

Time and Job Satisfaction: A Longitudinal Study of the Differential Roles of Age and Tenure

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The relationship between job satisfaction and time is a fundamental question in organizational behavior. Yet given inconsistent results in the literature, the nature of this relationship has remained unresolved. Scholars' understanding of this relationship has been limited because studies have generally not simultaneously considered the two primary time metrics in job satisfaction research—age and tenure—and have instead relied on cross-sectional research designs. In this study, we develop and test an empirical model to provide a more definitive answer to the question of how age and tenure relate to job satisfaction. Our analyses draw on longitudinal data from 21,670 participants spanning a total of 34 waves of data collection across 40 years in two nationally representative samples. Multilevel analyses indicate that people became less satisfied as their tenure within a given organization increased, yet as people aged—and transitioned from organization to organization—their satisfaction increased. We also found that job rewards, as exemplified by pay, mediated these relationships. We discuss empirical, theoretical, and practical implications of our findings.

Keywords: *job satisfaction; time; age; tenure; pay; longitudinal study*

Time plays a critical, yet often underexamined, role in organizational behavior (e.g., George & Jones, 2000; Mitchell & James, 2001; T. A. Wright, 1997; Zaheer, Albert, & Zaheer, 1999).

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At the individual level, time—and particularly change over time—is essential for understanding adults' lives and careers, as noted by both traditional adult development theories (e.g., Erikson, 1963; Ginzberg, 1951; Levinson, Darrow, Klein, Levinson, & McKee, 1978; Super, 1992) and more recent career and identity development theories (e.g., Hall, 2002; Ibarra, 1999; Kroger, 2007; Pratt, 2000; Taylor, Marienau, & Fiddler, 2000). In the context of individuals' experiences at work, time can shape work attitudes such as job satisfaction, defined as "a positive (or negative) evaluative judgment one makes about one's job or job situation" (Weiss, 2002: 175). Indeed, scholars recognize and accept that job satisfaction changes over time (Ng & Feldman, 2010b; Rhodes, 1983). Yet the nature of the relationship between job satisfaction and time has yielded inconsistent findings over the course of several decades.

A central element of these inconsistencies is scholars' use of different conceptualizations—or metrics—of time. The two primary time metrics used in job satisfaction research are *age*, which captures the passage of time within a person's life, and *tenure*, which captures the passage of time within a person's specific employment context (e.g., organization or job; see Kooij, de Lange, Jansen, & Dijkers, 2008, for a discussion of notions of time in work motivation research). During individuals' time in a specific employment context, for instance, these two metrics are the same in that a 1-year increase in tenure and a 1-year increase in age are identical. However, across the set of employment contexts in which individuals may work during their careers, these two metrics can diverge: Whereas age advances continuously, tenure starts over with each new organization or job. Indeed, although age and tenure are positively related to one another (Kalleberg & Loscocco, 1983; Kooij et al.), the two metrics do not always have the same relationship with job satisfaction (Bedeian, Ferris, & Kacmar, 1992). Studies typically find that age is positively related to job satisfaction (for reviews, see Ng & Feldman, 2010b; Rhodes, 1983), while they find inconsistent results for tenure's relationship with job satisfaction.

In this study, we develop and test an empirical model of the relationship of age and tenure with job satisfaction. Our inclusion of both time metrics extends previous job satisfaction research that typically focused on *either* age or tenure but not both. In light of the large body of inconsistent evidence about the relationships between the two time metrics, age and tenure, and job satisfaction, a key contribution of our study is the resolution of these inconsistencies by testing how each time metric relates to job satisfaction above and beyond the other metric. We analyze data from two representative large-scale longitudinal studies to present a fundamental picture of how job satisfaction changes over time. We suggest that the relationships between age and job satisfaction and between tenure and job satisfaction are, in fact, diametrically opposed such that age is positively associated with job satisfaction, while tenure is negatively associated. We also demonstrate a key mediator in these relationships, job rewards, as exemplified by pay. In our view, understanding the varying effects of the two time metrics in a longitudinal framework will provide a more rigorous and accurate view not only of how job satisfaction evolves over time but also of the role of time in work attitudes research more generally.

The Two Time Metrics and Job Satisfaction

The Present Study

This study addresses three important outstanding issues—both theoretical and methodological—in the job satisfaction literature. First, several studies have concluded that studying

both age and tenure simultaneously, rather than examining either age or tenure alone, is necessary to understand the effect of time on job satisfaction (Bedeian et al., 1992; Brush, Moch, & Pooyan, 1987; Ng & Feldman, 2010a, 2010b). Yet there has been little research that integrates both tenure and age in studying job satisfaction. Our study therefore responds to this issue by providing a fresh perspective on the effect of time on job satisfaction by considering both the age and tenure metrics simultaneously in relation to job satisfaction over a long period of time.

