

Identity Over Time: Perceived Similarity Between Selves Predicts Well-Being 10 Years Later

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Abstract

When individuals feel similar to their future self, they are more likely to delay present gratification and make plans for the long run. But do these feelings of similarity actually correspond with heightened well-being for the future self? Theoretically, making patient decisions in the present could lead to a future self who is better off and thus more satisfied. Alternatively, perceived overlap with the future self could cause people to continually deny themselves pleasures in the present, diminishing satisfaction over time. To adjudicate between these possibilities, we use a 10-year longitudinal data set ($N = 4,963$) to estimate how thoughts about one's future self in an initial survey predict life satisfaction 10 years later. Controlling for initial life satisfaction, greater perceived similarity to the future self is linearly associated with greater life satisfaction 10 years after the original prediction, a finding that is robust to a number of alternative analyses.

Keywords

identity over time, future self, well-being, life span development

How similar do you think you will remain over time? The answer to this question matters: A growing body of evidence shows that people tend to think about their future selves similar to how they think about other people (e.g., Burum, Gilbert, & Wilson, 2016; Pronin, Olivola, & Kennedy, 2008; Pronin & Ross, 2006). Just as feeling close to others increases prosocial giving (Small, 2011), feeling psychologically close to one's future self motivates more patient long-term decision-making (Urminsky, 2017). Perceiving more similarity between the self of today and the self of tomorrow,¹ for example, is linked to a heightened ability to delay gratification (Bartels & Rips, 2010), make more ethically sound decisions (Hershfield, Cohen, & Thompson, 2012), save money (Ersner-Hershfield, Garton, Ballard, Samanez-Larkin, & Knutson, 2009), and even take care of health (Rutchick, Slepian, Reyes, Pleskus, & Hershfield, 2018). But are these feelings of similarity really paying off? Or could perceptions of similarity cause people to sacrifice present happiness for an endless mirage of future well-being?

Whereas many studies demonstrate that the way people think about their future selves impacts a wide variety of *current* decisions and outcomes, no research to date has examined how people who feel more or less similar to their future selves are actually doing once they became those future selves. Theoretically, if heightened similarity results in more patient decision-making (e.g., choosing to save rather than spend), then it should also result in more positive outcomes later on. For example,

healthy eating in the present could lead to a fitter future self, and thus, a future self who is more satisfied. But a different pattern could also emerge: perceived overlap with the future self could cause people to continually deny themselves pleasures in the present, diminishing satisfaction over time. Perpetually making farsighted choices rather than indulging in the present, for example, could lead to increased regret over time (Kivetz & Keinan, 2006). Furthermore, perceiving dissimilarity between present and future selves is associated with focusing on the present moment (Nichols, Strohminger, Rai, & Garfield, 2018), which has been shown to be a critical determinant of happiness (Killingsworth & Gilbert, 2010). A final possibility is that there could be a nonlinear relationship between perceived similarity and future well-being. That is, it could be most adaptive for future well-being to perceive a modest amount of similarity with one's future self but least adaptive to perceive either extreme levels of dissimilarity or similarity.

In short, there are theoretical reasons to predict that both perceived similarity and dissimilarity may be adaptive for

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well-being. Determining which is the case is crucial for developing descriptive and normative models that link future thinking to long-term well-being. The current research is thus the first to check in with the future self. Using a 10-year longitudinal data set with thousands of Americans, we estimate how perceptions of the future self—held earlier in life—correspond with well-being (as measured by life satisfaction) at a later point in time.

Method

Participants

We use a publicly available 10-year panel data set from the first two waves of the National Survey of Midlife Development in the United States (MIDUS). A total of 4,963 participants responded to both the first wave (MIDUS I, conducted between 1994 and 1995; age range 20–75, $M_{\text{age}} = 46.5$ years; 53.3% female) and the second wave (MIDUS II, conducted between 2004 and 2006).² The national sample was selected using random digit dialing in the 48 contiguous states. Respondents were invited to participate in a phone interview and two self-administered questionnaires (see Brim, Ryff, & Kessler, 2004, for more details about the MIDUS survey). Note that MIDUS I originally had 7,108 respondents, but only 4,963 people responded in MIDUS II (Section 17 of the supplement addresses the possibility of survivorship bias in our panel). All data, materials, and code are publicly available on Open Science Framework (<https://osf.io/yqxm/>).

