious bank, which included instructions for breathing, pausing, and observing when stressed about finances. In the control condition, participants viewed an advertisement (https://youtu.be/tLeg2F1gJE8?si = sr1OUy3LTfd1Kesr) from the same bank that discussed money management.

Participants were then asked to imagine opening an account at this bank, which they were told was offering a promotion with a choice of bonus: $20 deposited into their savings account immediately on opening the account or $30 deposited four months after opening the account (see Web Appendix D). They were asked to choose their preferred bonus. Next, we assessed future time perspective (α = 0.95) and state mindfulness (α = 0.94), using the same measures as in the previous studies.

In the second task, participants completed a shortened eight-item Behavior Identification Form (BIF; Fujita et al., 2006; see Web Appendix D) to assess their momentary construal mindset. On each item, they chose between two explanations for a behavior based on how they felt in that moment: one reflecting a high-level ("why") construal and the other reflecting a low-level ("how") construal. For example, "making a list" could be described as "getting organized" (high-level) or "writing things down" (low-level). We coded each high-level choice as '1' and each low-level choice as '0,' then summed these scores so that higher totals indicate a stronger high-level construal mindset at the time of measurement.

Next, participants rated their current impulsiveness using eight items adapted from Puri (1996), each anchored to "how you feel right now": impulsive (reverse-scored), careless (reverse-scored), self-controlled, enjoy spending (reverse-scored), rational, responsible, restrained, and easily tempted (reverse-scored). All items were answered on 7-point scales (1 = strongly disagree, 7 = strongly agree), and we averaged them (α = 0.82) so that lower scores reflect greater momentary impulsivity. Given the financial context of our task, we then measured financial literacy with a single item asking participants to rate their "knowledge of financial investments" on a 7-point scale (1 = not much, 7 = a lot).

Finally, we assessed subjective time passage using two measures adapted from prior research (Bailey & Areni, 2006). The first measure was an open-ended question that asked participants to estimate how long they thought it took them to complete the survey in minutes and seconds. We converted these answers into seconds. The second measure consisted of two items that asked participants to rate how time was experienced when they completed the survey: "time has passed quickly" (reverse-scored) and "time has passed slowly," on a 7-point scale (1 = strongly disagree, 7 = strongly agree). We averaged these two items for each participant, with higher

scores indicating that time is perceived as passing more slowly ($r = 0.91$, $p < 0.001$). Finally, participants reported demographic information and were debriefed.

7.2. Results

Manipulation check Participants in the mindful (vs. control) condition reported a higher level of state mindfulness ($M_{mindful} = 4.97$, $SD = 0.90$; $M_{control} = 4.14$, $SD = 1.28$, $t(248) = -5.81$, $p < 0.001$, $d = -0.73$).

Delayed gratification We coded the participants' choice of a bonus offer as '0' if they chose an immediate $20 bonus and '1' if they chose $30 bonus four months after opening a bank account. We then examined the proportion of participants who chose the delayed $30 bonus across the two experimental conditions. As expected, more participants chose delayed gratification in the mindful condition (57.7 % [71/123]) than in the control condition (38.6 % [49/127], $\chi^2(1) = 9.17$, $p = 0.002$, $\varphi = 0.19$).

Serial mediation via subjective passage of time and future time perspective Using the survey metadata from Qualtrics, we investigated whether there was a difference in the actual time to complete the survey for the two experimental conditions. We found that participants in the two conditions did not differ significantly in their time (in seconds) to complete the survey ($M_{mindful} = 541.96$, $SD = 685.37$; $M_{control} = 523.16$, $SD = 392.76$, $t(248) = -0.26$, $p = 0.795$).

