

The Health Consequences of Intertemporal Preferences

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Conditionally accepted

For inclusion in the “Handbook of Self-Control in Health and Wellbeing”

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Abstract

Intertemporal tradeoffs, the conflict between current and future costs and benefits, lie at the core of health decisions. An extensive literature on time discounting has documented the widespread tendency to place a lower value on distant outcomes and to favor benefits in the moment. These tendencies have been linked to key challenges to long-term health, including lack of exercise and preventative care, substance abuse, unsafe sex, overconsumption of calories and obesity. Understanding when and how people think of time, future outcomes, future resources, and their future selves may shed light on how to motivate health-promoting behaviors.

Decisions about health inherently involve tradeoffs over time. Many choices we have made in the past and are making in the present jointly shape our health in the future. What makes managing our health difficult is the prevalence of tradeoffs between what we prefer in the present and what is in our best long-term interest. Many of the things that feel rewarding in the present, such as consuming sugar and fatty foods, alcohol, smoking and drugs, potentially unsafe sexual activity, taking exhilarating risks or venting anger, increase the odds of negative health consequences in the future. By the same token, practices that would help long-term health, such as exercising, getting vaccinations, regular check-ups and medical testing, compliance with medical treatment, dental hygiene, and spending time on safety precautions are often annoying at best, and highly aversive at worst. It is these intertemporal tradeoffs that are at the core of this chapter.

Rational and forward-looking people, who plan out the consequences of their actions and choose what maximizes their overall lifetime health, would find it easy to eat salads instead of hamburgers or cake, go to bed early and go for a run in the morning, drive under the speed limit and keep fresh batteries in their smoke detectors, drink alcohol only in moderation, get recommended colonoscopies and mammograms, stick to treatment protocols when sick and floss their teeth three times a day. These choices are typically no-brainers, with the costs clearly outweighing the expected benefits.

For many of us, this describes the way we do want to live -- but in the future. It is a lifestyle that few of us are able to fully maintain in the present. What seem like small temptations in the future become overwhelming urges when they are up close in the present, and seemingly minor inconveniences in the future become major obstacles when we are directly faced with them. The gap between what we wish we had done (or what we plan to do) for our health and what we actually do reflects a fundamental driver of decision making: our time preferences. In this chapter, we will review the extensive research literature on time preference, including how time preferences shape health behaviors. We will then cover recent developments in understanding

the psychological bases of time preferences, and discuss the implications for fostering more far-sighted health choices and behaviors.

The nature of time preferences.

Time preference is defined by how people make tradeoffs between outcomes in the present and outcomes in the future. As a stylized example, consider a person choosing between \$10 to be received today or \$10 to be received in a year. Most people would choose \$10 today, because they *discount* the value of future outcomes -- \$10 in the future is simply not worth as much as \$10 today. In the financial context, this can be normative. After all, the \$10 today could pay off a credit card bill or be put in an interest-earning account, and be worth more than \$10 in a year. Perhaps the \$10 in a year is only worth \$9 today, in purely objective terms.

But what about choosing between \$10 today and \$20 in a year? What people choose will depend on their *discount rate*. People with a reasonable discount rate (say, 10% per year), will see the \$20 in a year as worth about \$18 in the present, and will strongly prefer to wait for the “later-larger” amount. However, a large literature on time discounting has found that people’s time preferences in these kinds of choices are not well-explained by normative standards (see Frederick, Loewenstein, & Rabin, 2002; Urminsky & Zauberman, 2016 for detailed reviews).

First, people’s preferences reflect extremely high discount rates. Many people would, in fact, choose \$10 today over \$20 in a year, despite the more than 100% annual discount rate that would imply. Second, people’s discount rates are not stable, but rather context dependent. For example, people are more impatient (i.e. more likely to choose the sooner-smaller outcome over the later-larger outcome) when the amounts are smaller.

In particular, people are more impatient when trading off the present against the future than when choosing between a sooner and later outcome, both of which occur in the future. So, the same person who would prefer \$10 today over \$20 in a year, might well choose \$20 in two years over \$10 in one year, even though the times between the outcomes are the same (Thaler, 1981).

This widely documented inconsistency in time preference, often referred to as hyperbolic discounting or present bias, has been proposed as a model of why people have difficulty exercising self-control and making far-sighted choices (Ainslie, 1975; Hoch & Loewenstein, 1991). We might prefer to forego the unhealthy cake in favor of a salad that contributes to long-term health tomorrow, but when the time comes our preferences shift, and we become relatively more concerned with present benefits and less concerned with the long-term consequences.

