

Identity, Personal Continuity, and Psychological Connectedness across Time and over  
Transformation

Oleg Urminsky<sup>i</sup>, University of Chicago

University of Chicago, Booth School of Business

Daniel Bartels, University of Chicago

University of Chicago, Booth School of Business

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**ABSTRACT:**

How do people think about whether the person they'll be in the future is substantially the same person they'll be today or a substantially different, and how does this affect consumer decisions and behavior? In this chapter, we discuss several perspectives about which changes over time matter for these judgments and downstream behaviors, including the identity verification principle (Reed et al. 2012) — people's willful change in the direction of an identity that they hope to fulfill. Our read of the literature on the self-concept suggests that what defines a person (to themselves) is multi-faceted and in almost constant flux, but that understanding how personal changes relate to one's own perceptions of personal continuity, including understanding the distinction between changes that are consistent or inconsistent with people's expectations for their own development, can help us to understand people's subjective sense of self and the decisions and behaviors that follow from it.

A person's sense of their own identity (i.e., the person's self-concept) plays a central role in how the person thinks and acts. Research on identity, particularly in social psychology and consumer behavior, often views a person's self-concept as a set of multiple (social) identities, sometimes characterized in terms of the category labels that the person believes apply to themselves, like "male" or "high school athlete" (Markus and Wurf 1987). These multiple categories provide a basis for defining oneself, often in terms of the features that are inherited from membership in these categories.

Research based on this perspective had largely focused on the role of multiple identities at a given time in a given situation. However, the relevance of identities with differing associations may shift over time, and people may then react to or manage conflicts between identities they subscribe to or conflicts between how they see themselves and the person they would like to be (Reed and Forehand 2016; Urminsky et al. 2014). Philosophers distinguish between theories of synchronic identity (the identity that something has at a point in time) and theories of diachronic identity (whether something at a later time, like a future person, is identical to something existing at an earlier time).

We survey multiple perspectives on how people think about their diachronic identity, over time and across periods of identity-relevant change. We focus on how people think about their own *personal continuity* over time — how much they view their future self to be substantially the same person they are now — and some implications for consumer decisions. This topic is related to the verification principle (Reed et al. 2012), the tendency for people to willfully change in the direction of an identity that they hope to fulfill, but also extends to beliefs about undesired, or even disruptive, future change.

## THEORIES OF IDENTITY OVER TIME

What does it mean to say that a person is substantially different now than they used to be, or to say that one's identity has changed, or is expected to change, over time? One starting point is a philosophical literature that debates normative rationales for caring about one's future self. Whether an entity at two points in time is the same—whether it persists or ceases to exist is a question of *numerical identity* (e.g., Starmans and Bloom 2018a), and different criteria, (e.g., physical, biological, social, psychological, causal or informational relationships) can give rise to radically different definitions of numerical identity (Shoemaker and Tobia 2018, Martin and Barresi 2003).

Regarding the *descriptive* question of how lay people think about identity over time, we think that most people do not typically consider only numerical identity. For example, consider how a person thinks of an elderly relative who has lost substantial cognitive functioning but still retains some of their unique characteristics (e.g., personality or memories), at least some of the time. The person may simultaneously say “I lost my grandmother a long time ago”, “I visited my grandmother today” and “She was more like my grandmother today,” without feeling like they are being inconsistent. Likewise, a person may say of their future self, “that would no longer be me,” when thinking about different kinds of anticipated changes.

It may be useful to think about identity as a subjective psychological construct, studied as it occurs in people's judgments. Starmans and Bloom (2018a) distinguish numerical identity from what they term *qualitative identity*, which they characterize as the similarity (defined as the degree of feature overlap) between the self at two points in time. However, feature overlap fails to explain even simpler similarity judgments (Medin, Goldstone, and Gentner 1993), and so is

probably inadequate to characterize people's more nuanced views of their own identity over time. In fact, recent research has found that feature overlap is not always the best predictor of people's judgments of the continuity of people (De Freitas et al. 2018; Chen, Urminsky, and Bartels 2016).