We then proceeded to investigate subjective time passage. We found that participants in the mindful (vs. control) condition estimated that the survey took longer to complete ($M_{mindful} = 416.53$, $SD = 220.98$; $M_{control} = 285.29$, $SD = 151.11$, $t(248) = -5.49$, $p < 0.001$, $d = -0.69$) and felt that time passed more slowly ($M_{mindful} = 3.93$, $SD = 1.73$; $M_{control} = 3.29$, $SD = 1.73$, $t(248) = -2.91$, $p = 0.004$, $d = -0.36$). We then standardized all three items across these two measures (estimated time in seconds and the two items of subjective time perception) by calculating their z-scores and averaging them into a composite index of subjective time passage ($\alpha = 0.83$). This index also showed that participants in the mindful condition perceived the passage of time as slower ($M = 0.23$, $SD = 0.87$) than did those in the control condition ($M = -0.22$, $SD = 0.79$, $t(248) = -4.32$, $p < 0.001$, $d = -0.54$). Further, participants in the mindful (vs. control) condition viewed their future time perspective as more expansive ($M_{mindful} = 4.82$, $SD = 1.20$; $M_{control} = 3.98$, $SD = 1.63$, $t(248) = -4.61$, $p < 0.001$, $d = -0.58$).

Next, we conducted a serial mediation analysis using PROCESS Model 6 (Hayes, 2017) with 5,000 bootstrap resamples. We examined the indirect effect of mindfulness on delayed gratification via subjective time passage and future time perspective (i.e., mindfulness → subjective time passage → future time perspective → delayed gratification). The analysis revealed a significant serial mediation index (B = 0.06, $SE = 0.02$, 95 % CI [0.01, 0.12]). Full mediation results are given in Web Appendix D.

Following Bellezza et al. (2017), we compared a simple mediation model (mindfulness → subjective time passage → delayed gratification) to our full serial mediation model (mindfulness → subjective time passage → future time perspective → delayed gratification). Adding future time perspective increased R^2 from 0.03 to 0.15 ($F_{change}(3, 246) = 9.73$, $p < 0.001$). Reversing the order of the two mediators yielded a non-significant indirect effect (B = 0.01, SE = 0.01, 95 % CI [–0.01, 0.05]). In a parallel mediation analysis, only future time perspective carried a significant indirect effect (B = 0.24, SE = 0.07, 95 % CI [0.12, 0.41]), whereas subjective time passage did not (B = 0.04, SE = 0.04, 95 % CI [–0.02, 0.14]).

Finally, we repeated our analyses with BIF, impulsivity, and financial literacy, as covariates. We found that adding these covariates did not change our results (B = 0.06, $SE = 0.02$, 95 % CI [0.02, 0.13]), suggesting that mindfulness influences delayed gratification via subjective time passage and future time perspective, even when we control for these potential alternative explanations and confounding factors. We also conducted a parallel mediation analysis simultaneously including future time perspective, impulsivity, and construal mindset as mediators; the full results are reported in Web Appendix D. Results showed that future time perspective remained the only significant mediator of the effect of mindfulness on delayed gratification.

8. Study 4a

Although classical intertemporal choice theory (Ainslie, 1975) assumes that reward amount and waiting time are integrated within each option before comparison, newer work shows that these attributes have distinct effects on intertemporal preference (Amasino et al., 2019). In other words, consumers' willingness to delay gratification can vary independently with the length of the wait for the delayed reward and the size gap between the delayed and immediate rewards.

We use these two attributes to test our mechanism. If future time perspective drives the mindfulness effect, mindfulness should reduce sensitivity to waiting costs while leaving sensitivity to reward amounts unchanged. This is because waiting longer should feel less costly when consumers hold an expansive future perspective, as time, now viewed as abundant, is a resource they are willing to spend (Löckenhoff & Carstensen, 2004; Ebert & Prelec, 2007; Lempert & Phelps, 2016). In contrast, narrowing the size gap between the delayed and immediate rewards should reduce the delayed reward's appeal regardless of time perspective.

Empirically, we would then expect the mindfulness effect to grow when the delay is longer. This should occur because mindful participants should be more willing to wait longer for the same reward, a pattern we observe in Study 4a. By comparison, the mindfulness effect should remain stable across different reward-size gaps, with both mindful and control participants preferring the larger reward; Study 4b confirms this prediction. Because these studies involved larger, more consequential rewards, we also measured participants' financial needs, as greater immediate need could bias choices (Reyna & Wilhelms, 2017).