Questions and Measures

Independent variable. Our main independent variable is a bottom-up measure of perceived overlap with the future self (“perceived similarity³”), constructed from questions in MIDUS I regarding present and predicted traits. The MIDUS I survey asked, for example, “How calm and even-tempered are you now?” (present trait; 0–10 scale) and “How calm and even-tempered do you think you will be 10 years from now?” (predicted trait; 0–10 scale). The survey included similar questions for caring, wise, willingness to learn, energetic, and knowledgeable. Adapting methodology from Quoidbach, Gilbert, and Wilson (2013), we first took the absolute difference between the predicted traits and present traits and then reverse-coded these scores so that higher values correspond with higher perceived similarity. Finally, we summed these scores across the six traits to get an aggregate measure of perceived similarity and transformed the variable into percentage terms, where 100 corresponds with complete similarity and 0 corresponds with complete difference ($M = 92.56$, standard deviation [SD] = 5.49, max = 100, min = 73.33). Consistent with previous research (Quoidbach, Gilbert, & Wilson, 2013), most people perceive high levels of similarity with their future selves. For more details on the questions and measures, see Supplement, Sections 1–4.

Validation. We acknowledge that the MIDUS surveys measured perceived similarity with the future self differently than previous research has (for a review, see Hershfield & Bartels, 2018). Namely, while the MIDUS survey allowed us to construct a bottom-up measure of perceived similarity, prior work has often used a single-item holistic measure of perceived similarity to the future self (Bartels & Rips, 2010; Ersner-Hershfield et al., 2009). However, a post-test validation study conducted on Amazon Mechanical Turk ($N = 300$) indicated that the bottom-up measure of perceived similarity we use in the current research is closely related to the top-down measure used in previous research (see Section 2 of the Supplement).

Primary dependent variable. As our measure of well-being 10 years after the initial survey, we used life satisfaction, which has been used as a canonical indicator of well-being in prior research (Diener, Suh, Lucas, & Smith, 1999). In both MIDUS I and MIDUS II, life satisfaction was assessed using a 5-item measure, in which respondents rated how satisfied they were with their work, health, relationship with spouse or partner, relationship with children, and life overall, using 0–10 scales (Prenda & Lachman, 2001; 1995 Life Satisfaction; $M = 7.82$, $SD = 1.15$; 2005 Life Satisfaction; $M = 7.82$, $SD = 1.14$).

Control variables. We used control variables measured in MIDUS 1 including age ($M = 46.46$, $SD = 12.51$), gender (53.3% female), household income ($M = \text{US}\$71,383.44$; median = $\text{US}\$57,000$; $SD = \text{US}\$54,756.83$; log-transformed in all analyses), education ($M = 2.91$, $SD = 0.97$), and life satisfaction ($M = 7.82$, $SD = 1.15$). Note that a median income of $\text{US}\$57,000$ in 1995 dollars corresponds with approximately $\text{US}\$95,000$ in 2018 dollars. See Table 1 for the intercorrelations for the continuous variables used in the primary analysis.

Exclusions and outliers. Missing values for various measures are fairly common in the MIDUS data because 11% of respondents in MIDUS 1 and 19% of respondents in MIDUS II completed the phone interview but did not complete the self-administered questionnaires, and nearly all the personal questions in the survey were not forced response. To use a consistent sample across regression specifications, we restricted the sample to respondents who had non-missing values for all the covariates in our primary specification (Table 2, Model 3). Additionally, we dropped respondents with outlier values for any of the included continuous measures (i.e., 3 SD s above or below the mean). The Supplement includes versions of the primary regressions where (1) the sample size is maximized in each regression by including respondents if they had non-missing values for all the variables in that specification, (2) multivariate imputations are used to retain observations with missing values, and (3) outliers are included. Regardless of how we treat missing values and outlier exclusions, the results are substantively unchanged (see Sections 8–12 of the Supplement).

