

Time Preference & Personal Identity

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1. Introduction

Economists usually regard time preference as they view any other type of preference. A preference for current utility over future utility is treated like the preference for an apple over an orange -- an issue of personal taste, whose rationality cannot be disputed. There is an important difference, however. Choosing an apple over an orange is compatible with utility maximization: While one cannot be certain that the apple conferred more utility than the orange, it seems reasonable to assume so. Such an assumption is not tenable in the case of time preference: someone who chooses a smaller amount of utility now over a greater amount in some future period is clearly *not* maximizing utility over that interval.¹

Because time preference runs counter to utility maximization, it requires more justification than other types of preferences. Many have argued that no such justification can be found; that there is no good reason to care less about future utility than current utility (see, e.g., Jevons 1871; Sidgwick, 1874; Pigou, 1920; Ramsey, 1928; Lewis, 1946; Rawls, 1971; Elster 1986; Broome, 1991). Those who advocate temporal neutrality argue that one should want their life, *as a whole*, to go as well as possible, and that counting some parts of life more than others interferes with this goal. On this view, it is irrational to prefer a smaller immediate pleasure over a greater future pleasure (or a greater future pain over a smaller immediate pain), because now and later are equally parts of one life, and choosing the smaller good or the greater bad reduces the quality of one's life, as a whole.

The belief that a person should weight all utility the same, regardless of its temporal position implicitly assumes that all parts of one's future are *equally* parts of oneself; that there is a single, enduring, irreducible entity to whom all future utility can be ascribed. However, some philosophers -- most notably Derek Parfit (1971, 1984) -- deny this assumption. They argue that a person is nothing more than a succession of overlapping selves related to varying degrees by physical continuities, memories, and similarities of character and interests. On this view, the separation between selves may be just as significant as the separation between persons, and discounting one's

¹ Note that if future utility is discounted, there is some $\epsilon > 0$ such that the utility sequence $(1-\epsilon, 0)$ would be preferred to the sequence $(0,1)$. However, choosing $(1-\epsilon, 0)$ over $(0,1)$ fails to maximize utility over the two period interval, because $1-\epsilon < 1$. As an analogy, suppose that one was asked to choose between \$99 on the left side of the table and \$100 on the right side. If one chose the \$99, one could hardly claim that they were maximizing because that amount was on the *left* side of the table. Correspondingly, preferring $1-\epsilon$ units of utility now over 1 in the future, requires some account for why the *temporal* position of utility is any more relevant than the *spatial* position of the two monetary quantities in the foregoing example.

"own" future utility may be no more irrational than discounting the utility of someone else.²

To illustrate this argument with an extreme example, consider the plight of Seth Brundle, the main character in the movie "The Fly." In a scientific experiment gone awry, Seth becomes genetically fused with a housefly and gradually metamorphoses into "Brundlefly" (a human-fly hybrid). Under these exceptional circumstances, it seems rational for Seth to discount "his" future utility -- to give less weight (perhaps no weight at all) to the future utility of Brundlefly.

The foregoing example lends credibility to the idea that it *could*, at least under *some* circumstances, be rational to discount future utility. Of course, it leaves open the questions of exactly *which types* of changes justify diminished concern for future selves and *what degree* of discounting might ordinarily be appropriate. This chapter will explore these issues in two different contexts. Section 2 summarizes philosophical positions on the nature of personal identity and sketches the most common philosophical critiques of Parfit's view. Section 3 presents a descriptive study that assesses individual's perceptions about the intertemporal stability of their identity, and assesses whether these perceptions can account for interpersonal variability in implicit discount rates. Section 4 concludes.

2. The nature of personal identity

Philosophical debates about the nature of personal identity are dominated by two competing views: the "simple" and the "complex." According to the simple view, we are the same person through time, despite the physical and psychological changes we undergo; our existence across time is unified by some indivisible and irreducible entity or essence or soul to which all of our future experiences can be assigned.³ In contrast, the complex view of identity denies that there is some irreducible entity or "I" that remains unchanged over time. It argues instead that our identity across time

² Although the analogy between selves and persons is strong, there are some distinctions. First, selves have identical genetic structure, whereas individuals do not (except for identical twins). Second, selves are spatiotemporally continuous, whereas individuals are not (except for siamese twins). Finally, by some philosophical and religious views, selves have the same soul, whereas distinct individuals do not. Of course, this final alleged disanalogy is precisely what many philosophers deny, and what forms the basis for debate among those championing differing views on the nature of personal identity.