8.1. Participants and procedure

A total of 500 participants located in the U.S. (53.5 % female; $M_{age} = 52.49$, $SD = 16.22$) were recruited through Qualtrics. This

study employed a 2 (mindfulness: mindful, control) × 2 (waiting time: shorter, longer) between-subjects design.

Participants completed two purportedly unrelated tasks. First, we manipulated state mindfulness. In the mindful condition, participants listened to a 2.5-minute recording of a breathing meditation (https://youtu.be/1nBnb-5adyQ) created by a mindfulness instructor. In the control condition, participants listened to a 2.5-minute recording about how clouds are formed (https://youtu.be/DQXGojRnWc8), which used the same narrator. They were then asked to write a response describing how they felt about the video.

In the second task, we asked participants to choose between two monetary rewards. In an approach adapted from Romero et al. (2019), we instructed them to make their choice based on their true preferences, because a participant would be randomly selected to receive the chosen reward. In the shorter waiting time condition, participants decided between receiving $100 immediately after the survey closed and $200 in three months. In the longer waiting time condition, the choice was between receiving $100 immediately and $200 in six months (see Web Appendix E). Participants then rated their perceived financial needs using a five-item measure (e.g., "Because of my money situation, I feel I will never have the things I want in life") adopted from Netemeyer et al. (2018). Each item was measured on a 7-point scale (1 = strongly disagree, 7 = strongly agree, α = 0.89). We included this assessment because financial needs can influence delayed gratification (Reyna & Wilhelms, 2017; see Appendix E). Finally, participants completed the state mindfulness measure (α = 0.91) used in the earlier studies, indicated their demographic information, and were debriefed.

8.2. Results

Manipulation check Participants in the mindful (vs. control) condition reported a higher level of state mindfulness ($M_{mindful}$ = 5.36, SD = 0.85; $M_{control}$ = 4.50, SD = 0.94, $t(498) = -10.58$, $p < 0.001$, $d = -0.94$).

Delayed gratification We coded participants' choice as '0' if they chose the immediate $100 reward and '1' if they chose the delayed $200 reward. A 2 × 2 moderated logistic regression predicting delayed gratification choice from waiting time (shorter vs. longer), mindfulness condition (control vs. mindful), and their interaction (PROCESS Model 1; Hayes, 2017; 5,000 bootstrap resamples) revealed a significant main effect of mindfulness (B = 0.52, $t(498) = 4.87$, $p < 0.001$), a marginally significant effect of waiting time (B = −0.20, $t(498) = -1.89$, $p = 0.059$), and a significant interaction (B = 0.21, $t(498) = 1.99$, $p = 0.047$).

Planned contrasts showed that increasing the waiting time significantly reduced the likelihood of choosing the delayed reward in the control condition (25.0 % [31/124] to 12.7 % [16/126], B = −0.41, $t(498) = -2.45$, $p = 0.014$), but had no effect in the mindful condition (38.1 % [50/131] to 38.6 % [46/119], B = 0.01, $t(498) = 0.08$, $p = 0.937$) (See Fig. 1). Thus, lengthening the actual waiting period affected control participants but not mindful participants, consistent with our theorizing that mindfulness reduces sensitivity to waiting costs.

From another perspective, in the shorter waiting time condition, mindful participants were more likely to choose delayed gratification than control participants (38.1 % [50/131] vs. 25.0 % [31/124], B = 0.30, $t(498) = 2.24$, $p = 0.026$). In the longer waiting time condition, this difference was even larger (38.6 % [46/119] vs. 12.7 % [16/126], B = 0.73, $t(498) = 4.48$, $p < 0.001$). Thus, the mindfulness effect was stronger for longer waits (Δ = 26.0 %) than for shorter waits (Δ = 13.1 %; B_{long} = 0.73 vs. B_{short} = 0.30).

Taken together, these results indicate that mindfulness makes consumers more willing to wait longer for a delayed reward in an intertemporal choice decision. Specifically, mindfulness lowers the perceived cost of delay, as lengthening the wait reduces delayed choices in the control group but leaves choices unchanged in the mindful group.