Table 1. Correlations for Continuous Variables in Primary Analysis.

Variable	1	2	3	4	5
1. 1995 perceived similarity					
2. 2005 life satisfaction	.21** [.18, .24]				
3. 1995 life satisfaction	.23** [.20, .26]	.52** [.49, .54]			
4. 1995 log income	.07** [.04, .10]	.15** [.12, .18]	.13** [.10, .15]		
5. 1995 education	.08** [.05, .11]	.09** [.06, .12]	.01 [−.01, .04]	.31** [.28, .34]	
6. 1995 age	.17** [.14, .19]	.15** [.12, .18]	.19** [.16, .22]	−.12** [−.14, −.09]	−.13** [−.16, −.10]

Note. Values in square brackets indicate the 95% confidence interval for each correlation.

* $p < .05$. ** $p < .01$.

Table 2. Perceived Similarity and Future Life Satisfaction.

	Dependent Variable		
	2005 Life Satisfaction		
	(1)	(2)	(3)
1995 perceived similarity	.204*** [.169, .238]	.163*** [.128, .198]	.066*** [.034, .099]
1995 log income		.150*** [.115, .185]	.081*** [.051, .112]
1995 education		.057** [.022, .091]	.065*** [.035, .095]
1995 age		.157*** [.124, .189]	.079*** [.049, .109]
1995 gender		.072*** [.040, .103]	.047*** [.019, .074]
1995 life satisfaction			.478*** [.446, .510]
Constant	.020 [−.012, .051]	.002 [−.029, .033]	−.006 [−.034, .021]
Observations	3,578	3,578	3,578
R ²	.042	.089	.291

Note. The 95% confidence intervals are displayed below the estimated coefficients. All reported standard errors are heteroskedasticity-robust. Gender is contrast coded with 1: female and −1: male. All other variables are standardized.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Results

Primary Results

We first regressed life satisfaction in MIDUS II on perceived similarity from MIDUS I and estimated a positive relationship ($\beta = .204$, 95% confidence interval [CI] = [.169, .238], $p < .001$; Figure 1, top panel). After including standard controls (i.e., age, gender, income, and education), the coefficient remained significant ($\beta = .163$, 95% CI = [.128, .198], $p < .001$). And when we conservatively included life satisfaction from MIDUS I as a covariate, the coefficient again remained significant ($\beta = .066$, 95% CI = [.034, .099], $p < .001$). See Table 2 for the full set of coefficients.

The general result implies that after controlling for current well-being (and a host of other variables), people who perceived greater similarity to their future self (when measured in 1995) experienced greater life satisfaction 10 years later. Note that the standardized coefficient is interpreted such that 1 *SD* greater perceived similarity in 1995 is associated with 0.066 *SD* more life satisfaction in 2005. While statistically modest, this relationship was nontrivial, especially given that the dependent variable was measured 10 years after the independent variable. Furthermore, the standardized coefficient for perceived similarity is comparable in magnitude to the

standardized regression coefficients for age ($\beta = .079$, 95% CI = [.049, .109], $p < .001$), log income ($\beta = .081$, 95% CI = [.051, .112], $p < .001$), and education ($\beta = .065$, 95% CI = [.035, .095], $p < .001$).