Even the high impatience found in people's time preferences may sometimes understate the degree of short-sightedness in people's behaviors. Time preferences have typically been studied by presenting people with direct tradeoffs. In these choice situations, the opportunity cost of favoring immediate benefits (e.g., the lost opportunity to get \$20 in a year) is made explicit. However, in many of the choices people face, the potential immediate benefits are highly salient (e.g., the taste of cake) but the long-term consequences are less apparent (the increased health problems from a slightly higher likelihood of obesity). Such opportunity costs and future consequences are often overlooked when people need to construe the choice tradeoff for themselves (Frederick, Novemsky, Wang, Dhar, & Nowlis, 2009; Spiller, 2011; Strathman, Gleicher, Boninger, & Edwards, 1994). This failure to elaborate on the long-term consequences can mean that people are not construing their decision as an intertemporal choice (Bartels & Urminsky, 2015), potentially resulting in behavior that is even more short-sighted than if people had been making direct tradeoffs.

How impatient time preferences relate to health.

Time preferences are often discussed as an overall disposition, at least partially independent of the decision context (Ainslie, 1975). People may make intertemporal tradeoffs in different kinds of decisions using the same generalizable mental processes (McClure, Ericson, Laibson, Loewenstein, & Cohen, 2007). Consistent with this view, prior research has looked at the relationship between patient time preferences (measured with financial tradeoffs) and far-sightedness in the domain of health.

General discount rates and health decisions.

A key question about the generality of monetary discounting behavior is whether people who discount the future more steeply (in financial terms) are also prone to unhealthy behaviors. Perhaps the most studied relationship is the one between discounting and addictive behavior. A meta-analysis by MacKillop et al. (2011) reviews 64 published studies, and finds people with higher discount rates have a higher propensity for a range of addictive behaviors ($d=.15$ for all studies, $d=.58$ for studies with high-quality measurement). In particular, impatience in financial discounting tasks is significantly associated in clinical studies with a higher likelihood of abusing alcohol ($d=.50$), tobacco ($d=.57$), stimulants ($d=.87$) and opiates ($d=.76$), but not significantly for marijuana use ($d=.20$). While causality is difficult to infer from these kinds of correlational results, this literature has attempted to address the potential for confounds by measuring discounting among addicts and demographically matched controls. Furthermore, the effect of discounting is stronger for the likelihood of relapse than for chances of initiating drug use (Yi, Mitchell, & Bickel, 2010).

Researchers have similarly investigated the potential relationship between discounting and obesity, by measuring BMI (Body Mass Index, defined by the ratio of weight to height). Some research has found a relationship between low BMI and actual far-sighted financial behaviors (e.g., Komlos, Smith, & Bogin, 2003). More directly, Reimers, Maylor, Stewart, and Chater

(2009) find that people with higher BMI were more likely to choose the sooner-smaller reward in a large-scale survey ($r=.05$). A similar relationship between BMI and discount rates was found in a meta-analysis of nine other studies ($r=.09$; Urminsky & Bayer, 2017).

While the relationship between BMI and discounting is robust, increases in the prevalence of obesity over time are not well-explained by discounting, which has remained relatively stable over time in the population (Borghans & Golsteyn, 2006). Furthermore, researchers have not yet established a mechanism for the relationship between discounting and BMI. Studies testing whether discounting is related to exercise or restrained eating have yielded mixed results (Adams & Nettle, 2009; Chabris, Laibson, Morris, Schuldt, Taubinsky, 2008). In part, these mixed findings may reflect a more complex relationship between health status, time preferences and how people think about future consequences (Urminsky & Bartels, 2017), as we discuss below.

Researchers have found similarly mixed results when relating discount rates to a range of preventative medical behaviors and prescription compliance (e.g., Chabris et al., 2008; Chapman & Coups, 1999, Chapman, Nelson, & Hier, 1999). In all, these results reliably implicate time preferences in people's short-sighted health behaviors. However, the findings from prior research also suggest that the relationship between time discounting and how people make decisions involving their health may be more complicated than impatient people consistently making short-sighted health decisions.

Present bias and health decisions.