We repeated our analysis with financial needs as a covariate. Results were substantively unchanged: mindfulness (B = 0.53, $t(498) = 4.96$, $p < 0.001$) and waiting time (B = −0.22, $t(498) = -2.07$, $p = 0.038$) both showed significant main effects, and the interaction remained marginally significant (B = 0.20, $t(498) = 1.95$, $p = 0.052$). Planned contrasts confirmed that increasing the waiting time significantly reduced delayed choices in the control condition (B = −0.43, $t(498) = -2.54$, $p = 0.010$), but had no effect in the mindful condition (B = −0.01, $t(498) = -0.10$, $p = 0.916$). From another perspective, mindfulness increased delayed choice both when the wait was shorter (B = 0.32, $t(498) = 2.34$, $p = 0.018$) and when the wait was longer (B = 0.74, $t(498) = 4.52$, $p < 0.001$), with the effect again stronger at longer waits.

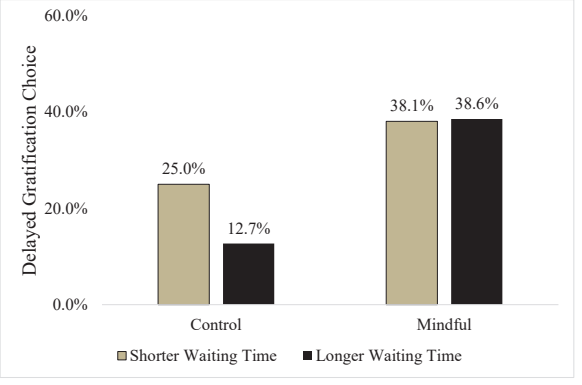

Fig. 1. The effects of mindfulness and waiting time on delayed gratification (Study 4a).

9. Study 4b

While Study 4a shows that the magnitude of the mindfulness effect changes as a function of the waiting time for the delayed reward because mindfulness makes people more willing to wait longer, Study 4b shows that this magnitude does not change with the size difference between the delayed reward and the immediate reward. As discussed, we expect that all consumers, independent of their mindfulness, to prefer delayed gratification more when the size difference between the delayed reward's amount and the immediate reward's amount is larger.

9.1. Participants and procedure

A total of 500 participants located in the U.S. (50 % female; $M_{age} = 43.23$, $SD = 12.87$) were recruited from Qualtrics. This study employed a 2 (mindfulness: mindful, control) × 2 (reward amount: lower, higher) between-subjects design.

The procedures for Study 4b were identical to Study 4a, with one important exception. In the lower reward condition, the choice was between receiving $100 immediately after the survey closed and receiving $125 in three months, whereas in the higher reward condition, the choice was between receiving $100 immediately and receiving $150 in three months (see Web Appendix F). As in Study 4a, participants rated their state mindfulness (α = 0.93) and financial needs (α = 0.91).

9.2. Results

Manipulation check Participants in the mindful (vs. control) condition reported a higher level of state mindfulness ($M_{\text{mindful}} = 5.28$, $SD = 0.94$; $M_{\text{control}} = 4.44$, $SD = 1.16$, $t(498) = -8.86$, $p < 0.001$, $d = -0.79$).

Delayed gratification We coded the participants' choice as '0' if they chose the immediate $100 reward and '1' if they chose the delayed $125 or $150 reward. A 2 × 2 moderated logistic regression on reward choice using PROCESS Model 1 with 5,000 bootstrap resamples (Hayes, 2017) revealed two significant main effects of mindfulness (B = 0.23, $t(497) = 2.50$, $p = 0.012$) and reward amount (B = 0.24, $t(497) = 2.68$, $p = 0.007$). As expected, however, the interaction effect was not significant (B = 0.12, $t(497) = 1.36$, $p = 0.173$).

Independent of reward amount, more participants chose delayed gratification in the mindful condition (46.8 % [117/250]) than in the control condition (35.6 % [89/250]). Independent of mindfulness, more participants chose delayed gratification in the higher reward amount condition (47.2 % [118/250]) than in the lower reward amount condition (35.2 % [88/250]). These findings are consistent with our prediction that the magnitude of the mindfulness effect on delayed gratification does not vary with the size difference in reward amounts, because consumers generally prefer delayed gratification more when the size difference between the delayed reward and the immediate reward is larger.