To assess whether a nonlinear relationship was present between perceived similarity and future well-being, we used three methods. First, we plotted a local polynomial regression fit curve (see the dashed line in the top panel of Figure 1). The nonparametric fit curve contains a large degree of overlap with the linear regression line, suggesting that the natural association between the variables is likely best characterized as linear. More formally, we ran a polynomial regression by first mean-centering perceived similarity and then including its first- and second-order terms as independent variables along with the covariates from our primary specification. The squared term in the regression was not statistically significant ($\beta = −.0001$, 95% CI = [−.0009, .0007], $p = .843$), further suggesting that the relationship between perceived similarity and future well-being is not quadratic. As an additional test, we used an alternative test of U-shaped relationships called “Two Lines,” which does not rely on a functional-form assumption (Simonsohn, 2018). Using this procedure, we estimated two regression lines, one for low values and one for high values of perceived similarity. The two-lines estimation confirms that

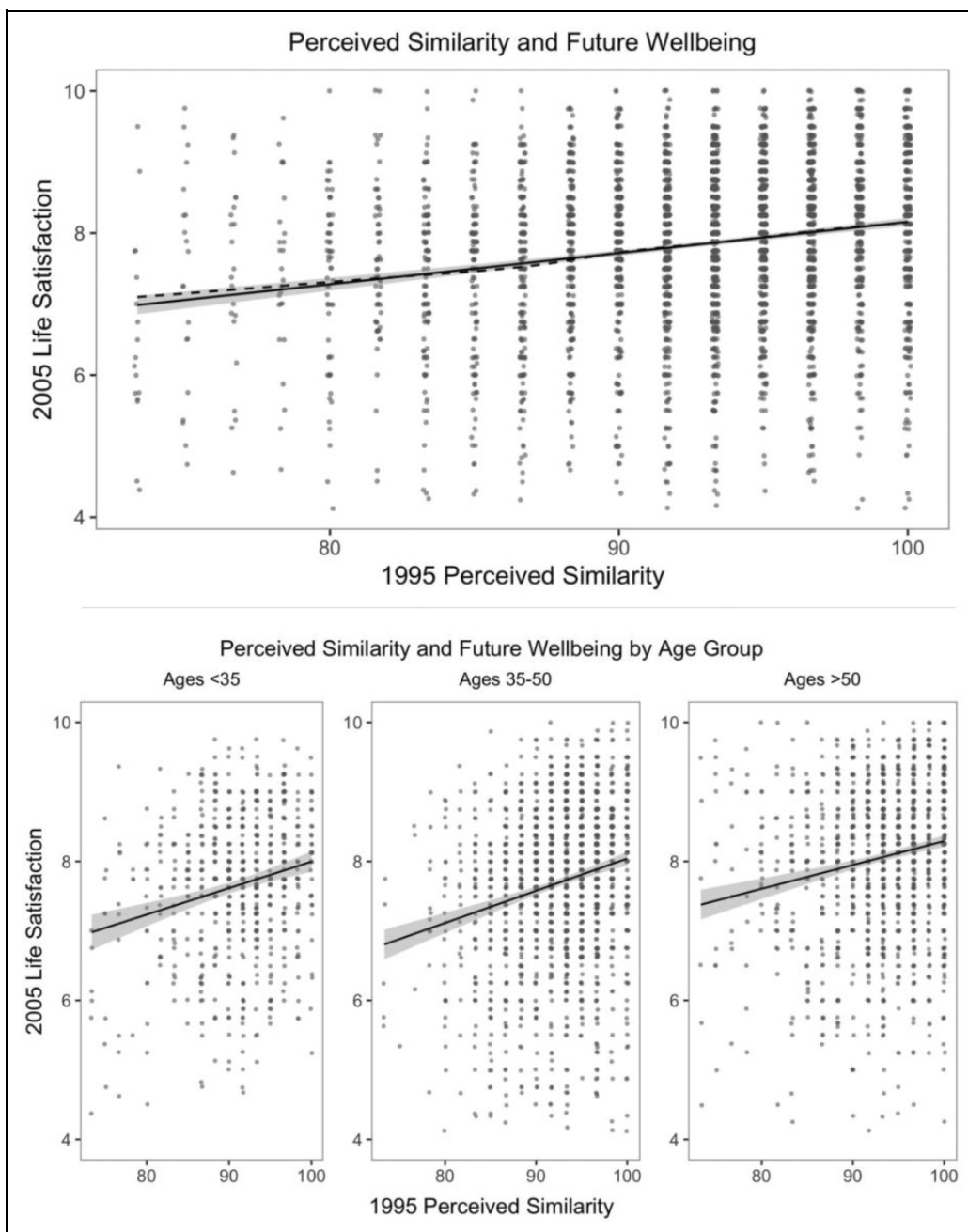


Figure 1. Perceived similarity and future well-being. To visualize the raw data, we plotted the relationship between perceived similarity and future life satisfaction in the upper panel. The dashed line in the upper panel is a local polynomial regression fit curve. To highlight the consistency of the relationship across ages, we separated the data into three age groups in the lower panel. For ease of visualization, a jitter was added to data points on each axis.

