

**Love is patient:
People are more willing to wait for things they like**

Annabelle Roberts¹, Franklin Shaddy², and Ayelet Fishbach¹

¹University of Chicago

²University of California, Los Angeles

In press, *Journal of Experimental Psychology: General*

All data and materials are publically available on OSF: <https://tinyurl.com/liking-and-patience-osf>. Correspondence concerning this article should be addressed to: Annabelle Roberts, University of Chicago Booth School of Business, 5807 S Woodlawn Ave, Chicago, IL 60637. Phone: (520) 241-4643, Email: arobert5@chicagobooth.edu. We are grateful for feedback and advice from Oleg Urminsky, George Wu, and members of Ayelet Fishbach's lab group. Funding from the University of Chicago supported this research.

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Abstract

How does liking of a target affect patience? One possibility is that the more people like a target the less patient they are for it, because it is more difficult to resist the attractive smaller-sooner option in order to wait for the larger-later option. However, across six studies ($N = 2,774$), we found evidence for the opposite effect. Specifically, an increase in liking was correlated with an increase in patience (Study 1), and when people made decisions about a target they liked more, they were more willing to wait for a better quality version of it (Studies 2 and 3) and a larger amount of it (Study 4). This is because when people like a target more, they perceive a greater difference in subjective value between its smaller-sooner and larger-later versions. Thus, the perceived difference in subjective value mediated the effect of liking on patience (Study 5). Further, consistent with this proposed mechanism, we found that liking increased both willingness to wait for a better quality version of a target and willingness to pay to receive the target sooner (Study 6). These findings suggest that patience, in part, results from believing the larger-later reward is worth waiting for. They also offer practical recommendations for people struggling with impatience: Individuals may benefit from reminding themselves why it is they like what they are waiting for.

Keywords: patience, liking, intertemporal choice, subjective value, self-control

Suppose you want to replace your old smartphone. You can replace it with the current model available for sale now or you can wait until the next model is released in a few months. This choice presents a classic intertemporal tradeoff: You can choose to receive either the current, less advanced model now (i.e., a “smaller-sooner” option) or the next, more advanced model in a few months (i.e., a “larger-later” option). Given an intertemporal choice between earlier delivery and greater value, patience is defined as the decision to wait for greater value (Ainslie & Haslam, 1992; Frederick, Loewenstein, & O’Donoghue, 2002). Thus, an individual would need to exhibit patience in order to enjoy the state-of-the-art features of the next, more advanced smartphone model.

Patience, or the decision to delay gratification in intertemporal choice, predicts positive life outcomes, including long-term academic success, health, wealth, and reduced risky behavior, such as criminal activity and substance use (Mischel, Shoda, & Rodriguez, 1989; Moffitt et al., 2010; Schlam, Wilson, Shoda, Mischel, & Ayduk, 2013; Shoda, Mischel, & Peake, 1990; Watts, Duncan, & Quan, 2018). Longitudinal studies have even found that preschool children who are able to resist an immediate reward sooner (such as a marshmallow or pretzel) in favor of a better reward later have greater academic achievements and fewer behavioral problems throughout their life (Mischel et al., 1989; Shoda et al., 1990; Watts et al., 2018). Patience is often associated with stronger willpower (Duckworth, Tsukayama, & Kirby, 2013; Mischel et al., 2010). Indeed, these findings were interpreted as suggesting that an individual’s ability to resist an immediate reward, through willpower, enables them to be patient.

However, the decision to delay gratification might not depend *only* on willpower. For example, given the choice between settling for the current smartphone model now and waiting to upgrade to the next model later, someone who loves technology might be very tempted to upgrade to the current model—much more so than someone who only cares about technology a little. If patience is determined only by an individual’s willpower, then the person who loves technology more would be *less* likely to wait for next model because they would find it harder to resist the temptation of upgrading to the current model immediately (i.e., they would have to exercise greater willpower). However, in this research we test the opposite prediction: A person who loves technology would actually be *more* willing to wait for the next model. This is because while liking a target increases the attractiveness of the smaller-sooner option, it also increases the difference in subjective value between the smaller-sooner and larger-later options. Thus, a

technology-lover is more likely to believe the next smartphone model is worth waiting for. More broadly, we explore whether patience stems from the desire to wait, rather than just the ability to do so.

Factors that Predict Patience

There are several factors that predict patience. People are less patient when they are in a “hot,” emotional state. In a “hot” state, people’s cognitive processes support impulsive behavior, such as through increased visual attention to the temptation (Nordgren & Chou, 2011).

Consequently, thinking about rewards in “cool” symbolic terms (e.g., thinking of a pretzel as a log vs. a crunchy, salty treat) can increase patience (Metcalf & Mischel, 1999; Mischel et al., 1989; see also distancing techniques, Kross & Ayduk, 2011). Lacking food, sex, medicine, or drugs can also elicit drive states like hunger, sexual desire, pain, or cravings, which reduces patience (Loewenstein, 1996; Nordgren, van der Pligt, & van Harreveld, 2007). Relatedly, people are less patient when the target is emotionally evocative. Thus, an individual can be relatively patient for one type of target but relatively impatient for another (Chapman, 1996; Tsukayama & Duckworth, 2010; Ubfal, 2016).

People’s mindset while making an intertemporal choice also impacts their patience. People are more patient when they maintain high-level construal, which promotes cognitive abstraction that highlights goal-relevant features, as opposed to low-level construal, which instead highlights idiosyncratic and unique situational features (Fujita & Carnevale, 2012; Fujita, Trope, Liberman, & Levin-Sagi, 2006). High-level construal encourages consideration of how rewards relate to the decision maker’s overall (typically longer-term) goals, resulting in patience. Additionally, people are more patient when they feel more connected to their future selves (Bartels & Urminsky, 2011; Ersner-Hershfield, Wimmer, & Knutson, 2009). When people identify more with their future selves, they are more likely to choose larger-later options that benefit their future selves.

The above factors influence individuals’ ability to exercise self-control, and thus, their ability to delay gratification. In these cases, people select the smaller-sooner option because they cannot resist the visceral temptation of the smaller-sooner reward (Loewenstein, 1996; Mischel et al., 1989). Even when people want to wait, they may not have the willpower to do so.

But exercising self-control requires that the person first identifies a self-control conflict, and then, is motivated to resist temptation through willpower (Fishbach & Converse, 2010);

Myrseth & Fishbach, 2010). Patience is not always a function of willpower, or an individual's ability to overcome temptation. That is, people are sometimes impatient because they actually prefer the smaller-sooner reward to the larger-later reward. For example, an analysis based on temporal discounting suggests people prefer smaller-sooner to larger-later rewards because they discount the future relative to the present (Frederick et al., 2002). Thus, a person may exhibit impatience because the discounted future reward is not sufficiently large enough to warrant waiting.

Feelings of uncertainty and distrust also reduce the desire to be patient, rather than the ability. People are less patient when they are uncertain if and when the larger-later reward will materialize (McGuire & Kable, 2013) or when they do not trust the person offering the rewards (Michaelson & Munakata, 2016). That is, people are more likely to settle for an immediate smaller reward when they believe waiting increases the likelihood that they will not receive a reward at all.

Finally, people are also more patient when the objective or subjective value of the options is greater. According to the magnitude effect (Loewenstein & Prelec, 1992; Thaler, 1981), people are more patient for larger magnitudes than smaller magnitudes. For example, people believe \$60 in one year is as attractive as \$15 now (median discount rate of 139%), but \$350 in one year is as attractive as \$250 now (median discount rate of 34%). Thus, greater objective values increase patience. Relatedly, imposing a waiting period before an intertemporal choice increases patience by enhancing the subjective value of outcomes (Dai & Fishbach, 2013; Imas, Kuhn, & Mironova, 2016). Specifically, when people were required to wait before making an intertemporal choice, they came to believe that both the smaller-sooner and larger-later options were subjectively more valuable, which increased patience for the larger-later option.