Second, scholars have proposed a range of explanations for the mechanisms linking both age and tenure with job satisfaction, as described more fully below. However, research has not yet provided empirical evidence for any predominant explanation for the mechanisms through which time affects job satisfaction (Spector, 1997). In the present study, we suggest that job rewards, as exemplified by pay, mediate the relationship between both time metrics and job satisfaction (as elaborated below).

Third, regarding methodology, the most effective way to understand the dynamic nature of job satisfaction over time is via longitudinal studies. However, research of this type is rare (e.g., less than 4% of existing studies on age and job attitudes and almost none of the research about tenure and job satisfaction included measures of age, tenure, and job attitudes at more than one point in time; Ng & Feldman, 2010b). Notably, the few longitudinal studies that examined the relationship between tenure and job satisfaction covered only short periods of time, thus not allowing the examination of the simultaneous effects of age and tenure. These studies, which typically focused on turnover outcomes in time periods up to 1 or 2 years, report that job satisfaction decreased over the 1st year of employment for individuals who left but did not change much among those who stayed (e.g., Boswell, Boudreau, & Tichy, 2005; Boswell, Shipp, Payne, & Culbertson, 2009; Hom & Griffeth, 1991; Kammeyer-Mueller, Wanberg, Glomb, & Ahlburg, 2005). We thus build on this initial short-term view of the relationship between tenure and job satisfaction, usually in the context of a single job in which age and tenure are confounded and/or in a single occupational context, by considering job satisfaction over longer time frames and in a wider array of job and occupational contexts.

In sum, we believe that in order to effectively understand the role of time, scholars need to specify their selection of time metrics and consider the interconnected theoretical, empirical, and methodological implications of their selection. In the section that follows, we discuss the features of the relationships between each of the two time metrics, age and tenure, and job satisfaction.

Age and Job Satisfaction

Of the two primary time metrics, job satisfaction research has predominantly focused on age. The vast majority of research on the age–job satisfaction relationship indicates that job satisfaction increases with age (for reviews, see Ng & Feldman, 2010b; Rhodes, 1983), although there are inconsistent findings about whether the pattern of this change is linear (e.g., Kalleberg & Loscocco, 1983; Price & Mueller, 1981), nonlinear (e.g., Clark, Oswald, & Warr, 1996; Hochwarter, Ferris, Perrewe, Witt, & Kiewitz, 2001), or both (Kacmar & Ferris, 1989). We thus expect that when accounting for tenure in the present study, the widely demonstrated positive relationship between age and job satisfaction will continue to hold.

Scholars have proposed several explanations for why job satisfaction increases with age. Early work in this area theorized that job satisfaction is determined by work values and job rewards, which depend on cohort and career stage (Kalleberg, 1977; Kalleberg & Loscocco, 1983). Subsequently, Clark et al. (1996) outlined six explanations for the age–job satisfaction relationship. First, relative to younger people, older people may have more attractive jobs (Herzberg, Mausner, Peterson, & Capwell, 1957; Kalleberg & Loscocco), including garnering greater power and status (Miller & Form, 1951). Second, work values, such as the importance of pay and promotion, may change with age such that job characteristics that are less appealing to younger workers may become more appealing to older workers (Kalleberg & Loscocco; J. D. Wright & Hamilton, 1978). Third, older people may lower their expectations for their jobs or experience more realistic job previews (Wanous, 1992), such that the perceived gap between expectations and reality is smaller. Fourth, the older generations studied in research could be inherently more satisfied than the younger generations, leading to the impression that satisfaction increases with age (rather than that there are generational differences). Fifth, there may be varying rates of participation in the labor force by age. If there is a greater percentage of younger people working relative to older people, a selection bias can occur such that the older people who continue to work (and who are sampled in research) likely have higher satisfaction levels. Lastly, changes in individuals' job satisfaction levels may not be about their jobs so much as reflect broader changes in their subjective well-being and mental health (Clark et al.; Judge & Watanabe, 1993). More recently, Ng and Feldman (2010b) utilized socioemotional selectivity theory—which suggests that as people age, the likelihood of experiencing positive emotions increases and negative emotions decreases as a result of changing perceptions of how much longer they will live—to frame their meta-analytic findings that age is positively related to job satisfaction.