there is not a sign change in the slope of the relationship between perceived similarity and future well-being (see Section 18 of the Supplement for more details).

We note here that we calculated absolute differences between present trait levels and predicted trait levels and, in doing this, did not examine the direction of predicted changes. It is thus possible that our result is best explained by predicted trait improvement or predicted decline rather than (absolute) perceived similarity. To examine this possibility, we

decomposed perceived similarity into predictions of trait improvement and predictions of trait decline. After controlling for initial life satisfaction and the standard controls, we estimated that predictions of decline ($\beta = -.070$, 95% CI = $[-.113, -.028]$, $p = .001$) and predictions of improvement ($\beta = -.056$, 95% CI = $[-.094, -.019]$, $p = .004$) are both associated with less future life satisfaction (see Section 5 of the Supplement for details). Put differently, regardless of whether individuals predict greater trait improvement or decline,

greater perceived dissimilarity *in either direction* is associated with less future well-being.

Notably, the relationship between perceived similarity and future well-being was particularly stable across the lifespan. Whereas participants felt increasingly similar to their future self as they got older ($r = .17$, 95% CI = [.14, .19], $p < .001$, consistent with Löckenhoff & Rutt, 2017), the magnitude of the relationship between perceived similarity and future well-being remained relatively constant across the life span (i.e., there was not a significant interaction between age and perceived similarity on future well-being, $\beta = -.0001$, 95% CI = [-.0005, .0004], $p = .748$; see Figure 1, bottom panel, for correlations across age groups).

Robustness

A number of alternative possibilities, that we address below, could explain these results.

Are the results explained by actual similarity over time? If perceptions of similarity with the future self are somewhat accurate, the perceived similarity variable may simply approximate the actual similarity people experience. To capture how much participants actually changed, we created a measure of actual similarity by taking the absolute difference of five traits in 1995 and 2005 (i.e., calm, caring, intelligent, curious, and active). Importantly, the questions from the first wave of the survey that we used to calculate perceived similarity were discontinued in the second wave of the survey, necessitating that we use a different set of trait questions to calculate actual similarity (we address this issue in Section 6 of the Supplement). Using analogous methodology to perceived similarity, we reversed and aggregated the difference scores such that 100 corresponds with complete similarity and 0 corresponds with complete difference. Actual similarity was then included as an additional control in our primary regression, and the coefficient on perceived similarity was substantively unchanged ($\beta = .057$, 95% CI = [.025, .090], $p < .001$). Perceived similarity thus continues to be a significant predictor of future well-being even when controlling for actual similarity. (See Supplement, Sections 6–18, for additional analyses related to this robustness check and the ones that follow.)

Are the results driven by optimism? Optimism is adaptive and beneficial for long-term well-being (Taylor & Brown, 1988). Indeed, a self-reported measure of optimism ($M = 3.32$, $SD = 0.75$) was positively correlated with future life satisfaction in the MIDUS data set ($r = .19$, 95% CI = [.157, .217], $p < .001$). However, after including optimism as an additional control, we found that the coefficient on perceived similarity is essentially unchanged ($\beta = .065$, 95% CI = [.033, .097], $p < .001$).