How Liking Affects Patience

Are people more or less patient for things that they like more? The literatures on visceral temptation in delay of gratification and the magnitude effect in intertemporal choice suggest contradictory answers to this question. According to research on visceral temptations, highly valued items are more likely to be processed as "hot" or highly emotional, which reduces self-control (Mischel et al., 1989). When people like something more, they may be particularly tempted to receive a smaller-sooner version of it because the heightened attractiveness leads to a strong visceral reaction that is hard to resist (Loewenstein, 1996, 2000). Liking a target may thus

reduce patience because it makes the smaller-sooner option too tempting to resist (Tsukayama & Duckworth, 2010).

However, liking might instead cause people to become more patient if, when people like a target more, they perceive a greater difference in subjective value between the smaller-sooner and larger-later options. According to the magnitude effect, as the magnitude of the monetary values in an intertemporal choice increase, the absolute difference between the smaller-sooner and larger-later values becomes larger, even though the proportional difference in the values remains the same (Loewenstein & Prelec, 1992; Thaler, 1981). Enhancing the objective values of the options in intertemporal choice increases patience by making the difference in utility more convex. For example, the same person might choose \$10 now over \$20 in one year and *also* choose \$200 in one year over \$100 now. In both cases the ratio of the smaller-sooner to larger-later options is 50%. But this apparent inconsistency arises because the objective marginal value of waiting one year is greater in the latter case (\$100) than the former (\$10). To that end, liking a target more may increase the difference in *subjective* value between the smaller-sooner and larger-later options, and subsequently increase patience.

Attitude research suggests a similar prediction. Positive evaluations predict successful goal pursuit (Ferguson, 2007), possibly by increasing patience. Additionally, objects that evoke strong positive attitudes (i.e., objects people like) automatically attract attention (Roskos-Ewoldsen & Fazio, 1992). This may lead people to spend more time considering the smaller-sooner and later-later options in an intertemporal choice when they like them more. Indeed, liking causes people to draw finer categorical distinctions between options because liking increases elaboration (Smallman, Becker, & Roese, 2014). That is, when people like a target more they compare, connect, and synthesize ideas related to the target more. For example, a wine lover is able to distinguish between different types of wine in greater detail and with more nuance than a person who does not love wine. Because people who like or maintain a strong positive attitude toward a target may pay more attention to and elaborate more on the smaller-sooner and larger-later options in an intertemporal choice, they are more likely to perceive and discern larger differences in subjective value between them.

Based on this analysis, we predict that people who like a target more perceive a greater difference in subjective value between its smaller-sooner and larger-later versions, compared to people who like a target less. This increases their willingness to wait for the larger-later option.

That is, liking increases patience because it increases the value of waiting and thereby, the motivation to resist.

Our main hypothesis, therefore, is that people who like a target a lot will be more patient for a larger quantity or better quality version of it, compared to people who only like the target a little. We explain that this is because liking increases the difference in subjective value between the smaller-sooner and larger-later options. Thus, we predict that this difference in subjective value will mediate the effect of liking on patience.

While we predict liking increases willingness to wait, our account also suggests liking should increase the subjective experience of pain while waiting. Although people are more likely to wait, the wait is more painful for them because a more valuable outcome is in sight. Thus, we further predict that when people like a target more, they will report waiting is more difficult. Consequently, they should be more willing to pay to eliminate the wait. An implication, therefore, is that patience in intertemporal choice will depend on whether the timing of rewards varies with value (i.e., quality or quantity) or with monetary cost. When an intertemporal choice varies in value (e.g., a choice between a sample of chocolate now and a whole chocolate later), we predict liking increases people's willingness to wait for the better reward. When the intertemporal choice instead varies with monetary cost (e.g., a choice between paying a premium to receive a piece of chocolate now or receiving the same chocolate after a delay), we predict liking will increase willingness to pay to receive the better reward sooner. That is, liking a target will increase patience for a better version of the target, but decrease patience for a cheaper price for the target. This further corroborates the difference in subjective value as the underlying psychological mechanism for the effect of liking on patience, as when people value a target more it is worth both waiting longer and paying more to obtain.

The Present Research

We define liking as subjective value.¹ Throughout our studies, we operationalize liking as higher (a) Likert scale ratings, (b) rankings of options, and (c) willingness to pay (WTP) for targets. This definition is consistent with a positive evaluation or attitude (Roskos-Ewoldsen & Fazio, 1992; Smallman et al., 2014). Additionally, we distinguish liking from need states, such as

¹ By “subjective value” we are referring to the slope of the utility function. That is, the marginal utility of each additional unit of high-liked item is higher than the marginal utility of each additional unit of low-liked item.

pain or hunger, which were shown to decrease patience (Loewenstein, 1996; Nordgren, van der Pligt, & van Harreveld, 2007). For example, a hungry person (who needs food) is different from a foodie (who likes food). For a hungry person, the smaller-sooner option has additional value, because by eliminating hunger, it serves a purpose that the larger-later option does not. We predict a foodie, on the other hand, perceives a greater difference in subjective value between the smaller-sooner and larger-later options, which leads them to be more patient for a better quality meal.

We explored the relationship between liking and patience with intertemporal choices that varied both the quantity and quality of the options across time. That is, we examined how liking of a target impacts the preference both for a smaller quantity sooner versus a larger quantity later, as well as a worse quality sooner versus a better quality later. For example, with respect to a restaurant, we presented participants with either a decision between one free meal sooner versus two free meals later (i.e., varying the quantity of meals) or between ordering from a limited menu sooner versus the full menu later (i.e., varying the quality of the meal).

We used these two empirical approaches to test alternative explanations. In the quality scenarios, people may not intend to use the low quality version of the product, which makes it easier to choose to wait for the better quality version. For example, if presented with a choice between diner coffee now (smaller-sooner option) and upscale-espresso coffee later (larger-later option), a coffee fanatic may not even consider diner coffee to be adequate enough to drink. As a result, the coffee lover's choice to wait for the larger later option would not reflect patience, but instead a selection of the only tolerable option. Therefore, beyond making sure that the smaller-sooner and larger-later options were acceptable to our participants in our studies, we also tested quantity tradeoffs, where both options in the intertemporal choice were of the same quality, but varied in quantity.

However, in choosing between quantities, a person who only likes the target a little may be less likely to want a greater amount of the target. We recognize that more of a target is not always better, even when people like the target. A person who likes coffee may still prefer a medium cup of coffee to a large cup of coffee, because drinking the large cup may have negative side effects (e.g., feeling jittery or not being able to sleep at night). To address this possibility, we presented quantity tradeoffs where the smaller-sooner option is less than a standard portion, such as a "sample" size. By examining how liking affects intertemporal choices for both the

larger quantity and better quality options, we isolated the impact of liking on patience across a wide range of common decisions.

Additionally, we predict that liking a target increases patience only when people have at least some level of baseline liking for the target. That is, we predict people who like a target a lot will be more patient than people who like a target a little. However, we do not make predictions about people's patience for a target that they actively dislike or do not want at all. A person who does not like a target at all might instead prefer to delay its delivery (Zauberman & Lynch, 2005). For example, in an intertemporal choice between a small portion of coffee sooner and a large portion of coffee later, a person who hates coffee might choose the larger-later option simply to postpone the hassle of dealing with an unwanted item. Therefore, in our studies, we screened participants to ensure that they maintained a baseline level of liking for the options.

We tested our predictions across six studies, summarized in Table 1. To maximize power, across studies we calibrated our measures and manipulations with pilot studies. These pilot studies yielded small effect sizes ($d = .28$, $d = .36$, and $d = .40$). Accordingly, we targeted a minimum sample of 100 participants per cell to achieve a power of .80. Sample sizes were determined prior to data collection. The studies in this paper incorporate data from participants in the United States recruited online from Amazon Mechanical Turk (MTurk), Prolific Academic, and university participant pools. All studies reported received IRB review and approval. We reported every independent and dependent variable and posted all surveys and data on OSF, along with all studies that we ran using similar paradigms to the studies reported in the paper (<https://tinyurl.com/liking-and-patience-osf>). Finally, we reported participant attrition in the Appendix (Zhou & Fishbach, 2016).