Although it is beyond the scope of the present study to examine all of these proposed mechanisms, we focus on one primary possible mechanism linking time to job satisfaction, job rewards. For decades, job satisfaction researchers have considered job rewards a key determinant of job satisfaction (e.g., Kalleberg, 1977; Kalleberg & Loscocco, 1983). Specifically, we focus on one exemplar job reward, pay, for several reasons. First, pay is a highly significant reward in the workplace for people across different ages and organizational contexts (e.g., Linz, 2004; Rynes, Gerhart, & Minette, 2004). Empirically, pay is positively correlated with other types of job rewards (e.g., job complexity in Ganzach, 2003; see also Hackman & Oldham, 1976), thus supporting our use of it as an exemplar job reward. Second, pay is a more reliable and objective measure than many other job rewards measures. Finally, in spite of the long tradition of connecting job rewards, including pay, to job satisfaction, Judge, Piccolo, Podsakoff, Shaw, and Rich concluded their meta-analysis of the pay–job satisfaction relationship by calling for further research in this area, citing the “dearth of research specifically focused on the relationship between pay level and job satisfaction” (2010: 158).

We thus build on both these streams of findings to suggest that pay mediates the relationship between age and job satisfaction. We propose that as people get older, they gain more experience in the labor market and obtain better, higher-paying jobs (Herzberg et al., 1957; Kalleberg & Loscocco, 1983), thus leading to higher job satisfaction. Indeed, our proposal that pay is a mediator of the age–job satisfaction relationship is largely commensurate with Clark and colleagues' (1996) first explanation described above, namely, that older workers

are more likely to have jobs with greater power and status and, so, higher pay. In contrast, Clark and colleagues' subsequent five reasons for the age–job satisfaction relationship reflect the expected positive direct effect of age on job satisfaction, such that they all suggest that even after pay is controlled for, age should relate positively to job satisfaction.

Tenure and Job Satisfaction

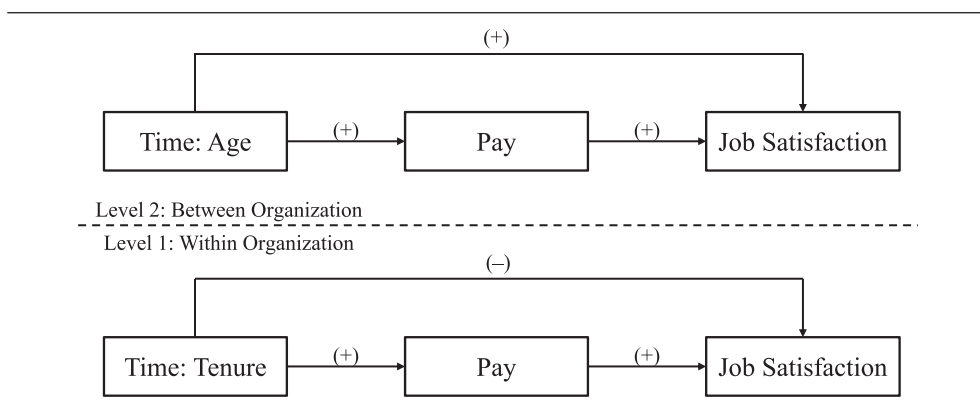
Job satisfaction research has focused less on tenure than on age as a time metric. These studies have yielded conflicting evidence about the direction of the relationship between tenure and job satisfaction, including negative (e.g., Bedeian et al., 1992), positive (e.g., Ng & Feldman, 2010b), and no relationship at all (Clark et al., 1996; Hochwarter et al., 2001; Kalleberg & Loscocco, 1983), and the shape, including nonlinear (Bamundo & Kopelman, 1980; Herzberg et al., 1957) and cyclical, rises and falls (Shirom & Mazeh, 1988). In light of these inconsistent results, which are primarily from cross-sectional studies, we draw on the short-term longitudinal finding that job satisfaction declines during the “hangover” period of employees' 1st year of employment (Boswell et al., 2005; Boswell et al., 2009) to hypothesize that the hangover effect will extend beyond individuals' 1st year of employment into their longer-term tenure in an organization. We thus anticipate a negative relationship between organizational tenure and job satisfaction over time when controlling for age.

As with the age–job satisfaction relationship, scholars have suggested a variety of reasons why job satisfaction changes with tenure. Scholars arguing for a positive relationship between tenure and job satisfaction suggest that dissatisfied workers leave their organizations, while satisfied workers stay (Sarker, Crossman, & Chinmeteeputuck, 2003). More experienced employees may have found jobs that better match their needs than have less experienced employees (Clark et al., 1996). Furthermore, employees with greater tenure may experience greater opportunity for promotion, status, and power, all of which are linked with greater job satisfaction (Kalleberg & Matsteakaasa, 2001; Miller & Form, 1951). As tenure increases, individuals may engage in retrospective rationalization to justify their current work situation (London, 1983), thus resulting in increased job satisfaction. Or they simply may have come to terms with or found ways to cope with or work through the aspects of their jobs they initially found less palatable.