We repeated our analysis using financial needs as a covariate. We found that this did not change our results, yielding two significant main effects of mindfulness (B = 0.22, $t(496) = 2.38$, $p = 0.017$) and reward amount (B = 0.24, $t(496) = 2.64$, $p = 0.008$), and a nonsignificant interaction effect (B = 0.11, $t(496) = 1.18$, $p = 0.236$).

10. General discussion

Mindfulness has gained immense popularity among both consumers and marketers. In the present research, we show that becoming more mindful increases consumer preference for delayed gratification in intertemporal choice decisions. We provide converging evidence for this effect across six studies, which assessed the impact of naturalistic mindfulness experiences (Study 1a), employed mindfulness meditation instructions (Studies 2, 4a and 4b), and integrated mindfulness cues into commercial promotions (Studies 1b and 3) across a spectrum of hypothetical (Study 3) and consequential (Studies 1a, 2, 4a and 4b) intertemporal consumer decisions.

At first glance, our findings might appear at odds with the idea of mindfulness as focused attention on present moment experience (Brown & Ryan, 2003; Langer, 1992), which could suggest a stronger pull toward immediate rewards. Yet present focus does not necessarily entail prioritizing immediate gratification. In fact, prior work shows that mindfulness often supports behaviors that temper short-term pleasure, such as regulating food intake (Van De Veer et al., 2016) and donating to long-term, sustainable causes (Orazi et al., 2019). In mindfulness, present focus signifies heightened awareness of one's ongoing experience, including the experience of time, which can shape how consumers process and evaluate information (Hafenbrack et al., 2014; Zhang et al., 2021). Our results reveal how this heightened temporal awareness leads mindfulness to increase preference for delayed gratification. By sharpening present moment attention and enriching perceptual granularity, mindfulness slows the felt passage of time (Study 3). A slower passage broadens future time perspective, making consumers feel time-rich (Studies 2 and 3). Consequently, mindfulness lowers the perceived cost of waiting and makes consumers willing to wait longer for a delayed reward (Study 4a), while leaving sensitivity to reward value unchanged (Study 4b).

Although delayed gratification often yields long-term benefits for consumers, particularly in well-specified monetary settings, it is important to note that these benefits are context dependent (McGuire & Kable, 2013; O'Donoghue & Rabin, 1999). In many real-world financial decisions, delayed outcomes entail risk and uncertainty (Chapman, 1998; McGuire & Kable, 2013). Hence, delaying gratification does not always enhance wellbeing, especially when risk is present. By contrast, in deterministic monetary decisions, delaying consumption typically delivers greater economic value. Our findings therefore offer practical guidance for marketers who design intertemporal incentives and for practitioners developing consumer interventions in structured, low-uncertainty contexts.

Finally, although our main studies focused on the effect of state mindfulness interventions, mindfulness can also be a personality

trait (Brown & Ryan, 2003). Therefore, we conducted an additional study ($N = 201$) to investigate the effect of trait mindfulness on delayed gratification via future time perspective. Consistent with the results of our main studies, we found that trait mindfulness was positively correlated with a consequential choice to obtain a larger delayed reward in an intertemporal choice decision and that this effect was mediated by future time perspective (see Web Appendix G for full details).

10.1. Practical implications

Consumers often struggle to make good intertemporal choice decisions because they tend to prefer immediate benefits and discount the value of future benefits (Malkoc & Zauberman, 2006). They have difficulty with these decisions despite robust evidence linking delayed gratification to positive outcomes in many contexts (Mischel et al., 1989; O'Donoghue & Rabin, 1999). Although choosing delayed gratification has always been a challenge, the matter warrants particular concern now because our society is experiencing "social acceleration," an increased rhythm of life that leads consumers to feel that their time is always running out (Husemann & Eckhardt, 2019). Our findings show that mindful interventions, such as participating in a mindfulness walk (Study 1a), listening to meditation exercises (Studies 2, 4a, and 4b), and even watching promotions that cue mindfulness (Studies 1b and 3), may help consumers slow down and reevaluate decision contexts, with potential implications for improved financial wellbeing.