Table 1. Summary of Studies 1-6

Study	Independent Variable	Primary Measures	Main Finding
1	Self-reported liking of the target	Likelihood of waiting for larger quantity or better quality target	Liking was positively correlated with patience
2a	1st vs. 5th favorite t-shirt	Likelihood of waiting for correct size t-shirt (vs. one size too large)	Liking increased patience for a correct size t-shirt
2b	1st vs. 5th favorite bed comforter	Likelihood of waiting for correct size bed comforter (vs. one size too large)	Liking increased patience for a correct size bed comforter
2c	1st vs. 5th favorite mug	Likelihood of waiting for standard size mug (vs. non-standard small size)	Liking increased patience for a standard size mug
3	More vs. less popular t-shirt	Choice to wait for correct size t-shirt (vs. one size too large)	Liking increased patience for a correct size t-shirt
4	Favorite food or drink vs. type they would consume, but is not their favorite	Choice to wait for a whole portion of food or drink item (vs. sample size)	Liking increased patience for a larger quantity of food and drink items
5	More vs. less popular water bottle	Likelihood of waiting for the standard size water bottle (vs. non-standard small size) and subjective value (WTP) of the standard size water bottle (vs. non-standard small size)	Liking increased the difference in subjective value (WTP) between the standard and smaller size water bottles, which mediated the effect of liking on patience for the standard size water bottle
6	More vs. less popular water bottle	Choice to wait for the standard size water bottle (vs. non-standard small size) and pay \$1 for expedited delivery of the standard size water bottle	Liking increased (1) willingness to wait for a standard size water bottle and (2) willingness to pay \$1 for expedited delivery

Study 1: The Correlation Between Liking and Patience

Study 1 (preregistered: <http://aspredicted.org/blind.php?x=wz4y3s>) measured the correlation between liking and patience. Participants rated how likely they would be to wait for a larger-quantity or better-quality version of a target, as well as how much they liked the target. We predicted a positive correlation between liking and patience.

Method

Participants. We opened the study to 400 MTurk participants with an approval rating at or above 90% in exchange for \$0.30. We chose this sample size with the goal of recruiting 100

participants per domain. Our final sample included 400 respondents (46% female; mean age = 37.46).

Procedure. We first presented a list of five domains: beach vacations, exercise classes, Chipotle Mexican food, seafood restaurants, and Broadway shows. Participants indicated which of these domains they liked: “Please select all of the activities and foods below that you enjoy.” We then presented participants with intertemporal tradeoffs only for domains that they selected from this list (e.g., if a participant indicated they liked beach vacations, exercise classes, and seafood restaurants, that participant answered questions only with respect to these three domains). This resulted in a final sample size of between 75 and 175 participants for each domain.

We randomly assigned participants to either a quantity or quality condition, between-participants. In the quantity condition, participants expressed their patience for a larger amount of each target, while in the quality condition participants expressed their patience for a better version of each target. For example, in the beach vacation domain, those assigned to the quantity condition chose between a two-day beach vacation this weekend and a three-day beach vacation in one month, while those assigned to the quality condition chose between a beach vacation with mediocre weather this weekend and a beach vacation with warmer weather in one month (see Appendix A for stimuli).

For each domain, participants rated their willingness to wait for the larger quantity option (e.g., “How likely are you to wait one month so that you can take a three-day beach vacation?”) or better quality option (e.g., “How likely are you to wait one month for better weather on the beach vacation?”). Participants also rated how much they liked each domain (e.g., “How much do you like beach vacations?”). These questions were presented in counterbalanced order. All items were measured on a seven-point scale ($-3 = \text{not at all}$; $3 = \text{very much}$). Participants repeated the procedure for each of the domains that they selected (up to five).

Results and Discussion

We calculated the correlation between liking of a target and patience for the target within each of the ten domain pairs (five quantity and five quality). In support of the hypothesis, liking positively predicted patience for all domains in the quantity condition, $r_s > .207$, $p_s < .05$. Liking also positively predicted patience for all domains in the quality condition, $r_s > .242$, $p_s < .01$,

except for the exercise class, which was marginally positively correlated, $r = .199$, $p = .085$, and for the Broadway show, which was not significantly correlated, $r = .127$, $p = .236$ (see Table 2).

Table 2. Means and correlations for liking and patience by condition and domain (Study 1)

Condition	Domain	<i>n</i>	Liking means	Patience means	<i>r</i> (Liking, Patience)	<i>p</i>
Quantity	Vacation	173	2.43 (0.94)	2.06 (1.45)	.278	.000
	Chipotle	161	1.96 (1.03)	1.40 (1.90)	.235	.003
	Seafood	132	2.30 (0.95)	1.68 (1.72)	.208	.017
	Broadway	86	1.84 (1.02)	1.10 (1.97)	.415	.000
	Exercise	79	1.84 (1.08)	1.11 (1.93)	.262	.020
	Total	200	1.56 (1.79)	2.13 (1.02)	.305	.000
Quality	Vacation	160	2.36 (0.92)	2.41 (1.04)	.252	.001
	Chipotle	156	1.83 (1.05)	1.33 (1.79)	.243	.002
	Seafood	143	2.19 (0.87)	1.41 (1.75)	.291	.000
	Broadway	89	2.06 (0.98)	1.45 (1.90)	.127	.236
	Exercise	76	1.63 (1.27)	1.68 (1.59)	.199	.085
	Total	200	1.68 (1.67)	2.05 (1.02)	.249	.000

Note. Means reflect raw means. Standard deviations are in parentheses.

We also combined all five domains to calculate the overall correlation between liking and patience by condition (quality vs. quantity). To account for repeated measurement, we clustered standard errors at the participant level, using the `lm.cluster` command in the “`miceadds`” package for R (Robitzsch, Grund, & Henke, 2017). Liking was positively correlated with patience in the quantity condition, $r = .305$, $p < .001$, and quality condition, $r = .249$, $p < .001$.

In Study 1 we found that liking was positively correlated with patience across a wide range of domains. When participants liked a target more they were more likely to wait for a larger quantity or better quality version of it. However, because this study is correlational, we were not able to isolate the causal effect of liking on patience (e.g., patience could increase liking). Therefore, in the remaining studies we experimentally manipulated liking.

Study 2: Patience for Better Quality

In Studies 2a–2c, we experimentally manipulated liking to explore its influence on patience for a better quality version of a product. We measured willingness to wait to receive a correct size t-shirt (vs. a t-shirt one size too large; Study 2a), a correct size bed comforter (vs. a bed comforter one size too large; Study 2b), and a standard size mug (vs. a nonstandard smaller mug; Study 2c). To manipulate liking, we asked participants to select their five favorite product designs from a list of 12 (e.g., in Study 2a, participants chose their five favorite t-shirt designs

from a list of 12). We then presented an intertemporal choice involving either participants' first favorite design (high liking) or fifth favorite design (low liking). We asked about participants' fifth favorite design in the low liking condition to ensure that they still liked the design enough to want the object, as the fifth favorite design out of 12 was rated in the top half of all designs. We predicted that participants would be more willing to wait for the correct or standard size of their first favorite design (high liking) than their fifth favorite design (low liking).

Method

Participants. We opened each study to 400 MTurk participants with an approval rating at or above 50% in exchange for \$0.40. Our final sample included 400 respondents in Study 2a (46% female; mean age = 36.10), 400 respondents in Study 2b (47% female; mean age = 36.32), and 408 respondents in Study 2c (42% female; mean age = 34.21).

Procedure. All participants viewed a set of 12 product designs and selected their five favorite designs. Participants then ranked the five designs that they selected from most- to least-preferred. Participants viewed t-shirt designs in Study 2a, bed comforter designs in Study 2b, and mug designs in Study 2c. In order to increase involvement, participants read that one randomly selected participant would receive the product they chose in the corresponding amount of time.