³ Thus, the simple view holds that persons are fundamentally unlike other objects, such as ships, whose identity over time can hold to intermediate degrees, depending on objective, empirical relations between the object at two points in time (e.g. the proportion of original planks that remain, whether the sail has been replaced by an engine, and so on).

is based only on continuity of memories, interests, and other characteristics that can diminish.⁴

The complex view is not new. Plato articulated it in his Symposium (207D- 208B):

"A man is said to be the same person from childhood until he is advanced in years: yet though he is called the same he does not at any time possess the same properties; he is continually becoming a new person ... not only in his body but in his soul besides we find none of his manners or habits, his opinions, desires, pleasures, pains or fears, ever abiding the same in his particular self; some things grow in him, while others perish." (Plato, Symposium, 207D - 208B; cited in Borowski, 1976)

David Hume later echoed the implicit question in Plato's statement. In An Enquiry Concerning the Principles of Morals (1751, p. 253) he asks: "*What ... gives us so great a propensity to ascribe an identity to these successive perceptions, and to suppose ourselves possess of an invariable and uninterrupted existence thro' the whole course of our lives?*" Among modern philosophers, the complex view is endorsed by Parfit (1971, 1973, 1976, 1984), Wachsberg (1983), Zemach (1978, 1987), Lewis (1976), and others. The complex view also appears to be endorsed by the economist Strotz (1956, p. 179), who writes: "*The individual over time is an infinity of individuals, and the familiar problems of interpersonal utility comparisons are there to plague us.*"

Once one accepts the complex view of personal identity, which denies the existence of a single entity persisting across time, it is a small step to further conclude that discounting "our" own future utility is as rational as discounting the utility experienced by someone else – because the utility experienced by the later selves it is not fully one's "own."⁵ Although philosophers have appreciated this implication for

⁴ In one widely cited argument in support of the complex view, we are invited to imagine a machine which, by the gradual replacement of cells, can transform Derek Parfit into Greta Garbo. Those who ascribe to the simple view of personal identity are forced to adopt the untenable position that somewhere along this spectrum there is a sharp borderline, on the one side of which we have Derek Parfit, and on the other side Greta Garbo. The complex view handles this puzzle case more easily, because it permits intermediate degrees of identity. We are allowed to speak of the resulting person as being more Parfit-like or more Garbo-like, without having to specify exactly where Parfit ends and Garbo begins. (See Parfit, 1984, p. 277.)

⁵ Indeed, philosophers often turn the discounting issue on its head. Rather than seeking to articulate a basis for giving less than full weight to future outcomes, they seek to establish reasons why we should have any special concern about "our" future selves (any concern beyond that which we would feel for any stranger). For example, Perry (1976, p. 74) asks: "*If I am told that by pushing a button I will prevent someone from being in great pain tomorrow, I will have a reason to push it. But intuitively, if the person is me, I will have more reason, or perhaps special reasons, for pushing it. What basis can the theory of personal identity sketched provide for this feeling?*" Whiting (1986, 551-552) suggests that most cannot: "*Of any candidate for what constitutes such identity -- for example, bodily continuity or sameness of immaterial soul -- we can always ask how that candidate justifies concern. And it's not clear that any account has a very satisfactory answer.*" (See also Korsgaard, 1989, p. 112)

some time (see e.g., Butler, 1736, pp. 99 & 105; Sidgwick, 1874, p. 419), this view is now most strongly associated with Derek Parfit, who was among the first to explicitly endorse it:

My concern for my future may correspond to the degree of connectedness between me now and myself in the future ... since connectedness is nearly always weaker over long periods, I can rationally care less about my further future. (Parfit, 1984, p. 313)

Parfit's provocative views -- and their implications for analyses of intertemporal choice -- have been largely ignored outside of philosophy journals (though see Broome, 1985, pp. 286-289; Baron, 1988, pp. 442 & 446, and Harvey, 1994, pp. 40 & 48). Among philosophers, however, they have spawned a lively debate. I will not review the richness of that debate here, but will briefly summarize the three primary bases for philosophical opposition to Parfit's claims.

Three critiques of the Parfitian view:

Critics of Parfit attack him by denying his proposition that there is a close relation between the degree of connectedness with a future self and the degree of concern for that self that is rationally mandated. Some offer examples (typically thought experiments) in which a diminution in connectedness does not seem to permit diminished concern. Others construct examples in which concern does not seem to be required despite full connectedness. Still others argue that we construct our identity; that changes in our character, values, goals, and beliefs are something we *initiate*, and do not merely *experience*, and that this continuity of agency integrates our existence through time. Each of these three criticisms is briefly sketched below:

(1) Concern for future welfare may be required in the absence of connectedness

Many have attacked the Parfitian view by asking the reader to imagine a profound change in our psychology, followed by a horrific pain (see e.g., Madell, 1981; Williams 1970). These critics maintain that, in a deep and undeniable sense, it will still be "you" who feels the future pain, however different "you" might be. For example, Williams (p. 170 & 180) writes:

Physical pain ... is minimally dependent on character or belief. No amount of change in my character or my beliefs would seem to affect substantially the nastiness of tortures applied to me; correspondingly, no degree of predicted change in my character and beliefs can unseat the fear of torture which ... is predicted for me ... the principle that one's fears can extend to future pain whatever psychological changes precede it seems positively straightforward.