Are the results explained by the specific measure of well-being we used? We used a composite measure of life satisfaction across different life domains as our measure of well-being. However,

overall life satisfaction can differ from the weighted average of domain satisfactions (Rojas, 2006). And well-being may comprise not only a cognitive component (i.e., life satisfaction) but also an affective component (i.e., high levels of positive affect and low levels of negative affect; Diener et al., 1999). Fortunately, the existing data set employed both the five-domain measure of life satisfaction that we used and a 1-item overall measure, as well as measures of positive and negative affect and related measures of mental and physical health. Using these alternative measures of well-being, our result holds: Greater perceived similarity is associated with greater life satisfaction (the single-item measure, $\beta = .056$, 95% CI = [.022, .089], $p = .001$), greater positive affect ($\beta = .079$, 95% CI = [.047, .111], $p < .001$), less negative affect ($\beta = -.059$, 95% CI = [-.091, -.027], $p < .001$), greater mental health ($\beta = .085$, 95% CI = [.057, .114], $p < .001$), and greater physical health ($\beta = .039$, 95% CI = [.014, .065], $p = .002$), all 10 years after the initial time point.

Are the results driven by perceived similarity for one trait alone? Our measure of similarity comprised six traits, but it is possible that one of these traits drove the results. To test this possibility, we estimated six models, regressing life satisfaction 10 years after initial measurement (i.e., in MIDUS II) on perceived similarity for each trait separately (with controls from the initial time point including life satisfaction, age, gender, income, and education). The coefficients are uniformly positive, and all but one of the coefficients is either statistically significant or marginally significant. Thus, it is not the case that one trait alone drove the results we obtained.

Are the results driven by people from a certain demographic or economic group? We examined whether any of our key covariates (income, gender, education, and initial life satisfaction) moderated the relationship between perceived similarity and life satisfaction 10 years later, but none were significant moderators.

Other robustness checks. To control for the false discovery rate inherent to multiple analyses, we corrected our p values with a Benjamini and Hochberg (1995) correction and found that our results remained substantively unchanged. Further, because some of our key variables are left-skewed, we transformed variables by squaring them in order to improve the normality of the model's errors and again found that results remained unchanged. Finally, we tested whether attrition between waves biased our estimated effects and did not find substantiating evidence of survivorship bias.

Discussion

When people perceive overlap between their current and future selves, they are more likely to act in ways that should theoretically make life better for the person they will become (Hershfield & Bartels, 2018). The present study examined, for the first time, whether people who feel similar to their future selves

actually end up becoming more satisfied with their lives. We found that perceptions of similarity at one time point are positively linked to well-being 10 years later. This relationship was independent of age, gender, education, income, optimism, and life satisfaction levels at the initial assessment point, as well as actual similarity over time, suggesting that perceptions of similarity at one time point account for unique variance in a future measurement of well-being. Moreover, regardless of whether people predicted their traits to improve or decline, greater perceived dissimilarity in either direction was associated with less future well-being.

Previous research has found that perceived similarity with the future self is associated with less discounting of the future (Bartels & Rips, 2010), more ethical decision-making (Hershfield et al., 2012), greater savings rates (Ersner-Hershfield et al., 2009), and better health (Rutchick et al., 2018). When people perceive similarity with their future selves and make farsighted decisions, they presumably experience better outcomes in the future (e.g., have more money, fewer ethical dilemmas, and better health) and, accordingly, could be better off. The current research found evidence consistent with this theory.

That said, the results are also broadly consistent with a number of other social psychological theories. Specifically, the current findings align with a large body of research on the adaptive nature of self-affirmation (Cohen & Sherman, 2014; Steele, 1988). That is, perceiving similarity across traits over time could reflect a general contentment with one's identity, which could in turn relate to future well-being. The results are also consistent with previous findings on the maladaptive consequences of fantasizing about the future (Oettingen & Mayer, 2002). Our data suggest that when people predict change over time, even when such change is positive in nature, they tend to have lower future well-being. It is possible that these optimistic predictions are similar to positive fantasies rather than reasonable forecasts (Oettingen & Sevincer, 2018).

There are also less theory-driven explanations of our results that cannot be ruled out with the current data set. Stable familial relationships, for example, could contribute to both perceived similarity and future well-being. Additionally, when making judgments about their future selves, participants could have been thinking about specific negative future events that could impact both perceptions of similarity and future well-being. If such events actually came to fruition, they could negatively impact future well-being.