For each study, we randomly assigned participants to either the high or low liking condition, between-participants. In the high liking condition, participants evaluated an intertemporal choice with respect to the product design they ranked as their first favorite. In the low liking condition, participants evaluated an intertemporal choice with respect to the product design they ranked as their fifth favorite.

To construct these intertemporal choices, in Study 2a, participants indicated their preferred t-shirt size from a list of six options: extra-small, small, medium, large, extra-large, and extra-extra-large. In Study 2b, participants indicated their preferred bed comforter size from a list of six options: twin, twin XL, full, queen, king, and California king. To measure patience, participants reported whether they preferred to receive the correct size version of the product in six months or a version of the product that was one size too large this week: "For the [t-shirt/bed comforter] design below, how likely are you to wait six months for a [insert size] [t-shirt/bed comforter] as opposed to receiving a [t-shirt/bed comforter] that is one size larger this week?"

While the t-shirt and bed comforter sizes were customized to each participant in Studies 2a and 2b, all participants were presented with the same mug size options in Study 2c. To

measure patience, participants reported whether they preferred to receive a standard size mug (11oz) in six months or a nonstandard small mug (6oz) this week: “For the mug design below, how likely are you to wait six months for a standard size mug (as pictured, 11oz) as opposed to receiving an unstandardized small mug (6oz) this week?” In each study, we measured patience in waiting for the larger-later reward (1 = extremely unlikely, 7= extremely likely).

Finally, as a manipulation check, participants rated: “How much do you like the [t-shirt design/comforter/mug] below?” (–3 = not at all, 3 = very much).

Results and Discussion

For each study, the manipulation checks confirmed that participants liked the product design they ranked first more than product design they ranked fifth, $t_s > 11.15$, $p_s < .001$. In support of the hypothesis, in Study 2a, participants were more willing to wait for the correct size t-shirt in the high liking condition than in the low liking condition, $t(398) = 2.80$, $p = .005$. In Study 2b, participants were more willing to wait for the correct size bed comforter in the high liking condition than in the low liking condition, $t(398) = 4.02$, $p < .001$. In Study 2c, participants were more willing to wait for the standard size mug in the high liking condition than in the low liking condition, $t(406) = 3.65$, $p < .001$ (see Table 3).

Table 3. Means and test statistics for liking and patience ratings by condition (Study 2)

Variable	Study	High liking	Low liking	<i>t</i> -test
Likelihood of waiting	Study 2a	5.05 (2.08)	4.44 (2.24)	$t(398) = 2.80$, $p = .005$
	Study 2b	4.68 (2.20)	3.77 (2.30)	$t(398) = 4.02$, $p < .001$
	Study 2c	5.07 (2.02)	4.31 (2.17)	$t(406) = 3.65$, $p < .001$
Manipulation check	Study 2a	2.30 (0.76)	1.03 (1.31)	$t(398) = 11.82$, $p < .001$
	Study 2b	2.21 (0.89)	0.92 (1.38)	$t(398) = 11.15$, $p < .001$
	Study 2c	2.25 (1.00)	0.82 (1.23)	$t(406) = 12.77$, $p < .001$

Note. Means reflect raw means. Standard deviations are in parentheses.

In Study 2 we found that participants were more likely to wait for a better quality version of a target when they liked the target more (i.e., their first favorite design), compared to when they liked it less (i.e., their fifth favorite design). While these findings provide evidence that liking increases patience on a scale across a range of tradeoffs, Study 3 tested our theory with a dichotomous choice. Will participants choose to wait for a product they love?

Study 3: Patience in Consequential Choices

In order to explore the effect of liking on patience in real decisions, in Study 3 we measured university students’ choice to wait to receive a correct size t-shirt later (vs. a t-shirt one

size too large sooner). To manipulate liking, we presented a t-shirt with either high or average liking ratings.

Method

Participants. We opened the study to 200 students from an online participant pool maintained by a large university on the West Coast in exchange for \$1.50; 206 participants responded. We excluded five participants who were not current students at the university, resulting in a final sample of 201 participants (75% female; mean age = 22.05).

Procedure. Participants first selected their preferred t-shirt style (men vs. women) and size (extra-small, small, medium, large, extra-large, and extra-extra-large). We then randomly assigned participants to either the high or low liking condition, between-participants. We selected university t-shirts that were more and less well-liked for the high liking and low liking conditions respectively, based on ratings from a panel of students from the same university.

We measured patience with a binary choice: “For the t-shirt design below, would you rather wait ten weeks for a [men or women’s] [correct size] t-shirt or receive a [men or women’s] [one size too large] t-shirt this week?” We told participants that one randomly selected participant would receive the t-shirt they chose in the corresponding amount of time. Finally, as a manipulation check, participants indicated how much they liked their assigned t-shirt design (–3 = not at all, 3 = very much).

Results and Discussion

The manipulation check confirmed that participants liked the t-shirt more in the high liking condition ($M = 0.33$, $SD = 1.60$) than in the low liking condition ($M = -0.15$, $SD = 1.49$), $t(199) = 2.20$, $p = .029$. In support of the hypothesis, participants were more willing to wait for the correct size t-shirt in the high liking condition (57%) than in the low liking condition (38%), $\chi^2(1, N = 201) = 6.77$, $p = .009$. That is, when participants liked a t-shirt more, they were more likely to wait ten weeks for the correct size than when they liked the t-shirt less.

Studies 2 and 3 found that people were more willing to wait for a better quality version of a target, such as the correct or standard size, when they liked it more. However, it is possible that people may not intend to use the low quality version of the products tested in Studies 2 and 3. We designed Study 4 to address this possibility.

Study 4: Patience for a Larger Quantity

In Study 4, to ensure the effect of liking on patience extended beyond just a better quality version of a target, we tested patience for a larger *quantity* of a target, using products for which more is objectively better. Specifically, we predicted that when people liked a food or drink more, they would be more likely to wait to receive a whole portion later, as opposed to receiving a sample of it sooner.

Method

Participants. We opened the study to 300 Prolific Academic participants in exchange for \$0.65; 302 participants responded. We excluded five participants who failed a bot check, resulting in a final sample of 297 participants (51% female; mean age = 34.51).

Procedure. We first presented participants with a list of six items: coffee, beer, chocolate, cheese, granola bar, and breakfast cereal. Participants indicated which of these items they liked: “Please select all of the items below that you enjoy consuming.” We then presented participants with intertemporal tradeoffs only for items that they selected from this list (as in Study 1). This resulted in a final sample size of between 70 and 135 participants for each item.

For each item, participants were asked to describe both their favorite type as well as a type that they would consume, but was not their favorite, in an open response. For example, someone who indicated they liked beer might submit “India pale ale” as their favorite type and “lager” as a type they would consume, but is not their favorite.

We randomly assigned participants to either the high or low liking condition, between-participants. In the high liking condition, participants evaluated an intertemporal choice with respect to their favorite type of food or drink. In the low liking condition, participants evaluated an intertemporal choice with respect to a type food or drink they would consume, but was not their favorite. Specifically, participants chose between receiving a sample of the food or drink today or a whole serving in one month. For example, with respect to coffee, participants answered: “Would you prefer to receive a sample of [type of coffee listed] today or a whole cup of [type of coffee listed] in one month?” As a manipulation check, participants rated how much they liked the type of food or drink that they listed (−3 = not at all, 3 = very much). Participants repeated the procedure for each of the items that they selected (up to six).

Results and Discussion

The manipulation check for each item confirmed that participants liked their favorite type of food or drink more than the type they would consume but was not their favorite, $t_s > 9.00$, $ps < .001$. In support of the hypothesis, participants were more likely to wait for a larger quantity of their favorite type of food or drink than a type they would consume but was not their favorite, $X^2_s > 6.60$, $ps < .05$ (see Table 4).