(2) Concern may not be required despite full connectedness

Others have criticized Parfit's view by arguing that connectedness, per se, cannot be the appropriate basis for our future concern (Robinson 1988, p. 323; Korsgaard, 1989, p. 107). These critics argue that if connectedness is what matters, we ought to be indifferent about whether "we" survive or whether someone who is sufficiently

psychologically connected to us does, including a replica of ourselves whom we have never met. The unacceptability of this conclusion is assumed to be self evident:

Suppose that scientists on Mars are mass-producing bio-programmed people to populate other planets. They are able to imprint various information on the brains of these creatures, including personalities, apparent memories, interests, and so on. Suppose that by purely random coincidence they program a man to have a personality, memories, skill, interests, and so on just like mine, so that they unwittingly create a coincidental replica, who would be just as he is if I had never been born. I am about to die. If identity isn't what matters, the fact that this coincidental replica will continue ought to be just as good as survival ... This is plainly mistaken. (Stone 1988, p. 526)

While replacement with a replica does not seem as good as ordinary survival, it surely seems better than ordinary death. Suppose, for example, that in the airports of the future you enter a special type of scanner that records all of your physical and psychological characteristics (including dispositions, memories, and so on). Prior to boarding, you are given your disk containing this information. You may either throw the disk away or give it to the ticket agent for safekeeping. If you throw the disk away, then the result of a plane crash is as it is now. However, if you give the disk to the ticket agent, then, in the event of a plane crash, the information would be sent to the airport of your destination and an exact replica of you would be reconstituted from the information on the disk. It seems unlikely that the fate of the disk would be a matter of indifference for people. This suggests that *something* important *is* preserved on the disk. Indeed, I suspect that some people would be willing to pay a substantial premium to be "backed up" in this way.

(3) *Agency unifies successive selves despite diminishing connectedness*

A third criticism of Parfit is less easily captured by an intuitively compelling thought experiment. However, like the other objections, it denies Parfit's assertion that selves are linked principally by connectedness. This third critique denies that selves are just spatiotemporally continuous passive loci of experiences. Instead, these critics suggest that selves are active agents whose choices forge the identity of descendent selves, and this continuity of agency connects selves more tightly than an assessment of connectedness alone would imply. For example, Elster argues: "*I have no argument against Parfit's view that a person who expected his future states to be weakly connected would not be irrational in discounting the future. I believe, however, that a person who takes his future states as given, rather than something to be created, is fundamentally irrational.*" (See also Daniels, 1979, p. 273; McClennen, 1990 p. 218; Whiting, 1986; and Korsgaard, 1989). Elster's objection is not entirely convincing, though. While it may be rational to strive for psychological connectedness, this does not make it irrational to discount for any loss of connectedness that might occur despite such efforts. As an analogy, though one should strive to stay vigorous, this does not make it irrational to account for the likelihood of becoming less vigorous with age.

Discussion

Parfit's claims about time preference are normative, not descriptive. He is not attempting to explain or predict people's intertemporal choices. Rather, he is arguing that theories of rational choice must be grounded on a correct view of personal identity, and the correct view permits people to discount future utility. It is important to be clear about this claim. Parfit is not claiming that people *should not* care about their future welfare. Rather, he is claiming that one is not rationally compelled to care about their future welfare to a degree that exceeds their level of connectedness with those future selves.⁶

However, even if one correctly interprets and accepts Parfit's claims, they provide precious little guidance about the degree of time preference that would be rationally permissible. First, he offers no precise definition of "connectedness," suggesting only that it is related to "ambitions, achievements, commitments, emotions, memories, and several other psychological features" (1984, p. 284).⁷ Second, he never quite spells out the relation between connectedness and concern, claiming only that the two concepts "correspond" (1984, p. 313). Third, he never specifies how much connectedness diminishes over time, saying only that it "is nearly always weaker over longer periods" (1984, p. 313).

The following section describes a study that attempts to measure "connectedness" (and its diminution across time), by asking people to report their self perceived similarity with their past and future selves. These assessments, in turn, are compared with imputed discount rates to determine whether Parfit's views about identity have descriptive as well as normative content – whether they might *explain*, as well as *justify*, intertemporal choices.

⁶ Some readings of Parfit could perhaps interpret a stronger claim – that it is *irrational* to care more about one's "own" future self than about the welfare of any other person whose connectedness is equally high. Of course, if the degree of connectedness with other persons is generally lower than the degree of connectedness with future selves (as seems likely), this distinction is irrelevant.

⁷ Shoemaker (1996, p. 320) defines connectedness of a later self in terms of the degree to which the later self remembers actions, carries out the intentions, or has the same character, desires and goals as the earlier self. Nozick (1981, p. 69) comments on the difficulty of defining an objective measure of connectedness:

Which particular properties, features, and dimensions constitute the measure of closeness, and with what relative weights? ... what are the relevant subcomponents of psychological continuity or similarity (for example, plans, ambitions, hobbies, preferences in flavors of ice cream, moral principles) and what relative weights are these to be given in measuring closeness?