We propose that understanding how people think about change over time and their future selves involves a third way of thinking about identity, distinct from numerical or qualitative identity, which we will refer to as *personal continuity*. Personal continuity is neither an all-or-nothing numerical identity judgment about persistence or a simple accounting of subjective similarity between a person at two points in time. Instead, beliefs about personal continuity involve continuous judgments about how much the characteristics that define a person persist over time. In this context, beliefs about self-continuity are subjective judgments about how much of what currently defines one's own self will persist over time in the future self.

#### THE BASIS OF PERSONAL-CONTINUITY AND SELF-CONTINUITY

A descriptive theory of how people think about the continuity of themselves and others should allow for some changes to not be seen as disruptive to continuity. After all, an 80 year old and the 10 year old she once was differ in many physical, biological, social, and psychological features, but she may think of her past and future selves as the same person throughout her life. Conversely, people often think of their future selves as distinct and not fully the same as the current self, even over time periods that lack drastic changes in physical, biological, social, psychological, and informational features. This is what distinguishes personal continuity from similarity-based qualitative identity.

The category membership view of identity is often characterized in terms of “multiple identities” (see, e.g., Markus and Wurf 1987), such that a person’s identity is jointly defined by those categories that the person sees as applying to the self and that provide descriptive content about people in that category. The descriptive content specifies “what that ‘kind’ of person looks like, thinks, feels, and does,” and may contain both descriptive norms and injunctive norms—ideas about how these kinds of people typically act or should act; Reed et al. 2012, p. 312). For example, Paul, a male high school athlete who lives in an odd-numbered house would see being male and being an athlete as parts of his identity, and would therefore be influenced by the descriptive content he sees as contained in the categories “male” and “athlete”. However, Paul is unlikely to see “odd-numbered house resident” as an aspect of his identity, because that category lacks descriptive content. Likewise, he is unlikely to see “college student” as an aspect of his identity, because that category does not yet apply to him.

We can think of judgments of a person’s continuity across time and over transformations as a function of the continuity of the multiple identity categories. A past change (or future anticipated change) to one or more underlying identity categories (i.e., a loss of category membership) would therefore change people’s identity (Akerlof and Kranton 2010; Hogg, Terry, and White 1995) and disrupt their sense of self-continuity, if they see the categories as applying to themselves and having descriptive content. As a result, a change for one person (leaving high school) may be experienced as disrupting self-continuity, but not for another person, who did not see the category (being a high school student) as containing descriptive content or who did not see the category as applying to themselves (e.g., saw themselves as a student rather than a high school student).

A different set of views defines personal continuity as the preservation of specific types of features of a person. However, there is considerable disagreement about specifically which psychological aspects of the person matter most. One line of thought, stretching back to Locke's views of awareness of past actions as necessary for remaining accountable for those actions (see Shoemaker and Tobia 2018) treats memories as especially important for personal continuity. If people are defined by what they remember, loss of memories (e.g., as in Alzheimers' patients) would represent a loss of personal continuity. Consistent with this view, people often judge greater personal continuity over changes when autobiographical memories are preserved (Blok, Newman, and Rips 2005; Nichols and Bruno 2010).

However, changes over time in other psychological aspects also seem potentially relevant for assessing personal continuity. Past or anticipated changes in one's personality traits and preferences may be seen as relevant to personal continuity (Haslam, Bastian, and Bissett 2004; Gelman, Heyman, and Legare 2007). Recent research has identified moral characteristics as the strongest factor in judgments of other people's continuity (Heiphetz, Strohminger, and Young 2017; Strohminger and Nichols 2014, 2015). For example, Strohminger and Nichols (2015) document that relatives see a greater loss of personal continuity in a loved one who is suffering from forms of dementia associated with changes in moral behaviors, more so than forms of dementia associated with other cognitive losses (e.g., memories). Such judgments are personal and subjective, and depend on one's own personal moral beliefs characteristics (De Freitas et al. 2018; Newman and Knobe forthcoming).

For judgments of one's own self-continuity, it is less clear that any one psychological aspect of identity matters most. Chen et al. (2016) measured how disruptive to self-continuity people perceived different kinds of changes to be. Although changes differed in their disruption,

no specific category of change emerged as consistently more disruptive. Instead, changes in “causally central” aspects (those seen as causally related to more other aspects) were seen as more disruptive to self-continuity than changes to “causally peripheral” aspects (see Chen 2019, in this volume, for a more detailed discussion). This distinction is conceptually related to, and may help explain, the notion that some aspects of identity are subjectively more important to a given person than others (Markus and Wurf 1987; Reed 2004; Reed et al. 2012).