Table 4. Means and test statistics for liking and patience ratings by condition and item (Study 4)

Variable	Item	<i>n</i>	High liking	Low liking	<i>t</i> / X^2	<i>p</i>
Percent choosing to wait	Cheese	269	84.6%	58.6%	22.27	<.001
	Chocolate	269	70.3%	43.5%	19.69	<.001
	Breakfast cereal	233	84.3%	60.4%	16.86	<.001
	Coffee	209	67.6%	50.0%	6.70	.010
	Granola bar	184	79.3%	53.3%	14.01	<.001
	Beer	144	88.1%	70.1%	6.82	.009
Manipulation check	Cheese	269	2.64 (0.59)	0.71 (1.44)	14.41	<.001
	Chocolate	269	2.64 (0.62)	0.60 (1.41)	15.55	<.001
	Breakfast cereal	233	2.43 (0.76)	0.89 (1.25)	11.53	<.001
	Coffee	209	2.48 (0.90)	0.44 (1.49)	11.94	<.001
	Granola bar	184	2.33 (0.85)	0.46 (1.41)	10.88	<.001
	Beer	144	2.49 (0.68)	0.71 (1.41)	9.39	<.001

Note. Percentages represent the proportion of participants choosing to wait for a whole portion. Means reflect raw means. Standard deviations are in parentheses.

In Study 4, we found participants were more willing to wait for a whole portion of food or drink (compared to receiving a sample portion sooner) when this type of food or drink was their favorite. Despite the temptation of receiving their *favorite* food or drink sooner, we find that people are actually more likely to choose to wait to receive a whole portion of their favorite type of food or drink than a type they like less. Thus, just as people are more patient for a higher quality version of an item when they like it more, people are also more patient for a larger quantity of an item when they like it more. In the remaining studies we explored the mechanism underlying this effect.

Study 5: Difference in Subjective Value

We propose that liking increases patience because when people like a target more, they perceive a greater difference in subjective value between the smaller-sooner and larger-later options. We tested this mechanism in Study 5 by measuring willingness to pay (WTP) for the smaller-sooner and larger-later versions of different types of water bottles. We predicted that the

difference in WTP (i.e., the difference in subjective value) would mediate effect of liking on patience.

We also used the WTP measures to compare the ratio of subjective value between the smaller-sooner and larger-later options between conditions. Research on the magnitude effect finds that people are more patient when the magnitude of the smaller-sooner and larger-later options is higher, even when the ratio between the smaller-sooner and larger later options is the same (Loewenstein & Prelec, 1992; Thaler, 1981). For example, if a person who likes the target a lot values the smaller-sooner and larger-later options at \$6 and \$12, respectively, while a person who likes the target less values them at \$4 and \$8, then the difference in subjective value is greater in the high liking condition (i.e., \$6 vs. \$4) while the ratio is constant (50%). Thus, while liking increases the difference in subjective value between the smaller-sooner and larger-later options, it does not change the ratio. Testing whether liking increases the ratio, in addition to the magnitude, of the difference in subjective value between the smaller-sooner and larger-later options allows us to further decompose the precise nature of the effect.

Finally, in this study, we also measured how difficult participants anticipate the subjective experience of waiting for the larger-later option will be. We predicted that when participants liked the water bottle more they would find it is more difficult to wait, because the difference in subjective value between the smaller-sooner and larger-later options is greater (i.e., there is more at stake). Thus, when people choose to wait for the things they like, it is *despite* the fact that it is harder for them to do so.

Method

Participants. We opened the study to 250 MTurk participants with an approval rating at or above 90% in exchange for \$0.40; 258 participants responded. We excluded 28 participants who failed a bot check and 23 participants who preferred a smaller size (6oz) water bottle to a standard size (18oz) water bottle (as their preference for the smaller-sooner option would not reflect impatience), resulting in a final sample of 207 participants (41% female; mean age = 37.75).

Procedure. Participants first read that they would have a chance to win one of two water bottles, either a better, more popular water bottle or a worse, less popular water bottle. We then randomly assigned participants to either the high or low liking condition, between-participants. In the high liking condition, participants had a chance to win a better, more popular water bottle:

“The water bottle below is a high quality stainless steel water bottle from Hydro Flask. It is consistently rated as one of the best water bottles, with an average of 5 out of 5 stars from customers.” In the low liking condition, participants had a chance to win a worse, less popular water bottle: “The water bottle below is a plastic water bottle currently on sale at Walmart. It is rated as a mediocre water bottle, with an average of 3.7 out of 5 stars from customers.”

Then, to construct an intertemporal choice, we told participants the water bottle was available in two different sizes: “The 18oz water bottle is the standard and most popular size. The 6oz water bottle is a smaller version, which is one third of the size. The 18oz water bottle is typically preferred over the 6oz water bottle because it holds more water and fits in a standard cup-holder. However, the standard size water bottle is currently back-ordered.” The 6oz version thus represented the “smaller-sooner” option, while the 18oz version represented the “larger-later” option.

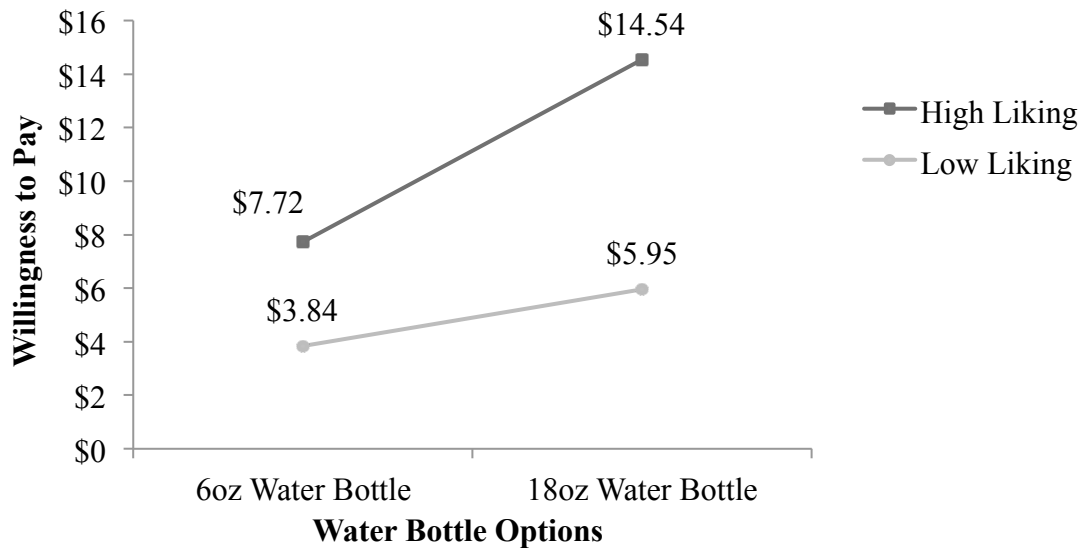
We next measured patience: “For the water bottle below, how likely are you to wait six months for a standard size water bottle (18oz) or receive the smaller version of the water bottle (6oz) this week?” (1 = not at all likely to wait, 7 = extremely likely to wait). In order to assess differences in subjective value, participants answered: “How much would you be willing to pay for the standard size (18oz) water bottle?” and “How much would you be willing to pay for the smaller size (6oz) water bottle?” Participants chose a dollar amount between \$0 and \$40. Then, participants rated how difficult it would be to wait for the larger-later option (1 = not at all difficult, 7 = extremely difficult): “For the water bottle below, how difficult would it be to wait six months for a standard size (18oz) water bottle?” Finally, as a manipulation check, participants rated: “How much do you like the water bottle below?” (−3 = not at all, 3 = very much).

Results and Discussion

The manipulation check confirmed that participants liked the water bottle in the high liking condition ($M = 1.99$, $SD = 1.05$) more than the water bottle in the low liking condition ($M = -1.36$, $SD = 1.58$), $t(205) = 17.84$, $p < .001$. In support of our primary hypothesis, participants were more willing to wait six months for the standard size water bottle in the high liking condition ($M = 5.18$, $SD = 2.18$) than in the low liking condition ($M = 4.08$, $SD = 2.38$), $t(205) = 3.47$, $p = .001$.