People who are present-biased in general, prioritizing present and near future benefits over more distant ones, might exhibit present-bias in their health behaviors as well. This would be reflected in a tendency to plan healthy behaviors with long-term benefits in the future (e.g., pay for a gym membership or quit smoking), but then make choices inconsistent with those healthy behaviors in

the present (e.g., not attend the gym or relapse and smoke again). Some initial research has demonstrated such a link between present-biased preferences and inconsistency in financial decisions (summarized in Urminsky & Zauberman, 2016). However, direct tests of this correlational relationship between present-bias and inconsistency in health decisions have not been reported, to our knowledge.

That said, there is evidence suggesting that people are often present-biased in their health decisions. People's preferences for flat-fee over per-visit gym memberships suggest an investment in more intended gym usage than occurs (Della Vigna & Mallmendir, 2006). Direct preference reversals between healthier foods planned in the future and less healthy foods actually consumed (Read & Leeuwen, 1998) may also be explained in terms of the present bias that characterizes hyperbolic discounting.

If people are present-biased in making health decisions, then pre-commitment mechanisms, in which people commit in advance to future decisions, may be effective at improving health behaviors. An emerging literature has found that pre-commitment mechanisms can result in people exercising more (Milkman, Minson & Volpp, 2012; Royer, Sterh, & Sydnor, 2013), quitting smoking (Jeffrey, Hellerstedt, & Schmid, 1990; Gine, Karlan, & Zinman, 2010) and losing weight (Jeffery et al., 1990; Volpp et al., 2008; John et al., 2011). The effectiveness of these mechanisms is strong but somewhat indirect evidence of present bias in people's health behaviors.

Notably, there is evidence that such mechanism can be effective in practice and sophisticated decision-makers may even spontaneously incorporate pre-commitment into their behavior (Hoch and Loewenstein, 1991). When offered, smokers who are trying to quit are willing to enroll in a costly pre-commitment contract that would penalize them for taking up smoking again (Gine, Karlan, & Zinman, 2010). Services such as stikk.com provide such contracts for the general public, and are used for a range of intended behaviors, including health related goals such as

exercise (Bhattacharya, Garber, & Goldhaber-Fiebert, 2015). Even people's purchasing of unhealthy foods may reflect a pre-commitment motive. Wertenbroch (1998) demonstrated a willingness to pay extra for smaller packages of unhealthy (but not healthy) foods, presumably because shoppers want to constrain their future consumption of the unhealthy foods.

Present-bias and pre-commitment are often thought of in terms of a mismatch between a preference for indulgence in the present and a preference for responsible behavior in the future, such as eating cake and watching TV now, while preferring to eat salad and go to the gym in the future. However, guilt about one's short-term responsibilities in the present can also contribute to a mismatch between intentions and behavior, with a resulting need for a very different kind of pre-commitment. Kivetz and Simonson (2002) find that some people do pre-commit to hedonic consumption. The under-consumption of pleasures in the present is driven by excessive guilt-proneness, leading to long-term regrets (Keinan & Kivetz, 2008).

These findings suggest that there may be two kinds of present-bias that lead people to neglect long-term health consequences. The couch-potato TV watcher is present-biased for vices, preferring pleasures over long-term needs. But the workaholic over-achiever may likewise be present-biased, but towards immediate responsibilities and achievements, focusing on work at the expense of long-term needs. The workaholic may not get enough sleep or exercise, may skimp on preventative medical behaviors, eat poorly for convenience, tolerate unsafe working conditions and engage in risky behaviors such as aggressive driving. While appearing very different, both the couch potato and the workaholic may have similar health prospects, for a similar underlying reason – their excessive concern with the present, even when intending to be better balanced in the future.

Time preferences for health tradeoffs.

While time preferences have been primarily studied in financial terms, some researchers have investigated how people directly tradeoff between smaller health benefits enjoyed immediately versus better health enjoyed later. For example, a patient may be choosing between two courses of treatment, one that provides immediate but temporary relief, and another that takes longer to work but yields better long-term prospects. Do people make such decisions the same way that they make financial intertemporal tradeoffs, or do people discount health outcomes differently?

Overall, findings regarding discounting between health outcomes parallel findings regarding discounting between financial outcomes, including present-bias as well as magnitude and steeper discounting for gains than losses (e.g., Chapman, 1996; Hardisty & Weber, 2009). However, a meta-analysis of prior research finds a consistent but modest relationship between financial discount rates and health-based discount rates ($r=.23$; Urminsky, 2017). This suggests that financially patient people will, on average, be more patient for health outcomes as well, but that many people do discount money and health differently.