What these diverse views have in common is the notion that self-continuity represents a middle ground between numerical identity and qualitative (similarity-overlap) identity (Chen and Urminsky 2019). In this view, people have ideas about what defines their own self-continuity and the personal continuity of others, and correspondingly, what changes would disrupt that continuity. While a change in a moral value may be the most disruptive to self-continuity for one person, a change in life goals or memories may be most disruptive for another person. Thus, if Paul the high-school athlete sees himself as defined by being an athlete, graduating high school will not disrupt his perceived self-continuity as long as he remains an athlete. However, for a teammate, who defines himself primarily as a high-school student, dropping athletics will not disrupt his self-continuity as much as graduating high school does.

This approach to identity may seem circular – what disrupts a person’s sense of their continuity is changes in whatever that person thinks defines himself or herself and what people think defines them is whatever they think must remain unchanged for their identity to persist. However, this bi-directional relationship follows from the assumption that when people think of change as transforming them into another person—when they say things like “I wouldn’t be me anymore”—they are not (usually) referring to numerical identity, but are, instead, expressing that

they wouldn't expect such a large change in that given feature and that the resulting future person would be different enough to not count as fully (qualitatively) "myself".

This approach to self-continuity draws on the philosopher Derek Parfit's notion of *connectedness to the future self* as the number and strength of psychological connections (having to do with the preservation of your personality, temperament, major likes and dislikes, beliefs, values, ambitions, life goals, and ideals) held between their present and future self (Parfit 1984, p. 204-209). He maintains that a reducing these connections can warrant a reduction in concern for one's future self (Parfit, 1971). In this view, the less psychological overlap there is between the present and future selves, the more a person should normatively favor the interests of the current self over those of the future self.

Although Parfit's normative arguments are controversial (Dancy 1997), his approach is useful for descriptive questions about people's assessments of self-continuity. Parfit's notion of connectedness to the future self does not assume that the future self must be seen as another person (i.e., as lacking numerical identity). Instead, the future self is a partially overlapping continuation of the current self, which may be perceived as almost identical to the current self, or as quite different, or somewhere in-between. Importantly, Parfit's notion leaves open which psychological aspects provide the basis for psychological connections for a given person.

We suggest that a person's general sense of self-continuity over time depends on subjective perceptions of psychological connections over time that may differ across people. We would further distinguish between "connectedness" and "continuity". Parfit (and other philosophers) contend that *connectedness* is about the preservation of important psychological

features. People's conceptions of *continuity* of identity are more nuanced than just the constancy or change in those features, and may persist despite change.

Specifically, changes that are congruent with people's theories of how their features are causally related to each other (Chen et al. 2016) or how they'll develop over time (Molouki and Bartels 2017) do not undermine people's perceptions of self-continuity. If people think that a given feature *should be* invariant over time, changes to that feature would reduce both psychological connectedness and continuity with the future self. However, in other situations (e.g., when change is expected) the change would still impact connectedness (as defined in the prior literature), but would not necessarily affect judgments of self-continuity.

Since judging self-continuity presumes active consideration of the present and future selves, the degree of continuity is empirically and conceptually distinct from the vividness of the future self, consideration of future consequences, or active planning for the future (Frederick et al. 2009, Spiller 2011). While self-continuity is also conceptually distinct from the valence of potential changes, valence is often relevant to how people assess self-continuity, as we discuss next.

## SELF-CONTINUITY AND VALENCE OF CHANGE

People's beliefs about what makes them who they are now and who they want to be in the future can influence their behavior. The identity verification principle holds that people use feedback from the environment to determine how well they are living up to their desired identity (Reed et al. 2012). People's perceptions of their abilities affect their goals and how they strive toward those goals (Markus and Nurius 1986; Markus and Wurf 1987), which can affect

preferences and consumption (LeBoeuf, Shafir, and Bayuk 2010; Reed 2004; Reed et al. 2012). Thus, failure to progress towards a desired identity can undermine perceptions of one's own identity, contrary to theories of qualitative identity that are based on simple feature overlap.