We next calculated the difference in subjective value between the smaller-sooner and larger-later options by subtracting WTP for the 6oz version (high liking condition: $M = \$7.72$, $SD = 5.94$; low liking condition: $M = \$3.84$, $SD = 6.69$) from WTP for the 18oz version (high liking condition: $M = \$14.54$, $SD = 7.21$; low liking condition: $M = \$5.95$, $SD = 7.69$). This difference was greater for participants in the high liking condition ($M = \$6.82$, $SD = 4.92$) than participants in the low liking condition ($M = \$2.11$, $SD = 3.41$), $t(205) = 8.04$, $p < .001$ (see Figure 1).

Figure 1. Willingness to pay for the 6oz water bottle (smaller reward) and the 18oz water bottle (larger reward) by liking condition. Liking increased the difference in subjective value between the smaller and larger rewards (Study 5).



A mediation analysis (with 10,000 bootstrapped resamples) examined whether these differences in subjective value increased the likelihood of waiting. With the liking condition as the independent variable (low liking = 0, high liking = 1), difference in subjective value as the mediator variable, and the likelihood of waiting as the dependent variable, we observed significant mediation (indirect effect = 0.31, $SE = 0.15$, 95% bias-corrected confidence interval $CI = [0.026, 0.640]$).

We also calculated the ratio of WTP for the smaller-sooner option to WTP for the larger-later option (e.g., WTP for larger-later / WTP for smaller-sooner), excluding participants with WTP of \$0 for the smaller-sooner option. We did not find a significant difference in the average ratio between the high liking ($M = 2.32$, $SD = 1.37$) and low liking ($M = 2.03$, $SD = 0.91$)

conditions, $t(177) = 1.60$, $p = .113$. Similar to the magnitude effect, liking did not significantly affect the ratio of subjective value between the smaller-sooner and larger-later options.

Finally, participants found it more difficult to wait for the standard size water bottle in the high liking condition ($M = 3.97$, $SD = 2.10$) than in the low liking condition ($M = 3.35$, $SD = 2.28$), $t(205) = 2.04$, $p = .043$.

Study 5 found that the difference in subjective value between the smaller-sooner and larger-later option mediated the effect of liking on patience. When people liked the water bottle more, they perceived a greater difference in subjective value between the 6oz and 18oz versions of the water bottle, resulting in greater patience.

Additionally, participants were more likely to wait for a water bottle that they liked more *even though* they found it more difficult to wait. That is, participants reported that it would be harder to wait six months for the 18oz water bottle when they liked it more, and yet chose to do so anyway. This suggests that participants in the high liking condition were more tempted by the smaller-sooner option, but nevertheless thought it was worth the wait. Thus, liking seems to increase the preference to be patient, rather than the ability to do so.² Since liking makes it seem harder to wait, we would predict that liking increases willingness to wait for a better version of the target but also increases willingness to pay for an expedited delivery of this target. In our final study, we tested for this prediction.

Study 6: Liking Increases Subjective Value

In Study 6, (preregistered: <https://aspredicted.org/blind.php?x=cz86fj>) we presented participants with both an intertemporal choice between time and value (i.e., lower quality now versus higher quality later) as well as time and cost (i.e., pay to receive the item now versus wait to receive it later for free). We predicted that liking would *increase* patience for a better quality version of a target (as in the previous studies) and *decrease* patience for the cheaper price of a target. These opposite effects are consistent with our hypothesis that liking increases the difference in subjective value between larger-later and smaller-sooner options. That is, liking

² Alternatively, assessing the difficulty of waiting effectively shines a spotlight on just the larger-later option, leading people to compare the difference in utility between having the larger-later option now versus having it later. Dispossession of a larger-later option will be more painful when it is liked a lot relative to when it is liked a little. Yet, while this is plausible (and consistent with our account), we believe it is more likely that when assessing the difficulty of waiting for a later option people make the more salient comparison of having the smaller option now to having the larger option later, as when making the intertemporal choice.

increases people's willingness to compromise both time (by waiting for better quality) and money (by paying to receive the item sooner).

Adding a time-cost dilemma further allowed us to test for alternative explanations. First, is it possible that facing liked targets, people have stronger willpower? In that case, they should be more patient both in waiting for a higher quality and in waiting for a late delivery. If it is easier for people to wait, they should both be willing to wait for a better version and a cheaper price. Second, is it possible that people are more patient for a target when they like it more because they are savoring the experience of waiting (Loewenstein, 1987)? Savoring refers to the positive utility derived from anticipating a reward. In some cases, people prefer to delay the reward rather than receive it sooner because they enjoy savoring the wait. Possibly, when people like a target a lot, they may be more likely to savor the wait for the target than when they like it a little. This alternative explanation predicts that when people like a target a lot they are more patient both in waiting for a higher quality and in waiting for a late delivery, compared to when people like the target a little.

In Study 6, we again manipulated liking with different types of water bottles. We then presented participants with (a) an intertemporal choice between time and value (i.e., receive the small size water bottle now or standard size water bottle later), and (b) an intertemporal choice between time and cost (i.e., pay to receive the standard size water bottle now or receive the same water bottle for free later). We predicted that participants would be both more willing to wait for the better quality water bottle and less willing to wait for the free water bottle, when considering the popular (high liking condition) rather than the unpopular (low liking condition) bottle. This would suggest that liking a target increases patience for the target because people value it more.

Method

Participants. We opened the study to 400 Amazon Mechanical Turk participants with approval ratings at or above 90% in exchange for \$0.40; 400 participants responded. We excluded 64 participants who preferred a smaller size (6oz) water bottle to a standard size (18oz) water bottle (as their preference for the smaller-sooner option would not reflect impatience), resulting in a final sample of 336 participants (45% female; mean age = 35.28).

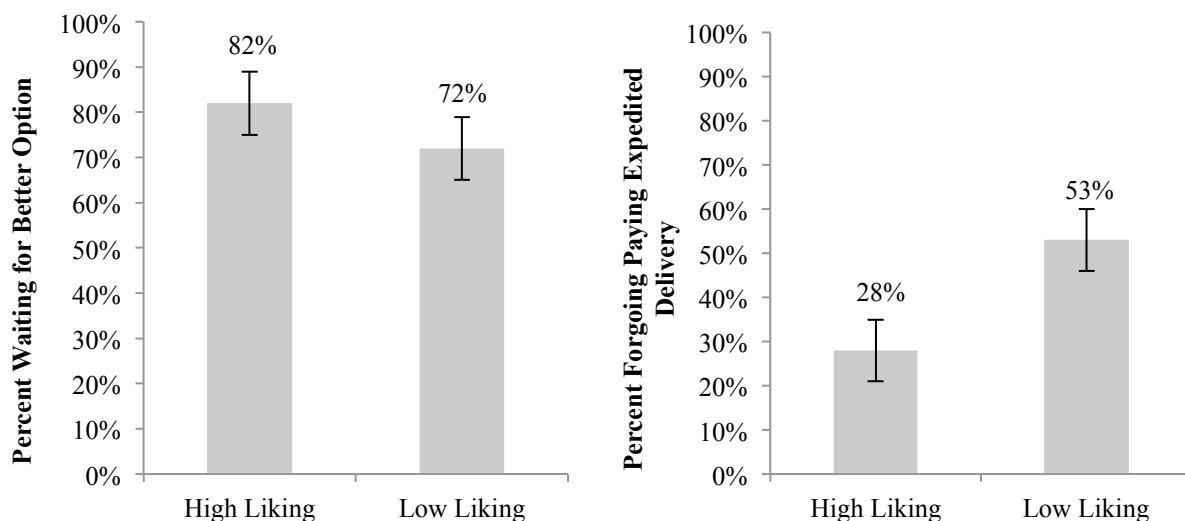
Procedure. Participants followed a similar procedure as in Study 5. In order to make the decision consequential, we told participants that one randomly selected participant would receive the water bottle they chose in the associated amount of the time.