In particular, it would be useful to know if people are generally more patient when making financial tradeoffs or health tradeoffs. Numerous papers have attempted to test this, with very mixed results (see Urminsky & Zauberman, 2016 for a review). In part this may be because it is difficult to compare discount rates across different sources of utility, because the tradeoffs can also differ in the degree of diminishing utility, perceived risk, perceived magnitude or other factors influencing choices.

While subject to these limitations, the literature does seem to suggest more impatience for health than for money. Based on meta-analyses of prior research, people seem to discount goods with potential negative health outcomes more steeply than money, including drugs, alcohol, cigarettes and snack foods (Urminsky & Bayer, 2017). In a study designed to rule out magnitude-effect confounds, Chapman (1996) finds more impatience (a higher discount rate) for health outcomes than for financial outcomes.

Psychological determinants of time preferences

The literature on time discounting has demonstrated consistent relationships between time preferences and health behaviors and outcomes. This literature suggests that how people make intertemporal tradeoffs involving their health parallels, but is distinct from, how they make financial intertemporal tradeoffs.

To understand how people's time preferences shape their health decisions, it is important to go beyond individual differences in discounting, and to understand the source of people's time preferences. A recent literature has made progress in identifying the psychological factors that influence people's discounting. This literature suggests that time discounting is multiply determined, and is shaped by people's attention to and subjective interpretation of the elements of the tradeoff, both perceived value and time, as well as their underlying motivations. Next, we review the psychological mechanisms that have been shown to influence time preferences in general, and discuss the implications for how these factors may shape health decisions.

Affective Drivers

There is little doubt that affective processes have a significant influence on intertemporal decisions. Loewenstein (1996) has argued that visceral factors play a significant role in such decisions, both due to their strong influence and because people have difficulty anticipating them. Visceral factors refer to emotions (e.g., anger, fear) and drive states (e.g., hunger, thirst) that provide strong motivation to consume. As such, these factors are likely to play a significant role in short-sighted behaviors involving food choices, alcohol consumption, and sexual behavior. In one demonstration relevant to food, Shiv and Fedorikhin (1999) show that the

preference for chocolate cake (affect rich) compared to fruit salad (relatively affect poor) goes up when people have low cognitive resources available (e.g., under cognitive load). While hot emotions were at the center of research on impulsivity, other research has investigated the effects of specific emotional states, such as sadness, on short-sighted preferences (Lerner, Li & Weber 2013). These results are consistent with the notion that affect influences the relative preference for an option with immediate benefits (e.g., taste) but long term costs (e.g., health). In sum, the emotional reactions to certain options can help explain why people eat fatty food, smoke, or engaged in potentially unsafe sex.

Mental Representation and Concreteness of Outcomes

An important difference between how people consider options and outcomes in the near versus the distant future is their level of mental representation: The near future is represented more concretely while the distant future is represented more abstractly (e.g., Liberman & Trope, 1998). It then follows that when the health relevant options are in the present and the immediate consequences are concrete (whether the taste of the chocolate cake, or the effort associated with exercise), they are weighted more heavily than the abstract long term benefits (maintaining normal weight and being healthy).

Supporting this idea, research has shown an effect of level of representation on impatience, where abstract mental construal leads to more self-control (Fujita, Trope, Liberman, & Levin-Sagi, 2006) and less present-bias or hyperbolic discounting (Malkoc & Zauberman, 2006; Malkoc, Zauberman, & Bettman, 2010). In addition to demonstrating a cognitive account of intertemporal preferences, these findings also provide some ways to boost self-control. Zhao, Hoeffler, and Zauberman (2007) showed that mentally simulating the future outcome changes the weight of different attributes, moderating the standard temporal construal effects. Thus, the difference between mental representations triggered by near and distant outcomes provides one way to shift relative preferences.

Resource Slack

Another reason people often delay engaging in a healthy activity they understand to be beneficial, is that they believe they will have more time and more money available in the future. For example, one reason people might delay going to the gym or seeing a specialist for a nagging pain, is that they perceive themselves as having very little time or money now, but expect both to be more plentiful in the future. This idea is predicted by Slack Theory (Zauberman & Lynch, 2005), which explains intertemporal preference, including both the overall rate of discounting and the extent of hyperbolic discounting, using the concept of slack. Slack is defined “as the perceived surplus of a given resource available to complete a focal task without causing failure to achieve goals associated with competing uses of the same resource” (p. 23).