In contrast, scholars who argue for a negative relationship suggest that greater tenure can result in increased boredom and, therefore, lower job satisfaction (Clark et al., 1996). As individuals' tenure in an organization increases, they gain more knowledge of their organization (Chatman, 1991; Louis, 1980). This knowledge includes the less favorable aspects of the organization and can thus be linked with decreased job satisfaction (Fichman & Levinthal, 1991). Indeed, the phenomenon of disillusion with a job that comes with increased tenure is a main reason why a realistic job preview can prevent a future decrease in job satisfaction (Meglino & DeNisi, 1987). Finally, research on postdecision dissonance in work contexts (Lawler, Kuleck, Rhode, & Sorensen, 1975; Vroom & Deci, 1971) found a reduction in job attractiveness as individuals gain more experience with their jobs. In sum, not only is there a range of evidence about the shape of the tenure–job satisfaction relationship but there are also multiple causal explanations to go along with each of these shapes.

As with the age–job satisfaction relationship, the present study does not examine all possible mechanisms linking tenure and job satisfaction. However, we again suggest that job

Figure 1
Overview of Model



rewards, as exemplified by pay, are a primary possible mechanism. We expect a logic similar to that linking age and job satisfaction to apply to the link between tenure and job satisfaction, such that increased organizational tenure generally leads to an increase in pay, which will ultimately lead to higher job satisfaction. Interestingly, this proposed mediation suggests that tenure has a dual relationship with job satisfaction: In addition to the *direct negative* relationship with job satisfaction we predicted above, it should have an *indirect positive* effect, mediated via pay.

In sum, on the basis of the arguments above, we make the following hypotheses about the relationships among age, tenure, pay, and job satisfaction (see Figure 1 for an overview of our model):

- Hypothesis 1:* Holding all else constant (and in particular controlling for tenure), job satisfaction increases as people age.
- Hypothesis 2:* Holding all else constant (and in particular controlling for age), job satisfaction decreases as organizational tenure increases.
- Hypothesis 3:* Pay mediates the relationship between both (a) age and (b) tenure with job satisfaction, such that age and tenure both have a positive relationship with pay, which in turn has a positive relationship with job satisfaction.

Hypotheses 1 and 2 reflect the direct effects of age and tenure on job satisfaction, regardless of pay, while Hypothesis 3 reflects their indirect effects when pay can vary.

Together, these hypotheses imply that between-jobs time (age) has a positive effect on job satisfaction: a positive direct effect as well as a positive indirect effect mediated by pay. On the other hand, within-jobs time (tenure) has a negative direct effect as well as a positive indirect effect mediated by pay. These effects highlight the complexities of the effect of time on job satisfaction. Our set of hypotheses thus attempts to embrace this complexity while also clarifying inconsistent results about the relationship between the two time metrics and job satisfaction. This study further identifies pay as a mediator and provides a more accurate empirical view of job satisfaction's evolution over time than has existed previously in the literature.

Method

Participants and Procedure

Participants were individuals enrolled in two long-term, ongoing longitudinal studies, the 1979 and 1997 cohorts of the National Longitudinal Survey of Youth (NLSY79 and NLSY97, respectively). The U.S. Department of Labor's Bureau of Labor Statistics conducted both studies, which included a wide range of questions about background characteristics, education, and employment. For both databases, we included all relevant variables from the beginning of the surveys through 2008.

The NLSY79 is a nationally representative sample of 12,686 Americans born between 1957 and 1964. Of the participants in the study, 49.5% were female, and 59.2% were non-Black/non-Hispanic, 25.0% were Black, and 15.8% were Hispanic. The first interviews occurred in 1979 when participants were ages 14 to 22. The mean age in 1979 was 18.14 years, with percentage breakdowns for each age (in parentheses) as follows: 4.2% (14), 12.2% (15), 12.5% (16), 12.2% (17), 12.7% (18), 13.5% (19), 13.1% (20), 13.3% (21), and 6.4% (22). Participants completed interviews annually until 1994 and from then on every 2 years. We use all available data from 1979 through 2008, thus spanning participants' lives from late adolescence/early adulthood through adulthood (i.e., ages 43–51 in 2008). As our analyses depended on participants being employed such that they could rate their job satisfaction, our analyses *de facto* excluded almost all responses from participants aged 17 and younger (i.e., participants aged 17 and younger compose 0.2% of the observations included in our sample). Overall, our analyses draw on 22 waves of data collected over 29 years. During the time frame under investigation, participants were, on average, employed by 4.73 different organizations.¹