Our findings are relevant to marketers aligned with the marketing responsibilization movement (Haenlein et al., 2022), as "better marketing for a better world" (Chandy et al., 2021). This movement encourages marketing scholars and practitioners to more proactively address broader societal implications in their marketing activities (Pauwels et al., 2024), including by promoting consumer wellbeing. Our studies demonstrate how mindfulness cues can be strategically integrated into marketing campaigns to nudge consumers toward decisions that may benefit them in the long term, such as obtaining greater value from promotions (Study 1b) and increasing their savings (Study 3). In doing so, we provide a blueprint for how marketers can cultivate the self-regulatory effects of mindfulness in their customers, thereby contributing to a more responsible and positive marketing practice.

Encouraging consumers to consider delayed rewards may also present commercial opportunities in certain contexts. For instance, Study 1b shows how mindfulness interventions combined with intertemporal promotions can be used to encourage customer revisits, thereby fostering opportunities to strengthen future relationships. In this vein, marketers may wish to consider integrating mindfulness cues into their loyalty and reward programs because the value of such programs rests on the willingness of consumers to invest present resources to obtain greater future rewards. Finally, Study 4a shows that mindful consumers are less sensitive to longer known waiting times. This effect can be beneficial for industries where consumers need to wait for extended periods to obtain benefits (e.g., financial investments, education, real estate, customized product offerings, research and development). For such industries, the cultivation of mindfulness may make consumers less likely to abandon their long-term goals in favor of more immediate but less rewarding options.

10.2. Theoretical contributions

Our findings have important conceptual implications for the literature on mindfulness, time perception, and intertemporal choice decisions. First, we enrich the literature on mindfulness and consumer self-regulation (e.g., Hafenbrack et al., 2022; Lueke & Gibson, 2015; Van De Veer et al., 2016) by showing how mindfulness influences consumer self-regulation in intertemporal choice decisions. We reveal what may seem a paradoxical effect of mindfulness: although mindfulness makes consumers focus on their present moment experience, it increases delayed gratification in intertemporal choices (Studies 1a – 4b).

Second, we show that this effect of mindfulness is based on a subjective slowing of the passage of time (Study 3), which makes the future seem more expansive and, therefore, leads to different evaluations of future outcomes in intertemporal choice decisions (Studies 2 and 3). Through a demonstration that mindfulness slows the subjective passage of time (Study 3) and expands future time perspective (Studies 2 and 3), our findings add to the literature that examines factors influencing time perception (e.g., Noulhiane et al., 2007; Shalev & Morwitz, 2013).

Third, we contribute to the intertemporal choice literature by uncovering a novel link between subjective time passage and delayed gratification. Earlier studies have mainly examined how felt time shapes inferences about the *anticipated* waiting period for a delayed reward (e.g., Kim & Zauberman, 2013; Zauberman et al., 2009). Our findings show that subjective time passage is also tied to whether consumers adopt an expansive or limited future time perspective (Study 3). This suggests that the role of subjective time in intertemporal choice is more complex than previously recognized.

Notably, we document this mechanism in deterministic intertemporal choice contexts, where rewards are fixed and delays clearly defined—conditions under which representative processes such as time perception are likely to outweigh emotional or stress-based responses (Lempert & Phelps, 2016). Prior work shows that when delays are uncertain or indeterminate, waiting often feels longer and more aversive, making immediate rewards appear more rational (McGuire & Kable, 2013). By contrast, in our deterministic tasks, mindfulness did not make waiting feel costly, suggesting that when uncertainty is stable consumers are more willing to tolerate delay. Future research could investigate the effect of mindfulness on intertemporal choice decisions involving greater levels of uncertainty and risks.