Consistent with the identity verification view, positive changes reflect common aspirations for self-improvement (Kanten and Teigen 2008). In fact, negative changes are seen as more disruptive to perceptions of others' personal continuity than are positive changes (Newman, Bloom, and Knobe 2014; Newman, De Freitas, and Knobe 2015; Tobia 2015). For example, people judge that a person who changes from being very cruel to being very kind has revealed her "true self"—that these positive qualities were lurking within and that the person has undergone some sort of maturational unfolding (Newman et al. 2014; Tobia 2015) to reveal who she really is.

However, people also generally expect improvement over time in themselves and others (Busseri, Choma, and Sadava 2009; Haslam et al. 2007; Wilson and Ross 2001), often neglecting the possibility of specifically negative changes in themselves in the future (Molouki, Bartels, and Urminsky 2016). This suggests that the reason improvements don't undermine perceived continuity may be that improvements are consistent with people's general beliefs about human development (Shoemaker and Tobia 2018).

Recent work has evaluated how differences across people in their specific expectations about individual trajectories of change shape perceived continuity. Molouki and Bartels (2017) orthogonally manipulated the valence of change and expectations of change (in some studies) and valence of change and desire for change (in others) and examined which changes undermined the sense of self-continuity. While improvements were generally assessed as less

disruptive to self-continuity than were declines, it was specifically the changes that were congruent with people's expectations and desires that led to less perceived disruption of self-continuity. These patterns suggest that continuity of the self-concept is about both the person who you desire to become (consistent with the identity verification principle) and the person you expect to become.

### SELF-CONTINUITY AND CONCERN FOR THE FUTURE SELF

Static, synchronic, identity influences choices by either providing a template for behavior or by motivations arising from the desire to manage and reconcile diverse aspects of the self (Reed et al. 2012). The dynamic nature of a potentially changing identity over time can interact with decision-making in distinct ways, particularly in decisions presenting tradeoffs between the present and future.

Parfit proposed that when anticipated connectedness to the future self is low (i.e., when people perceive the future self as very different from the present self), people should rationally care less about the welfare of their future self. Beyond the merits of this normative claim, Parfit's theory raises an empirical question as to whether anticipated self-continuity shapes people's degree of concern for their own future self, affecting how much they are willing to sacrifice resources in the present for greater benefits to be enjoyed by the future self (Frederick et al. 2002; Frederick 2006).

Recent research has tested whether having higher anticipated self-continuity (operationalized as the perceived connectedness between the current self and the future self at a specific point in time) results in more far-sighted choices. Bartels and Urminsky (2011) had

graduating college seniors read about post-graduation life changes, either as having a major effect on identity (“low connectedness”) or as not impacting people’s fixed and stable identity (“high connectedness”). Participants then made a series of real lottery choices between winning a \$120 gift certificate in one week (when the drawing would be held) and winning gift certificates ranging from \$120 to \$240 to be received in a year. Participants in the low connectedness condition (for whom impending graduation was described in terms of a loss of self-continuity) were more likely to choose the more immediate lottery rewards, compared to participants in the high connectedness condition (who had read that about self-continuity post-graduation).

The relationship between more anticipated self-continuity (manipulated or measured) and more far-sighted intertemporal choices has been found in other studies, using both hypothetical and incentive-compatible tradeoffs, and controlling for potential confounds (Bartels, Kvaran, and Nichols 2013; Bartels and Urminsky 2011, 2015; Ersner-Hershfield et al. 2009; but not in Frederick 2003). These results suggest that anticipating changes in the traits that define one’s own self-concept (and therefore anticipating low self-continuity) yields less motivation to provide resources for one’s own future self than when people anticipate higher self-continuity.

Differences in self-continuity over time may also help explain a central puzzle in people’s time discounting preferences, the inconsistency of discount rates. People often make seemingly inconsistent choices when trading off the present and future versus when making the same tradeoffs between compensation and delay involving two future outcomes. For example, people are more likely to choose a present over a future outcome (\$120 now over \$180 in 6 months), than when choosing between the same two outcomes with the same delay in the future (\$120 in 6 months vs. \$180 in one year; Green, Fristoe, and Myerson 1994).