The current data also revealed previously unexplored relationships between perceived similarity, actual similarity, and well-being. Perceived similarity and actual similarity were orthogonal predictors of future well-being. Put differently, people were not accurately predicting real changes that they would experience, and as a result, perceived similarity was not simply an approximation of actual similarity. Both predicting and experiencing disruptions to the self-concept over time independently corresponded with less well-being. Future research might study why people predict that they might change, why

they actually change, and why both of these variables separately relate to future well-being.

Whereas we had theoretical reasons to predict a positive relationship between perceived similarity and well-being, we can only speculate about the reasons why actual similarity was also positively related to well-being. One potential explanation is that actual identity changes can occur as the result of major life events (e.g., marriage, unemployment, death of a family member; Specht, Egloff, & Schmukle, 2011). Importantly, previous research has shown that negative life events have a stronger impact on personality change than positive life events (Lüdtke, Roberts, Trautwein, & Nagy, 2011). Therefore, the positive link we observed between actual similarity and well-being could be explained by the fact that individuals who reported more change were also more likely to have undergone adverse life events. Another possibility is that people who reported more identity change have higher self-concept differentiation (SCD; Donahue, Robins, Roberts, & John, 1993)—the tendency to see oneself as having different personality characteristics in different social contexts. A large body of work has demonstrated that high levels of SCD are associated with poor emotional and social adjustment (for a meta-analysis, see Bleidorn & Ködding, 2013). Investigating the different reasons why people report identity change over time and the specific pathways through which such changes relate to their well-being represents an exciting avenue for future work.

The current study also used a new, bottom-up measure of perceived similarity by aggregating predicted changes for traits. We note here that previous research has revealed that some traits are more important to perceptions of identity over time than others (Molouki & Bartels, 2017). In a similar vein, perceptions of identity over time are partially determined by how central a given trait is to one's conception of the self (Chen, Urminsky, & Bartels, 2016). Building on this work, future research could explore whether there are certain types of traits for which perceived similarity is particularly predictive of well-being. Researchers may also wish to test whether a more traditional, top-down measure of perceived similarity also relates to future well-being.

As a notable limitation, the current investigation could not directly observe mechanism because there were no intermediate data points between the initial measurement of perceived similarity and the subsequent measure of well-being. Accordingly, future work would benefit from a longitudinal design in which similarity (at Time 1) is associated with behaviors (at Time 2), which subsequently explain well-being (at Time 3). Future research should also attempt to replicate our findings with new samples, particularly non-Western samples that are typically more accepting of identity change due to positive notions of transience (e.g., in Buddhism; Nichols et al., 2018). Of particular importance, the current investigation was inherently limited by the correlational design. Future fieldwork should experimentally test whether interventions that enhance perceived similarity with the future self (particularly early in life) can improve long-term patience, planning, and well-being. Taken together, future research is needed to not only

explain the underlying mechanisms behind the positive correlation between perceived similarity and future well-being but also assess the generalizability of these findings.

Despite these limitations, the current results highlight the importance of understanding perceptions of selves over time not only for concurrent outcomes but also for future well-being.

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Supplemental Material

The supplemental material is available in the online version of the article.

Notes

1. While the psychological meaning of "perception" is often retrospective (e.g., self-perception), our use of the word is prospective. We use "perception" to refer to an individual's cognitive representation of their current identity and anticipated future identity. This use mirrors social psychological research that typically describes "perceived similarity" between two individuals (e.g., Newcomb, 1956).
2. For ease of presentation, the article hereafter refers to MIDUS I as the 1995 survey and MIDUS II as the 2005 survey. We acknowledge that the surveys were administered over 2- to 3-year periods, and thus, some respondents did not precisely complete the surveys in 1995 or 2005.
3. When we refer to similarity, we are referencing what has also been termed qualitative identity but not numerical identity or personal identity (Starmans & Bloom, 2018).

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