3. A measure of psychological connectedness

Sample

228 respondents participated in the study. Their ages ranged from 13 to 83 ($M=38$, $\sigma = 16$). Respondents were drawn from 5 convenience samples: travelers at the Pittsburgh International Airport, employees of the US Forest Service, competitors at a Pittsburgh Scrabble tournament, Carnegie Mellon undergraduates, and elderly residents of a Jewish Community center. Of the 228 respondents, 207 produced usable responses.⁸ Each respondent received a \$1 lottery ticket for completing the questionnaire.

Procedure

In this study “connectedness” was operationalized in terms of “similarity.” Respondents were first asked to indicate, on a 100 point scale, how similar they expected to be to their future selves and how similar they are now to their former selves. In these judgments, respondents were told to think of characteristics such as “personality, temperament, likes and dislikes, beliefs, values, ambitions, goals, ideals, etc.” (See Appendix 1 for a full description of the procedure.) Although similarity to future selves would be the relevant consideration for choices, I assumed that reported similarity of past selves might be a more meaningful measure than future projections, and that these retrospective reports might serve as proxies for the degree of future connectedness that could be expected (under the strong assumption that those who changed substantially in the past would continue to do so in the future).

Concern for future selves was operationalized through two measures of discount rates. Monetary discount rates were elicited by asking respondents to report the amount of money they would require in [1/5/10/20/30, and 40] years to make them indifferent to receiving \$100 tomorrow. Non-monetary discount rates were then elicited by asking respondents to imagine that they worked at a job that had equal proportions of pleasant and unpleasant work (“good days” and “bad days”) and to report the number of additional good days in [1/5/10/20, and 30 years] that would make them indifferent to receiving 20 additional good days (and, thus, 20 fewer bad days) this year.⁹ It was assumed that respondents who cared less about their future selves would require more future money (or more future good days) to make them

⁸ Respondents were excluded if their similarity judgments were not monotonically declining. For example, a person whose predicted a degree of similarity for [5/10/20/30, and 40] years into the future were [95/41/90/35, and 10] would be excluded because 90 is greater than 41. Although there is nothing inherently illogical about a teenager predicting that they are more similar to their 50 year old self than their 40 year old self, it seems unlikely, and suggests that those respondents did not understand the task.

⁹ I assumed that people would retire by age 70, and excluded responses that required the assumption of working past 70. Many of the respondents older than 40 did not answer all of the questions, writing “will be retired” or “doesn't apply” in at least one of the blanks.

indifferent to the immediate reward. (See Appendices 3a and 3b for a full description of the elicitation procedure.)

Results:

similarity with past and future selves

Table 1 reports the mean similarity judgments, both overall, and disaggregated by age group (teenagers, people in their 20s' 30's 40's 50's, and those 60 and over). For example, teenagers looking [5/10/20/30/40] years into the future predicted a degree of similarity of [65/55/49/46/42], respectively (read the "teens" row left to right, starting from "now"). For people over 60 looking [5/10/20/30/40] years into the past, the reported mean degree of similarity was [84/73/56/46/40], respectively (read the "sixty+" row right to left, starting from "now"). Figure 1 depicts these data graphically, with the six age groups plotted along the z axis ascending from "teens" to "people over 60."

The shape of these "similarity discount functions" defy any simple interpretation, because it is unclear exactly how respondents used the response scale. Similarity has no natural zero point, and the judged degree of similarity between two "selves" depends on the breadth of the judgmental context that one adopts. For example, if the judgmental context is one's twin brother or one's close friends, a former self may be judged as "very different" than one's current self, but if the judgmental context is a randomly selected person (e.g. an Australian aborigine), one's former self may seem "very similar."¹⁰ Thus, it isn't clear exactly what a similarity of "60" means. Nor is it clear whether a drop from 90 to 80 represents the same reduction in similarity as a drop from 50 and 40.¹¹

However, notwithstanding the problems posed by forcing similarity judgments onto a ratio-scale response format, the results do permit some interesting comparisons. First, the projected similarity of future selves suggests a curvilinear relation with age. In general, the "very young" (teens and twenties) and "very old" (fifties and 60+)

¹⁰ In many other studies that have elicited similarity judgments, the judgmental context can be inferred from the set of experimental stimuli explicitly presented, which are often a small set of abstract, impoverished figures that vary along only two or three dimensions, such as sixteen squares that vary in size and brightness (Tversky & Gati, 1982), sixteen drawings of plants that vary in form of pot, and elongation of leaves (Gati & Tversky, 1982), or four schematic faces varying in the shape of the mouth, eyebrows, and nose (Tversky, 1977), or on the presence or absence of beard, glasses, and moustache (Sattath & Tversky, 1987).