These seemingly inconsistent preferences (see Urminsky and Zauberma 2016 for a review) may be partially explained by differences in people's perceived connectedness to their future self over different time intervals. The non-linear pattern of hyperbolic temporal discounting tracks closely with a non-linear pattern of reduction in connectedness over time, with greater decreases in connectedness between the present and future than between two equivalent future times (Bartels and Rips 2010). Thus, the seeming "present-biased" inconsistency in people's immediate vs. delayed intertemporal tradeoffs may be partially attributable to judgments of connectedness between the present and future self typically being lower than between two future selves separated by the same delay.

Perceiving a high degree of connectedness with the future self can also affect decisions that involve the welfare of others. High connectedness has been associated with people foregoing immediately rewarding alternatives that are ethically risky in the long-term (Hershfield, Cohen, and Thompson 2004). Conversely, reduced connectedness to the future self (which can reduce generosity to that future self) can increase generosity to relevant others by reducing the counter-vailing influence of self-interest. For example, Bartels et al. (2013) find that the difference in perceived connectedness to their future self vs. to other people in the present predicted how they divided an uneven sum of money between the future self and the other person.

This allocation paradigm is borrowed from the literature on "social discounting" (Rachlin and Jones 2008), which finds that people's generosity to others declines as social distance increases. Temporal discounting and social discounting both seem to follow a hyperboloid function and both emerge in children around four years of age (Garon, Johnson, and Steeves 2011). These parallels have led some behavioral scientists to postulate people treat the future self as if it lies on a continuum between the present self and other people. Consistent with this

view, studies have found correspondences in neural activation when thinking of the future self and other people, which correlate with discounting (Ersner-Hershfield, Wimmer, and Knutson 2009; Mitchell et al. 2011).

However, it is important not to take this “future self as a different person” analogy too literally. People’s own degree of anticipated personal continuity is likely to be obvious and important enough to them (particularly when making explicit intertemporal tradeoffs) that they will not need to recruit social cognition reasoning. Even after major life changes, people are likely to share more and stronger connections with their own future selves than they will ever share with most other people.

Molouki and Bartels (2019) set out to test whether people treat future selves like they treat others, by measuring the distinct influence of four relevant factors (need, deservingness, liking, and similarity) on monetary allocation decisions that were both interpersonal (current self vs. others) and intrapersonal (current vs. future self). People did treat the future self like they treat other people, in that the relative influence of these factors is similar for both types of targets. However, there was also a very large difference in degree: monetary allocations to the future self were consistently higher than allocations to others. Although allocations to the future self and to others are evaluated using similar criteria, important differences in scope remain that are not captured by the analogy between social discounting and intertemporal discounting.

#### WHAT KINDS OF DECISIONS ARE INFLUENCED BY SELF-CONTINUITY?

The results discussed thus far are suggestive that anticipated self-continuity contributes to the motivation to provide for the future self. However, people’s allocation between present and

future self (e.g., time discounting) is largely of interest as a proxy for choices and behaviors in which short-term benefits compete with long-term benefits more generally. In this view, making seemingly short-sighted choices, can be thought of as impatiently favoring a smaller-sooner reward over a larger-but-later benefit (Ainslie 1975). Supporting this view, people who are impatient in time discounting tasks do, on average, show more evidence of various short-sighted behaviors and the resulting outcomes, particularly in their finances, but also related to physical health (reviewed in Urminsky and Zauberger 2016; see Pezzuto and Urminsky 2018 for a large-scale integrative replication).

This suggests that anticipated self-continuity may help explain other decisions and behaviors that pit present interests against future benefits. Consistent with this proposition, people who reported higher anticipated self-continuity chose lower levels of spending when opportunity costs were salient (Bartels and Urminsky 2015), were more likely to keep money for themselves by donating less to charity (Bartels et al. 2013), and reported more accumulated savings (Ersner-Hershfield et al. 2009; Joshi and Fast 2013).