Within this theory, discount rates (including the extent of hyperbolic discounting) depend on the patterns of how much slack is perceived over time, that is, the growth or contraction between the near and distant future. In general, people perceive more slack in the future than now, and therefore tend to devalue the costs and benefits or future outcomes. This tends to be stronger for time use compared to money use. From these principles, it is then easy to see how the time and money costs of attending the gym or seeing a dermatologist loom larger in the present than in the future.

Neglecting future consequences

There is a related body of evidence for the idea that people’s shortsightedness arises, in part, from a specific gap in cognitive processing, a tendency to neglect opportunity costs and future consequences (Frederick, Novemsky, Wang, Dhar, & Nowlis, 2009; Spiller, 2011). In particular, explicitly directing people’s attention to the future consequences of intertemporal tradeoffs increases patience in their financial choices (Magen, Dweck, & Gross, 2008).

This tendency to pay insufficient attention to future consequences may have important consequences for health behaviors. People who have a tendency to be more focused on long-term implications report more healthy behaviors, including lower alcohol, drug and cigarette use (Adams & Nettle, 2009; Keough, Zimbardo, & Boyd, 1999; Strathman et al., 1994), more exercise and a healthier diet (Joireman, Shaffer, Balliet, & Strathman, 2012). Likewise, researchers have found links between future oriented thinking and preventative health behaviors, including intended diabetes screening (Crockett, Weinman, Hankins, & Marteau, 2009), cancer screening (Picone, Sloan, & Taylor, 2004), and safer sexual practices (Rothspan & Read, 1996; Agnew & Loving, 1998 among men only).

Much of this research is correlational, and more work is needed to test the effects of interventions designed to counter the tendency to neglect future consequences. Calorie-labeling is generally thought of as an intervention that provides missing information and mixed effects on consumption have been observed (Long, Tobias, Craddock, Batchelder, Gortmaker 2015). Goswami and Urminsky (2016) find that both highly salient calorie labeling and non-informative reminders to think about calories have similar effects, reducing the number of calories in snack choices. These results suggest that calorie-labeling, when effective, may be reminding people to consider future consequences, rather than providing information. More generally, Orbell and Hagger (2006) find that health appeals are more persuasive when matched to people's perspective on the future, such as emphasizing immediate consequences for present-focused individuals.

Connectedness of current and future self

Choosing to forego pleasures or invest effort in the present for future health benefits can be thought of, in a sense, as an altruistic act. The current self bears the costs of missing out on cake

and going to the gym, and it is a future, older self who benefits. Most economic theories make no distinction between the present and future self, and the only reason to discount the future is because benefits could be objectively more valuable if received sooner.

In practice, however, people tend to prioritize the desires of the current self. An emerging literature (reviewed in Urminsky 2017) has built on ideas from philosophy to suggest that people's motivation to provide for the future self may depend on how that future self is perceived. In particular, a person's responsibility to their future self can be seen as depending on the degree to which the future self is the same person, in those psychological properties that define us. In this view, when people are low in connectedness to the future self, they believe that their identity will change over time and their future self's identity will therefore only partially overlap with their current identity. As a result, they will be less motivated to provide for the future self.

Initial research has demonstrated that manipulated and measured connectedness to the future self can help account for differences across people in discount rates (Bartels & Urminsky, 2011) and can help explain present-bias and hyperbolic discounting (Bartels & Rips, 2010). Connectedness has also been linked to a range of far-sighted financial and social behaviors (see Urminsky, 2017 for a detailed review).

By the same logic, the degree of connectedness to the future self may be important for people's motivation to provide for their future self's health. When people feel that their identity will change and that they will have little in common with their future self, they may think of their future self's health almost as they would another person's. In contrast, when people are highly connected to their future self, poor health in the future and poor health in the present would evoke similar concern. Preliminary research has found support for this prediction when making explicit tradeoffs. Manipulations that induce higher connectedness to the future self yield greater willingness to undergo painful medical procedures in the present for future health benefits.

Paralleling findings from the discounting literature, people higher in measured connectedness also have somewhat lower BMI (Urminsky & Bartels, 2017).

However, as discussed above, people may or may not think about the future consequences of their actions and about the implicit opportunity costs involved in their decisions when, as is often the case, the tradeoff is not explicit. When people do not think of a choice as involving a conflict between present and future interests, how they think of their future self is no longer relevant to their decision. For example, being more connected to the future self results in lower rates of spending, but only when people are reminded to think about the opportunity costs of their current spending (Bartels & Urminsky, 2015). When people are not prompted to consider opportunity costs, they are less likely to frame their choices in intertemporal terms, and neither connectedness nor discounting predict their spending decisions.