¹¹ If literally interpreted as a ratio scale measure of similarity, the judgments suggest an inconsistency: forward looking predictions indicate higher rates of change at younger ages, whereas backward looking reports indicate higher rates of change at older ages. For example, collectively, respondents predicted similarity to diminish by 34 points over the first 10 years (from 100 to 66), but only 8 additional points over the next ten years (from 66 to 58). However, looking in the opposite direction, perceived similarity diminished more quickly in the near past than the more distant past. For example, collectively, respondents reported a decline of 41 similarity points going 10 years back (from 100 to 59), but an additional decline of only 11 more points going 20 years back (from 59 to 48).

believe that they will change more than people who are “middle aged” (thirties and forties). This can be seen by looking down the columns in Table 1 (or into the “z” axis of Figure 1). (The bottom row of Table 1 shows the significance level of a Kruskal-Wallis test against the null hypothesis of equal responses among all six age categories). Perhaps the younger respondents predict greater change because their “adult” personalities have not yet crystallized, whereas older respondents predict greater change because they anticipate senile dementia or physical debilitation that is profound enough to change their conception of self.¹²

Reported similarity showed a simpler pattern. Looking back any given number of years into the past, older respondents report having changed less. For example, respondents sixty and older reported that the similarity between their current self and “-5” self was 84, whereas teenagers reported the similarity to their “-5” self to be only 55. (Again, the bottom row of Table 1 shows the significance level of a Kruskal-Wallis test against the null hypothesis of equal responses among all six age categories).

Since this was not a longitudinal study, respondents' predicted similarity of a future self could not be compared with their *own* reported similarity after that interval had elapsed. However, respondents' prospective judgments could be compared with the corresponding retrospective judgments of *other* older respondents. For example, the “+5” judgments of all 13 year olds could be compared to the “-5” judgments of all 18 year olds, and so on. Table 2 reports the average differences between predicted and reported similarity for matched age groups, both overall, and for a given age range (see Appendix 2 for a description of this calculation). Most of the entries are positive, which indicates that respondents generally predicted more similarity looking forward than they reported looking backward over the same age interval. Because there is no objective measure of similarity with which to compare these judgments, it is unclear whether people underpredict how much they will change, overreport how much they have changed, or some of each. (It is also possible that respondents use the response scale differently as they age.)

Does predicted reduction in similarity influence discount rates?

Tables 3a and 3b show median responses and corresponding imputed discount rates, both overall, and disaggregated by age category.¹³ If the predicted similarity of future selves affects the weighting of future welfare, discount rates should be inversely correlated with these similarity judgments (because if the utility from future

¹² Although physical characteristics were not included among the adjectives used to cue similarity judgments, respondents may have thought that they were part of the “etc.” That is, they might also have chosen to account for physical characteristics even if they did not consider them as part of the explicit or implicit instructions.

¹³ For the monetary question, implicit discount rates were computed from responses using the formula, $r = [(\# \text{ of future dollars}/\$100)^{1/t}] - 1$. For the non-monetary question, implicit discount rates were computed from indifference values using the formula, $r = [(\# \text{ of future days}/20)^{1/t}] - 1$.

rewards were discounted, people would need greater rewards to make them indifferent to an immediate reward). That was not found. In general, neither predicted nor reported similarity correlated significantly with either monetary discount rates or non-monetary discount rates (see Tables 3c and 3d).¹⁴

Discussion

The failure to find any correlation between future similarity and discount rates may have several explanations. First, it might indicate that people (implicitly) endorse the simple view of personal identity – that they believe that they *are* the same person through time, and that changes in personality (or “connectedness”) is just not one of the things that should affect their valuation of future rewards. Second, even if people believe that diminishing connectedness justifies discounting, they may fail to incorporate this consideration when they are assigning numbers to the matching tasks.¹⁵ The matching tasks may be so abstract that the responses reflect idiosyncratic algorithms for “solving the task” as much as they reflect anything about time preference per se.¹⁶ Of course, to the extent that the matching tasks are not measuring time preference, one would not expect the responses to correlate with similarity judgments, even if similarity was a proxy for connectedness and projected connectedness was, in fact, an important determinant of concern for future welfare.

Second, although respondents were instructed to base their similarity judgments on features that Parfit views as central components of connectedness (“personality, temperament, likes and dislikes, beliefs, values, ambitions, goals, ideals, etc.”), as least some of the things that fall under these broad terms may have little to do with how much one ought to care about their future self. For example, suppose someone predicts that their passion for *Scrabble* will wither with age. They will, accordingly,

¹⁴ In fact, the only statistically significant correlations are *positive*. Among respondents fifty and older, there was a significant positive correlation between the reported similarity of past selves, and the monetary discount rate (see bolded cells in “sim -40” column of Appendix 3a). There was also a significant correlation between the perceived similarity of distant past selves and the non-monetary discount rate for a 10 year time horizon (see bolded cell in “sim -40” column of Appendix 3b). In other words, older respondents who viewed themselves as being very similar to their more youthful selves had higher implicit discount rates. I have no explanation for these results. Perhaps they require none, as only 5 of 109 correlations are significant, and this is almost exactly what would be expected by chance.

¹⁵ This explanation predicts that if people were reminded about the concept of personal identity immediately before making intertemporal choices or rendering intertemporal judgments, those who projected a greater reduction in similarity would, indeed, display higher discount rates. Although this remains to be tested, the similarity judgments did, in fact, precede the matching tasks, so one might conclude that such a reminder *was*, in fact, provided in this study.