Evidence that anticipated self-continuity and seeming far-sightedness are related have been found in other domains as well. People who anticipate more future self-continuity may procrastinate less on their academic work (Blouin-Hudon and Pychyl 2015) and earn higher grades (Adelman et al. 2017). Perceptions of greater continuity also are correlated with healthy behaviors (e.g., exercising, Rutchick et al. 2018). In ethical domains, greater perceived self-continuity relates to greater acceptance of punishment for past unethical behavior (Mott 2018; Tierney et al. 2014), more ethical choices in the present, and a greater likelihood of keeping future commitments (Hershfield et al. 2012).

These results point to the potential for a wide-ranging influence of anticipated self-continuity on decision-making. However, relatively little research has been done to identify reliable moderators and boundary conditions. One exception is whether people identify the long-term tradeoffs in their decisions. In the context of consumer spending decisions, Bartels and Urminsky (2015) find that consideration of future consequences (e.g., considering the opportunity cost of current spending) is unrelated to anticipated self-continuity, but may be a necessary condition for connectedness to the future self to influence decisions.

In one such study, participants chose between cheaper and more expensive products in multiple product categories. When tradeoffs were cued (by having participants first evaluate the relative importance of product categories before making their choices), experimentally bolstering self-continuity (via connectedness to the future self) promoted consumer savings, reducing choices of expensive versions in the less desirable product categories. However, when tradeoffs were not cued before choices, there was no effect of manipulating self-continuity on purchase preferences. Bolstering connectedness can indeed reduce spending, but perhaps only for less desirable purchase categories and only when people actively consider the tradeoffs involved. These findings highlight the need for more research that tests generalizability and identifies when it is that self-continuity does or does not motivate far-sighted decisions.

#### OPEN QUESTIONS ABOUT SELF-CONTINUITY

How is people's subjective sense of identity continuity formed, and how do differences across individuals in perceptions of self-continuity arise? Bartels and Rips (2010) identify specific future events related to important aspects of identity (e.g., a religious conversion), for

which anticipating change can reduce perceived self-continuity. Recent research on what makes experiences transformative (Paul 2014) and on the causal structure of identity (Chen et al. 2016) may point to useful approaches to more generally answering this question. However, measurement over longer periods of time or spanning transformative life experiences, which can capture lasting changes to identity as they occur, may be most informative.

Does identity continuity guide behavior even in the absence of intertemporal tradeoffs? If people seek to achieve (per the verification principle) and maintain desired identities, people may be motivated to behave in accordance with the norms of these identities in order to preserve self-continuity. Consistent with this view, Chen and Urminsky (2019) find that holders of a political party or national identity for whom that identity is more central (i.e., is implicated in more causal relationships with other aspects of the self) are more likely to vote for their party's candidate (despite their own misgivings about the candidate) or to support a nationalist policy (Brexit).

Conversely, there may be circumstances in which self-continuity has negative associations or is undesired, motivating people to behave in ways that either disrupt self-continuity, or at least signal a change in prominent aspects of the self-concept. For example, a person who has defined him or herself by undesired self-destructive behaviors (e.g., as a substance abuser), or by identities closely associated with those behaviors (e.g., as a musician who plays in clubs where drug and alcohol use are rampant), may see a disruption to continuity as a welcome "clean-break" that would facilitate positive change. Yang and Urminsky (2015) find a lower likelihood of behaviors symbolically signaling self-continuity when people's past outcomes lead to predicting future negative outcomes. Such "fresh-start" behaviors tend to be clustered at times that signal the potential for change in identity (Dai, Milkman, and Riis 2014,

2015). The possibility that people are more open to engaging in behaviors associated with discontinuity when change is desirable needs more research.

While people may characterize themselves as a single entity, psychological approaches that have attempted to build theories of singular identity seem to fall short in explaining people's intuitions and self-concept-related behaviors. Instead, research on the self-concept suggests a broader view, where what defines a person is multi-faceted and in flux. Understanding how people anticipate changes in the self-concept, which changes they desire, and their resulting sense of self-continuity or disruption, can yield key insights into people's sense of what makes them who they are and the decisions that they make.

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<sup>i 1</sup>Address correspondence to Oleg Urminsky, University of Chicago Booth School of Business, 5807 S. Woodlawn Ave., Chicago IL 60637, oleg.urminsky@chicagobooth.edu