Participants made a consequential, binary choice between the two water bottle sizes: “For the water bottle below, would you rather wait six months for a standard size water bottle (18oz) or receive the smaller version of the water bottle (6oz) this week?” Next, participants made a binary choice about whether or not to pay for expedited delivery: “For the water bottle below, would you pay a \$1 expedited delivery fee to receive the standard size water bottle (18oz) this week instead of in six months?” Finally, as a manipulation check, participants rated: “How much do you like the water bottle below?” ($-3 = \text{not at all}$, $3 = \text{very much}$).

Results and Discussion

The manipulation check confirmed that participants liked the water bottle in the high liking condition ($M = 2.13$, $SD = 0.90$) more than the water bottle in the low liking condition ($M = -0.71$, $SD = 1.68$), $t(334) = 19.39$, $p < .001$. In support of the hypothesis, liking increased patience in the time-value dilemma: Participants were more likely to wait for the standard size water bottle in the high liking condition (82%) than the low liking condition (72%), $X^2(1, N = 336) = 5.14$, $p = .023$. Further, liking decreased patience in the time-cost dilemma: Participants were less likely to wait for the free option in the high liking condition (28%) than the low liking condition (53%), $X^2(1, N = 336) = 20.57$, $p < .001$ (see Figure 2).

Figure 2. Percent of participants choosing to wait in the time-value dilemma (left panel) and in the time-cost dilemma (right panel). Liking increased patience for the better option, but decreased patience in forgoing expedited delivery (Study 6).



Note. Error bars represent 95% confidence intervals.

Study 6 found that participants in the high (vs. low) liking condition were more likely to wait six months for the standard size water bottle (i.e., liking increased patience), but less likely to wait six months if they could pay for expedited delivery (i.e., liking decreased patience). These seemingly contradictory effects provide additional evidence for our proposed mechanism: that liking increases patience by increasing the perceived difference in subjective value between the smaller-sooner and larger-later options. When people like a target more, they are more likely to think the additional value from the delayed reward is worth waiting for and the additional value from receiving the reward sooner is worth paying for. Additionally, this finding is inconsistent with the possibility that liking increases willpower or that people were savoring the experience of waiting, as when people liked a target more, they were also willing to incur a cost to eliminate the wait.

General Discussion

Who is more patient: the passionate individual who likes the target a lot or the dispassionate individual who likes the target a little? Across six studies, we found that liking systematically *increased* patience for a wide range of targets. We further found that this is because when people like a target more they perceive a greater difference in subjective value between its smaller-sooner and larger-later versions.

These findings offer a novel insight regarding why people are impatient. That is, people are often impatient because the additional value from the delayed reward is not sufficient to warrant the wait. In these situations, impatience is not the result of a breakdown of will, but rather, people are impatient simply because waiting is not “worth it.”

These findings enrich our understanding of the two-stage model of self-control (Fishbach & Converse, 2010; Myrseth & Fishbach, 2009). According to this model, what appears like failure to exercise self-control often results from the failure to recognize a self-control dilemma in the first place (e.g., the dieter did not try to resist the dessert because it was a special occasion). With regard to patience, when liking is low, people are less likely to view an intertemporal choice as imposing a self-control dilemma, and thus, less likely to recruit the necessary motivational resources to exercise self-control.

Indeed, our findings help to distinguish self-control failures due to the strength of short-term temptations versus the weakness of long-term goals (Vosgerau, Scopelliti, & Huh, 2019). That is, choice of a smaller-sooner option may occur either because a person cannot resist or is

insufficiently motivated to do so. Understanding the role of liking could shed light on which alternative is at play: If a person chooses a smaller-sooner option and has high liking for the target, it probably reflects the former (i.e., low willpower), while if a person chooses a smaller-sooner option and has low liking for the target, it probably reflects the latter (cf. Shaddy, Fishbach, & Simonson, 2021).

Our findings also provide a new perspective on how attitudes influence intertemporal choice. Dual-process models conceptualize patience as a tradeoff between impulses and self-control, where patience reflects the ability to override impulses by engaging in self-control (Hofmann, Friese, & Strack, 2009). However, we find that liking—a positive evaluation or attitude—increases patience. Patience, therefore, reflects not only the ability to override impulses through willpower, but also recognition that it is worth waiting for. Liking a target a lot can yield patient choices, *even though* it increases the appeal of the smaller-sooner option (as we found in Study 5). On the other hand, liking a target a little can yield impatient choices, even though people have enough willpower to wait (because they simply do not want to).

What Accounts for Impatience? The Utility Versus Discounting Functions

How does liking influence a person's temporal discounting function? We argue that liking does not necessarily need to change the underlying temporal discounting function to yield patient choices (though it may). Liking does, however, necessarily change the slope of the utility function, or the difference in subjective value between the smaller-sooner and larger-later options. As such, liking, in effect, changes the intertemporal tradeoff that needs to be resolved.

For example, in Study 5 we found that participants in the low liking condition valued the standard size water bottle (the larger-later option) at \$5.95 and the smaller size water bottle (the smaller-sooner option) at \$3.84 (difference in subjective value of \$2.11), while participants in the high liking condition valued the standard size water bottle at \$14.54 and the smaller size water bottle at \$7.72 (difference in subjective value of \$6.82). Thus, liking effectively changes the nature of intertemporal tradeoff itself: Participants in the low liking condition decided whether to wait six months for a \$2.11 increase in utility, while participants in the high liking condition decided whether to wait six months for a \$6.82 increase in utility.

Moreover, that differences in subjective value mediated the effect of liking on patience in Study 5 further suggests that patience can result from liking without requiring any assumptions about differences in the discount rate. For example, even if participants in both conditions

discounted the future value by the same amount (e.g., 40%), those in the high liking condition would still be more patient. In the low liking condition the subjective value of the larger-later option was \$5.95. Discounted by 40%, it is worth \$3.57. However, in the high liking condition, the subjective value of the larger-later option was \$14.54. Discounted by 40%, it is worth \$8.74. Thus, even assuming identical discount rates, participants in the high liking condition gain more from waiting. In fact, liking a target more could increase, decrease, or simply not change people's discount rates for the target, but still lead to patient choices, as long as it increases the slope of the utility function enough.

To that end, our findings extend research on the magnitude effect—which finds that greater objective value increases patience in intertemporal choice (Loewenstein & Prelec, 1992; Thaler, 1981)—by exploring how *subjective* value influences patience. For example, while the magnitude effect predicts that people will be more patient for \$100 versus \$10 worth of chocolate, relative to \$10 versus \$1 worth of chocolate (larger objective amounts in the former case), it does not necessarily offer a prediction for whether people who *like* chocolate a lot will be more or less patient than people who like chocolate less (higher subjective values). Indeed, a person who prefers cheaper chocolate (e.g., likes cheaper and sweeter milk chocolate more than expensive, but bitter, dark chocolate) might be more patient for a lower objective value of chocolate than a higher objective value of chocolate because they like the chocolate with the lower objective value more. A corollary is that even controlling for objective value, two people who subjectively value a target differently will nevertheless differ in their patience for it.

Implications

These findings suggest that any factor that influences the sensitivity to differences in subjective value should similarly influence intertemporal choice. For example, gaze has been found to have a multiplicative effect on decision-making, such that gazing at higher valued options has a greater influence on choice than gazing at lower valued options (Smith & Krajbich, 2019). Thus, both liking and visual attention serve to amplify the subjective value of the options. Additionally, engaging in abstract processing or focusing people on the differences (rather than the similarities) between the smaller-sooner and larger-later options may enhance the perceived difference in subjective value and lead to more patient choices. Future research should continue to explore additional factors that shape differences in subjective value—and subsequently, patience.

Furthermore, our work yields practical implications for predicting patience across various domains. For example, in the domain of education, students may be more patient for subjects that they like more by waiting longer for help before giving up, thinking about ideas for longer, or taking the time to double check their work before submitting. In the domain of health, people may be more patient when they like themselves or value the treatment more. For example, consider a patient who greatly values skincare versus a patient who only moderately values skincare. Both would prefer a better quality Botox treatment, but if such an appointment required a months-long wait and a lesser quality Botox treatment were available sooner, the patient who greatly values skincare might be more likely to think the better quality care is worth waiting for.