¹⁶ For example, for the more distant time horizons in the monetary matching task, the median and modal response for \$100 tomorrow = \$ ___ in X years is, simply, \$100X. Moreover, the matching task is so difficult or unengaging that fewer than half of the respondents in the sample generated answers that could be considered “reasonable.” Specifically, fewer than half generated a set of numbers that were strictly monotonically ascending in X. (Restricting the sample to these respondents did not alter the qualitative conclusions.)

be somewhat dissimilar with respect to "likes and dislikes" (one component of connectedness). Nevertheless, they may not believe that this particular change has *any* significance for how much they should care about future monetary rewards or future pleasurable work experiences. Furthermore, their similarity judgments might well have been heavily influenced by factors (such as anticipated changes in physical characteristics) that are relatively unimportant determinants of how "connected" one feels to a future self.

4. Final remarks

Economic analyses of intertemporal choice typically assume positive time preference and focus on the implications of that assumption. The normative question about how much one *ought* to care about their future welfare is usually avoided.¹⁷

Philosophical analyses of intertemporal choice, by contrast, have sought to establish a normative basis for time preference – to articulate reasons why future utility should or should not be counted the same. Conclusions often rest on the view of personal identity that is adopted. Those who regard a person as a single irreducible entity that persists across time generally believe that any degree of time preference is irrational. Others, such as Parfit, who deny the existence of an enduring irreducible entity may view future selves as partially distinct individuals, and, correspondingly, may believe that some degree of time preference is rational (though very little is said about how much discounting is allowed).

It should, however, be noted that while diminishing connectedness of future selves may *permit* one to weight future utility less, it does not *require* one to do so. First, one might reasonably regard descendent future selves as children or close friends – others whose welfare is important enough to justify the sacrifice of one's "own" utility (see Whiting 1986). Second, though diminishing connectedness may make it *rationally* permissible to discount future utility, it may render it *morally* impermissible. As future selves gain the status of other people, rational mandates give way to ethical obligations. Regarding his decision to smoke, Parfit comments:

If I am not acting irrationally there is surely an objection to what I am doing. For the sake of smaller benefits now, I am bringing upon myself in old age greater burdens. This may not be irrational. But it is surely open to criticism ... By acting against my interest in my old age I am doing what, impartially considered, has worse effects, or reduces the sum of benefits minus burdens. We should perhaps begin to claim that this is morally wrong, even when it will be me who will bear the increased burdens. (Parfit, 1973, p. 240-241)

¹⁷ Sometimes, however, the issue does make its way to the surface. In their economic analysis of addiction, Becker and Murphy (1988, p.684) comment: "*Although fully myopic behavior is formally consistent with our definition of rational behavior, should someone who entirely or largely neglects future consequences of his actions be called rational?*"

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FIGURE 1. Self assessed similarity of past and future selves as judged by different age groups.

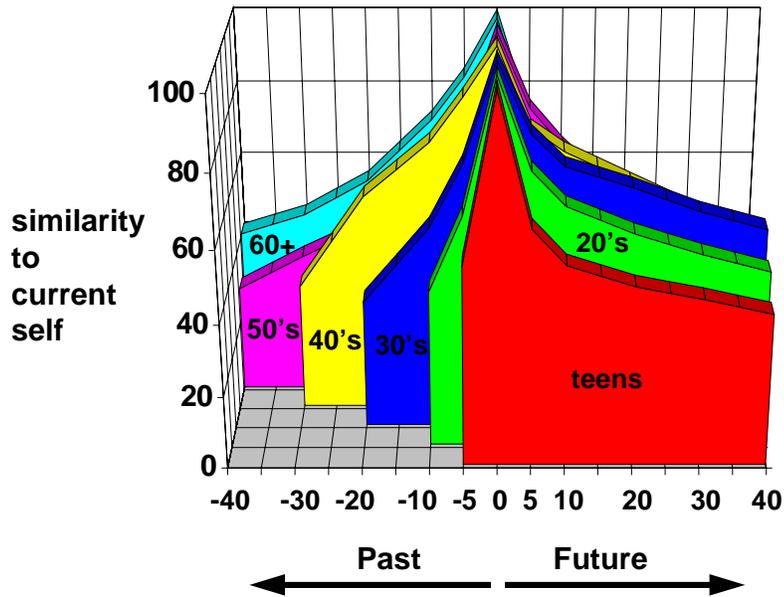


Table 1. Mean self-assessed similarity of current self to past selves and future selves

<u>Age group</u>	<i>(reported similarity)</i>					<i>(predicted similarity)</i>					
	40 years ago	30 years ago	20 years ago	10 years ago	5 years ago	NOW	5 years ahead	10 years ahead	20 years ahead	30 years ahead	40 years ahead
teens					55	100	65	55	49	46	42
twenties				43	64	100	75	66	59	53	49
thirties			35	56	73	100	81	72	67	60	55
forties		35	60	75	87	100	78	72	64	55	46
fifties	29	38	47	61	74	100	80	69	53	38	
sixty+	40	46	56	73	84	100	72	57	49		
overall	33	39	48	59	72	100	76	66	58	51	49
Kruskall – Wallis sig lev	0.13	0.31	0.00	0.00	0.00	--	0.05	0.01	0.03	0.01	0.25