Fourth, we reveal distinctive aspects of the mindfulness effect on intertemporal choice decisions by assessing whether mindful consumers show different levels of sensitivity to the waiting time to obtain the delayed reward (Study 4a) and the size of the delayed reward relative to the immediate reward (Study 4b). In this endeavor, we found that although mindfulness makes consumers more willing to wait longer to obtain the delayed reward, it does not change how they respond to variations in the size difference in reward amounts in an intertemporal choice set. These findings contribute to an understanding of how waiting time and reward amounts in intertemporal preferences can be independently influenced by external factors (Amasino et al., 2019).

10.3. Limitations and future research

Mindfulness has divergent effects on consumers (review in Web Appendix H1), and delayed gratification is shaped by multiple factors (Malkoc & Zauberman, 2018). While our findings provide convergent support for the effect of mindfulness on delayed gratification via time perception, limitations remain that warrant further investigation of additional mechanisms. One such process is construal-level mindset (Trope & Liberman, 2003), which describes how people mentally represent events, either as abstract, superordinate concepts (high-level construal) or concrete, subordinate ones (low-level construal). Mindfulness has been linked to high-level construal (Chan & Wang, 2019), which may promote delayed gratification by encouraging more rational, long-term thinking (Fujita et al., 2006; Malkoc et al., 2010). This mindset increases self-control by shifting attention from the time lost to the value of future rewards (Fujita et al., 2006).

This explanation does not contradict our findings that the effect of mindfulness is driven by an expansive future time perspective (Studies 2 and 3). In fact, when consumers prioritize the future, independent of the reason, they are likely to adopt a high-construal mindset (Trope & Liberman, 2003). The construal mindset could, therefore, be an additional factor underlying the effect of mindfulness on delayed gratification, complementing our proposed explanation involving time perception. In Study 3, we controlled for construal mindset and impulsivity, and the effect of mindfulness on delayed gratification via time perception remained significant.

Further, the effect of a construal mindset on delayed gratification is known to vary with reward abstractness (Kim et al., 2013). From this perspective, some of our studies used more concrete rewards (e.g., a gift card) while others used more abstract ones (e.g., a chance to win a gift card). However, we obtained consistent results in all studies, suggesting that a construal mindset does not fully account for our findings. In addition, if the effect of a construal mindset occurs because consumers shift their attention from the loss of waiting time to the benefits of rewards (Fujita et al., 2006), we would expect the magnitude of the effect to vary with the size difference between the delayed reward and the immediate reward, because a high-level construal mindset should pay more attention to such variance. However, we did not observe this pattern for the mindfulness effect (Study 4b).

We note several avenues for future research. First, scholars should examine the contextual boundary conditions under which mindfulness most effectively promotes delayed gratification. As discussed, emotionally charged or uncertain contexts (McGuire & Kable, 2013) may accentuate stress, which can heighten preferences for immediacy (Lempert & Phelps, 2016). Thus, it would be important to investigate whether and how mindfulness may influence consumer decisions in such contexts. Moreover, the framing of intertemporal choices, as delays versus speed-ups (Malkoc & Zauberman, 2006; Weber et al., 2007) or as dates versus delay intervals (LeBoeuf, 2006), substantially shapes preferences. One account for these framing effects is that consumers are acutely sensitive to "losing time" (Malkoc & Zauberman, 2006). Because mindfulness makes consumers more willing to spend time (Study 4a), future work should test whether such framing effects attenuate under mindful states.

Ethical approval

This research was conducted with the approval of the University of Auckland Human Participants Ethics Committee (UAHPEC). Ethical approval was granted under the reference number 022746.

CRediT authorship contribution statement

Amy Errmann: Writing – review & editing, Writing – original draft, Investigation, Formal analysis, Data curation, Conceptualization. **Yuri Seo:** Writing – review & editing, Supervision, Formal analysis, Conceptualization. **Felix Septianto:** Writing – review & editing, Validation, Supervision, Formal analysis. **Xing-Yu (Marcos) Chu:** Writing – review & editing, Formal analysis, Data curation.

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Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Appendix A. Supplementary material

Supplementary data to this article can be found online at https://doi.org/10.1016/j.ijresmar.2025.10.006.

Data availability

Public data link shared.

All anonymized data, survey materials, web appendix, and analyses are available on Open Science Framework (https://osf.io/tg8r2).

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