Finally, our work suggests untapped strategies for increasing patience. While previous research suggests that people should focus on distancing themselves from the rewards, diminishing the rewards' appeal, and focusing on the goal-relevant features in order to improve patience (Fujita & Carnevale, 2012; Fujita et al., 2006; Kross & Ayduk, 2011; Mischel et al., 1989; Mischel et al., 2010), our findings imply a novel strategy: People should remind themselves how much they like what it is they are waiting for. Instead of downplaying the appeal of rewards, people might explicitly focus on how much better the larger-later reward is than the smaller-sooner reward. For example, people may be able to improve their patience in domains like education and health by reminding themselves how much they like the subject in school or how much they care about themselves. As previously discussed, strategies or interventions such as elaborating more on the target or engaging in abstract processing might actually help to clarify and expand the relative difference in the value of the smaller-sooner vs. larger-delayed rewards, thereby increasing patience.

Limitations and Boundary Conditions

The current literature on intertemporal decision-making offers contradictory predictions about the potential influence of liking on patience, which the present research helps reconcile. Specifically, past work has suggested that the more viscerally tempting something is, the more difficult it is to resist the immediate option (Loewenstein, 1996; Mischel et al., 1989; Nordgren & Chou, 2011). One critical difference between our findings and this past work is that in all of our paradigms the smaller-sooner option still required *some* waiting (e.g., “this week”). It is possible that liking would lead to impatience for immediately available options. That is, if the

smaller-sooner option were sitting directly in front of someone, liking could increase the desire to grab it now. Additionally, we do not claim *all* self-control failures result from insufficient motivation. Indeed, self-control may break when one encounters an overwhelming temptation beyond the “cold” liking in our paradigms (e.g., engaging in unsafe sex in a sexually aroused state).

We are also careful to distinguish liking from need states. Someone with high need might indeed be less patient than someone with low need (e.g., hungry vs. full). However, in this case the smaller-sooner option serves a purpose (i.e., relieving immediate hunger) that the larger-later option does not. Thus, need states may influence patience through a different psychological process than liking. For example, smokers craving a cigarette find smoking more appealing than satiated smokers, who smoked a cigarette recently (Nordgren & Chou, 2011). Similarly, addicts and substance users are more impatient for their desired substances than for money (Bickel, Odum, & Madden, 1999; Coffey, Gudleski, Saladin, & Brady, 2003; Madden, Petry, Badger, & Bickel, 1997).

Additionally, we find that liking a target increases patience when the larger-later option is available in six months (Studies 1, 2, 3, 5, and 6) as well as one month (Studies 1 and 4). However, we do not expect that our effects would replicate for every time period. For very short time periods (e.g., 30 minutes) the majority of participants may choose to wait, while for very long time periods (e.g., 30 years) the majority of participants may choose not to wait. In these cases, liking may no longer predict patience. Thus, when the delay is longer, the reward needs to be larger to compensate (Ebert & Prelec, 2007; Read, 2001; Zauberman, Kim, Malkoc, & Bettman, 2009).

Finally, we note that in all of our studies, while liking was either low or high, it was always positive. Another potential implication of our theory is that intertemporal tradeoffs involving something that is *disliked* may erroneously suggest patience. For example, if someone does not like a particular food, they might not care whether they receive it now or later (or maybe even gain utility from delaying it as long as possible), which could manifest as decisions that appear patient. We note, however, that in our studies, the low liking conditions offered items that people still desired to some nonzero degree.

Conclusion

We found that liking a target increased patience because people who like the target a lot perceived a greater difference in subjective value between the options in intertemporal choice than people who only like the target a little. This suggests that impatience is the result of a lack of motivation to wait for the larger-later reward and offers practical recommendations for people struggling to wait: People may improve their patience by reminding themselves why it is they like the object they are waiting for.

Context of the Research

Patience is often equated with the willpower to delay gratification in intertemporal choice. Based on this willpower model of patience, liking a target should decrease patience for that target. However, Dai and Fishbach (2013) as well as Imas, Kuhn, and Mironova (2016) found that waiting periods before an intertemporal choice increase patience, presumably by increasing subjective valuation of the options. This led the authors to suspect that liking a target might actually increase patience for the target, despite what the willpower model of patience would predict. In the present research, we shed light on what it means to be patient through testing this hypothesis. This fits with the authors' research streams, which explore the psychological processes that motivate patience in everyday life.

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Appendix

Appendix A. Quantity and quality scenarios (Study 1)

Domain	Quantity	Quality
Exercise	Consider two promotion offers for free exercise classes (e.g. yoga, spinning, weight lifting, etc.): (a.) One for one exercise class that you can redeem next week (b.) One for three exercise classes that you can only redeem once you wait one month. How likely are you to wait one month so that you can take three exercise classes (option b)?	Consider two promotion offers for a free exercise class (e.g. yoga, spinning, weight lifting, etc.): (a.) One for a class with an instructor that has mediocre ratings that you can redeem next week (b.) One for a class with an instructor that has excellent ratings that you can only redeem if you wait one month. How likely are you to wait one month so that you can take the exercise class with an instructor with excellent ratings (option b)?
Vacation	Consider two potential beach vacations that have same weather and price: (a.) One for two days this weekend (b.) One for three days where you need to wait one month for a long weekend. How likely are you to wait one month so that you can take a three-day beach vacation (option b)?	Consider two potential beach vacations that are the same price: (a.) One this weekend with mediocre weather (b.) One where you need to wait one month with better beach conditions and warmer weather. How likely are you to wait one month for better weather on the beach vacation (option b)?
Broadway	Consider two promotions for free pairs of tickets to Broadway shows: (a.) One for one show that you can redeem this weekend (b.) One for two different shows that you can only redeem if you wait six months. How likely are you to wait six months for the two Broadway shows (option b)?	Consider two promotions for a free pair of tickets to a Broadway show: (a.) One for back row seats that you can redeem this weekend (b.) One for front row seats that you can only redeem if you wait six months. How likely are you to wait six months for the front row seats (option b)?
Chipotle	Consider two promotions for free meals (e.g. burrito, taco, etc.) at Chipotle: (a.) One for one free meal that you can redeem next week (b.) One for two free meals that you can only redeem if you wait one month. How likely are you to wait one month for two meals at Chipotle (option b)?	Consider ordering at Chipotle if they have run out of your favorite ingredients: (a.) You can order now and select ingredients you like less (b.) You can wait 15 minutes for the ingredients to be restocked and order your favorite ingredients. How likely are you to wait 15 minutes for your favorite ingredients (option b)?
Seafood	Consider two promotions for free meals at a seafood restaurant: (a.) One for one free meal that you can redeem next weekend (b.) One for two free meals that you can only redeem if you wait one month. How likely are you to wait one month for two meals at the seafood restaurant (option b)?	Consider two promotions for free meals at a seafood restaurant: (a.) One with a limited menu that you can redeem next week (b.) One with a full menu that you can only redeem if you wait one month. How likely are you to wait one month to order from the full menu (option b)?

Appendix B. Participant attrition for Studies 1– 6

Condition	Dropouts	Percentage
Study 1 (N = 400)		
Quantity	0	0.00%
Quality	1	0.25%
Study 2a (N = 400)		
High liking	2	0.50%
Low liking	2	0.50%
Study 2b (N = 400)		
High liking	3	0.75%
Low liking	4	1.00%
Study 2c (N = 408)		
High liking	6	1.47%
Low liking	8	2.96%
Study 3 (N = 206)		
High liking	0	0.00%
Low liking	0	0.00%
Study 4 (N = 302)		
High liking	4	1.32%
Low liking	7	2.32%
Study 5 (N = 258)		
High liking	0	0.00%
Low liking	0	0.00%
Study 6 (N = 400)		
High liking	3	0.75%
Low liking	5	1.25%

Note. Dropouts were not counted toward reported sample sizes.