Table 2. Difference between predicted future similarity and reported past similarity of older matched age groups

Predicting group	length of interval				
	5 years	10 years	20 years	30 years	40 years
teens	3.4	8.2	8.3	-1.1	14.6
twenties	5.0	10.5	-0.2	15.9	12.7
thirties	-0.8	-1.7	22.2	16.7	18.4
forties	-6.2	6.5	3.0	28.4	17.0
fifties	2.5	-7.0	13.8	13.7	
sixty+	-2.1	-13.8			
overall	0.4	2.4	8.9	14.7	14.9

Table 3a. Median number of future dollars judged to be equally attractive to \$100 tomorrow (implicit discount rates in parentheses)

	1 yr.	5yrs	10yrs	20yrs	30yrs	40yrs
teens	\$150 (50%)	\$500 (38%)	\$800 (23%)	\$1,000 (12%)	\$1,800 (10%)	\$1,800 (7%)
twenties	\$180 (50%)	\$500 (38%)	\$900 (25%)	\$2,000 (16%)	\$3,000 (12%)	\$4,500 (10%)
thirties	\$160 (60%)	\$500 (38%)	\$1,000 (26%)	\$1,500 (15%)	\$2,000 (11%)	\$3,500 (9%)
forties	\$150 (50%)	\$500 (38%)	\$1,000 (26%)	\$2,000 (16%)	\$2,500 (11%)	\$3,500 (9%)
fifties	\$150 (50%)	\$400 (32%)	\$1,000 (26%)	\$2,000 (16%)	\$7,500 (15%)	
sixty+	\$163 (63%)	\$450 (35%)	\$900 (25%)	\$2,000 (16%)		
overall	\$150 (50%)	\$500 (38%)	\$1,000 (26%)	\$2,000 (16%)	\$3,000 (12%)	\$3,750 (9%)

Table 3b. Median number of future extra "good days" judged equally attractive to 20 extra good days this year (implicit discount rates in parentheses)

	1 yr.	5yrs	10yrs	20yrs	30yrs
teens	25 (25%)	35 (12%)	40 (7%)	60 (6%)	85 (5%)
twenties	21 (5%)	38 (14%)	50 (10%)	84 (7%)	100 (5%)
thirties	20 (0%)	33 (11%)	50 (10%)	50 (5%)	55 (3%)
forties	21 (5%)	50 (20%)	100 (17%)	183 (12%)	
fifties	21 (5%)	80 (32%)	120 (20%)		
sixty+	25 (25%)				
overall	21 (5%)	40 (15%)	56 (11%)	70 (6%)	80 (5%)

Table 3c. Rank correlations between similarity judgments and [1 / 5 / 10 / 20 / 30, and 40] year monetary discount rates

<i>years until receipt of \$</i>	<i>(reported similarity)</i>					<i>NOW</i>	<i>(predicted similarity)</i>				
	<i>40 years ago</i>	<i>30 years ago</i>	<i>20 years ago</i>	<i>10 years ago</i>	<i>5 years ago</i>		<i>5 years ahead</i>	<i>10 years ahead</i>	<i>20 years ahead</i>	<i>30 years ahead</i>	<i>40 years ahead</i>
1	0.13	0.03	-0.01	-0.05	-0.04	--	0.00	-0.02	-0.07	-0.05	-0.01
5	0.37	0.23	0.00	0.01	0.07	--	0.09	0.07	0.04	0.01	0.07
10	0.41	0.26	0.03	0.04	0.09	--	0.09	0.08	0.04	0.00	-0.00
20	0.49	0.26	0.11	0.10	0.13	--	0.08	0.07	0.05	0.02	-0.00
30	0.55	0.24	0.08	0.08	0.12	--	0.07	0.03	-0.00	-0.02	-0.04
40		-0.01	-0.08	-0.03	0.04	--	0.05	0.00	-0.04	-0.02	-0.04

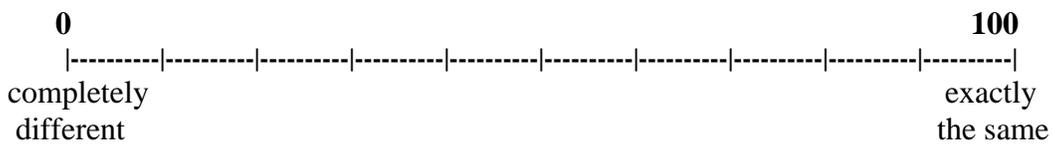
Table 3d. Rank correlations between similarity judgments and [1 / 5 / 10 / 20, and 30] year "good days" discount rates