Along the same lines, when people see their behavior as having long-term health consequences, their motivation to choose in accordance with future health may depend on their discount rate and connectedness to their future self. However, when people do not see their behavior as impacting future health, how they think about the future would not be incorporated into their decision. Supporting this view, overweight undergraduates who were higher in measured connectedness visited the gym more often, over the course of a year. In contrast, the gym attendance of normal weight students, for whom exercise has more limited long-term consequences was unrelated to connectedness (Urminsky & Bartels, 2017). Likewise, for overweight visitors to a museum who were prompted to think about health consequences, prompting high (vs. low) connectedness reduced their choices of high-calorie snacks. However, if they were not prompted to consider the consequences, or among people for whom the consequences were smaller (because they were not overweight), manipulating connectedness had no effect on their snack choices.

These findings suggest that people will be most motivated to engage in health-related behaviors when there is an actual long-term health benefit, they actively consider that benefit, and they care about their future health. However, health behaviors will diminish when people perceive no benefit, forget to consider the benefits, or insufficiently value the future benefits.

Theories of connectedness also suggest a still untested implication for health communications. In the course of informing people about the future health consequences of their current actions and reminding them to consider those consequences, it may be important not to inadvertently reduce connectedness between the current and future self. In particular, while fear-based appeals may generally be effective (Witte & Allen, 2000), if the appeal creates the impression that the elderly future self is likely to be fundamentally different from the current self, the motivation to care may decline. This may be of particular concern with regards to illnesses whose symptoms directly impact connectedness between the pre-illness and during-illness selves, such as frontotemporal dementia (Strohmingner & Nichols, 2015).

Time Perception

Another psychological input that is relevant to intertemporal tradeoffs is the perception of future time itself. This cognitive mechanism is different from the mechanisms discussed above since it moves the focal process from the subjective value of the options to the subjective perception of delay between the outcomes (e.g., Cooper, Kable, Kim, & Zauberman, 2015; Ebert & Prelec, 2007; Kim & Zauberman, 2009; 2013; Zauberman, Kim, Malkoc, & Bettman, 2009). For instance, Zauberman et al. (2009), showed that people's perception of future time durations follows a standard non-linear psychophysical function, rather than an objective linear mapping to calendar time. For example, one year is perceived to be less than four times as long as 3 months. They then showed that this non-linear time perception accounts for the extent of hyperbolic discounting, and that those who perceived a given duration as longer, also discounted outcomes over that duration more than did those who perceived it as shorter (Kim & Zauberman, 2009).

Moreover, several factors, from sexual arousal to mental elaboration of different durations, have been shown to influence how long or short a given duration is perceived to be, and this change corresponds to the change in discounting over that duration (e.g., Kim and Zauberman, 2013; Kim, Zauberman, and Bettman, 2012; Zauberman et al., 2009). This suggests that better understanding the factors that influence the perception of time, can then influence the extent of discounting. Thus, when people's behavior does not reflect the future health consequences they face, part of the blame may rest in their perception of how far away those future health consequences are; the further they are, the less attention they demand.

Conclusions.

The vast literature on intertemporal preferences provides an important set of tools to better understand the challenges that people face when making many health decisions. The basic human tendency to heavily value immediate and short term costs and benefits is a significant hurdle to a healthy lifestyle – including adherence to prescribed medication, preventive health behaviors, healthy eating, exercise, safe sex and managing or preventing addiction.

But in addition to simply understanding the hurdles to better health related decisions, emerging work on the psychological underpinning of intertemporal tradeoffs also provides ideas about how to potentially influence and improve these decisions. The key lies in how people think of the future, and how health communications and experiences affect or interact with those modes of thought. When people fail to consider and incorporate the future consequences of their current actions into their behavior, they are less likely to take the steps necessary for optimal future health. Even when people do consider future outcomes, if they see the future as particularly distant, think of the future in abstract terms, or see the future self as disconnected from the present self, it may be difficult to maintain the necessary motivation to persevere in health-

positive efforts. It may be most effective to foster people's sense of an expansive present, in which the behaviors we take today, both preventative and proactive, contribute to an ongoing state of health that benefits one's enduring self, now and in an imminent future that is right around the corner.

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