<i>years until receipt of good days</i>	<i>(reported similarity)</i>					<i>NOW</i>	<i>(predicted similarity)</i>				
	<i>40 years ago</i>	<i>30 years ago</i>	<i>20 years ago</i>	<i>10 years ago</i>	<i>5 years ago</i>		<i>5 years ahead</i>	<i>10 years ahead</i>	<i>20 years ahead</i>	<i>30 years ahead</i>	<i>40 years ahead</i>
1	0.12	-0.01	0.10	-0.08	0.02	--	-0.11	-0.13	-0.10	-0.08	-0.02
5	0.24	0.01	0.02	0.03	0.05	--	0.08	0.04	-0.05	-0.08	-0.07
10	0.44	0.02	0.12	0.16	0.15	--	0.10	0.07	-0.01	-0.04	-0.07
20		-0.31	0.00	0.12	0.14	--	0.03	0.01	-0.02	-0.03	-0.06
30			-0.13	0.04	0.08	--	0.04	0.04	0.03	0.03	-0.02

APPENDIX 1

Below, I would like you to rate how similar you expect to be in the future compared to how you are now, and how similar you were in the past compared to how you are now. By similar, I mean characteristics such as personality, temperament, likes and dislikes, beliefs, values, ambitions, goals, ideals, etc.

For each of the questions below, rate similarity by using a number from 0 to 100, where 0 means you [were / will be] *completely different* and 100 means you [were / will be] *exactly the same*. You may use decimals if you wish.



Similarity

Rating

- | | |
|--|-------|
| Compared to now, how similar will you be 5 years from now? | _____ |
| Compared to now, how similar will you be 10 years from now? | _____ |
| Compared to now, how similar will you be 20 years from now? | _____ |
| Compared to now, how similar will you be 30 years from now? | _____ |
| Compared to now, how similar will you be 40 years from now? | _____ |
| | |
| Compared to now, how similar were you 5 years ago? | _____ |
| Compared to now, how similar were you 10 years ago? | _____ |
| Compared to now, how similar were you 20 years ago? (If applicable) | _____ |
| Compared to now, how similar were you 30 years ago? (If applicable) | _____ |
| Compared to now, how similar were you 40 years ago? (If applicable) | _____ |

APPENDIX 2

$$(1) \text{ "k" year perspective effect} = \sum_{x=13}^{x=83} \left[\frac{\sum sim_x(x+k, x)}{i} - \frac{\sum sim_{x+k}(x, x+k)}{j} \right],$$

where:

x= age

k= length of interval being considered

i= number of respondents of age x who made predictions

j= number of respondents of age x+k who made reports

$sim_x(x+k, x)$ = similarity of age x+k to age x, as judged from the perspective of age x

$sim_{x+k}(x, x+k)$ = similarity of age x to age x+k as judged from the perspective of age x+k

APPENDIX 3a

On each of the seven lines below, circle the option that you would prefer

- 1) \$100 tomorrow or \$500 in one year
- 2) \$100 tomorrow or \$25 in one year
- 3) \$100 tomorrow or \$250 in one year
- 4) \$100 tomorrow or \$50 in one year
- 5) \$100 tomorrow or \$125 in one year
- 6) \$100 tomorrow or \$75 in one year
- 7) \$100 tomorrow or \$100 in one year

Now, for each of the lines below, fill in the blank so that you would be indifferent between the immediate and the delayed payment -- i.e., so that you would have a very hard time deciding between them.

I would be indifferent between \$100 tomorrow and \$_____ in one year.

I would be indifferent between \$100 tomorrow and \$_____ in 5 years.

I would be indifferent between \$100 tomorrow and \$_____ in 10 years.

I would be indifferent between \$100 tomorrow and \$_____ in 20 years.

I would be indifferent between \$100 tomorrow and \$_____ in 30 years.

I would be indifferent between \$100 tomorrow and \$_____ in 40 years.

APPENDIX 3b

Imagine that you will have the same job for the rest of your life. At this job, you get to spend about half of the days doing something that you love (good days). The other half of the days, you must spend doing something that you hate (bad days).

Suppose that you were given a chance to choose between having some extra good days (and, thus, fewer bad days) this year, or in a future year. For each of the six lines below, circle the option that you would prefer.

- 1) 20 extra good days this year or 100 extra good days next year
- 2) 20 extra good days this year or 5 extra good day next year
- 3) 20 extra good days this year or 50 extra good days next year
- 4) 20 extra good days this year or 10 extra good days next year
- 5) 20 extra good days this year or 25 extra good days next year
- 6) 20 extra good days this year or 15 extra good days next year
- 7) 20 extra good days this year or 20 extra good days next year

Now, complete the blanks below so that you would be indifferent.

I would be indifferent between 20 extra good days this year and _____ extra good days **next year**.

I would be indifferent between 20 extra good days this year and _____ extra good days in **5 years**.

I would be indifferent between 20 extra good days this year and _____ extra good days in **10 years**.

I would be indifferent between 20 extra good days this year and _____ extra good days in **20 years**.

I would be indifferent between 20 extra good days this year and _____ extra good days in **30 years**.