The NLSY97 is a nationally representative sample of 8,984 Americans born between 1980 and 1984. Of the participants, 48.8% were female, and 51.9% were non-Black/non-Hispanic, 26.0% were Black, 21.2% were Hispanic, and 0.9% were mixed race. Participants completed interviews annually starting in 1997, when they were 12 to 16 years old. The mean age in 1997 was 13.99 years, with percentage breakdowns for each age (in parentheses) as follows: 19.7% (12), 20.1% (13), 20.5% (14), 20.9% (15), and 18.8% (16). We use all available data from 1997 through 2008, thus spanning participants' lives from adolescence through early adulthood (i.e., ages 23–27 in 2008). As with the NLSY79 data set, our analyses again *de facto* excluded almost all responses from participants aged 17 and younger (5.9% of the observations included in our sample). Overall, our analyses draw on 12 waves of data collected over 11 years. During the time frame under investigation, participants were, on average, employed by 1.83 different organizations.²

The NLSY79 and NLSY97 are ideally suited for addressing our hypotheses about the relationships between age and job satisfaction and tenure and job satisfaction for several reasons. First, both studies started in adolescence/young adulthood and span long periods of time (29 years and 12 years, respectively) during which participants progressed through several career stages, including first employment and subsequent employment changes. These characteristics enable us to untangle the effects of age and tenure simultaneously, unlike previous cross-sectional and shorter-term longitudinal research. Many previous studies of time and job satisfaction focused on single contexts and/or small samples (e.g., 132 newcomers in a public sector service organization in Boswell et al., 2009; 323 Thai hotel employees in Sarker et al., 2003). In contrast,

our use of two large-scale, representative samples ($N = 21,670$) has positive implications for the generalizability of our findings to a wide range of people. Lastly, our longitudinal design distinguishes between aging effects (changes over time within individuals) and cohort effects (differences between individuals at baseline). For example, if changes in the economy cause an increase in job satisfaction, a spurious negative relationship between tenure and job satisfaction may be found in a cross-sectional design but not in a longitudinal design.

Job Satisfaction Measure

The NLSY79 measured global job satisfaction with the item, "How do/did you feel about your job? Do/did you like it very much (1), like it fairly well (2), dislike it somewhat (3), or dislike it very much (4)?" The NLSY97 used the same question but expanded the original 4-point response scale to a 5-point scale with a midpoint labeled "think it is OK." Consistent with other researchers' use of the NLSY job satisfaction measures (e.g., Judge & Hurst, 2008), we reverse-scored the response scale to 1 (*dislike very much*) to 4 (*like very much*) in the NLSY79 and 1 (*dislike very much*) to 5 (*like very much*) in the NLSY97.

In spite of the limitations of using single-item measures to measure many organizational behavior constructs, several studies have documented the good performance of single-item measures of job satisfaction and support their use as instruments to measure job satisfaction (e.g., Dolbier, Webster, McCalister, Mallon, & Steinhardt, 2005; Ganzach, 1998; Nagy, 2002; Scarpello & Campbell, 1983; Wanous & Reichers, 1996; Wanous, Reichers, & Hudy, 1997). Indeed, the Wanous et al. meta-analysis of single-item versus scale measures of job satisfaction, based on 28 correlations from 17 studies with 7,682 people, concluded that "a minimum estimated reliability for the single-item measure close to .70 is reasonable" (250). The Wanous et al. study makes the point that "if the use of a single item is indicated, researchers may do so in the knowledge that they can be acceptable. . . . One example of a research question suggesting the use of a single-item measure is the measurement of change in overall job satisfaction" (250), such as the longitudinal research in the present study. More specifically, the single-item measure from the NLSY used in the present study has been utilized frequently, both in foundational job satisfaction research (e.g., Gerhart, 1987; Staw & Ross, 1985) and in numerous subsequent studies (e.g., Ganzach; Judge & Hurst, 2008; Judge & Watanabe, 1995; Lee, Gerhart, Weller, & Trevor, 2008; Trevor, 2001). We thus expect that this measure is acceptable for our analyses; furthermore, our results should generalize to other job satisfaction research.

Time Measures

Age. We first used participants' date of birth to calculate their age in years at each data collection. We then calculated participants' mean age in each given organization for use in our analyses. For example, if a person joined an organization at age 21 and left at age 28, his or her mean age at this specific organization is $(21 + 28) / 2 = 24.5$ years. We did so to untangle the effect of age from the effect of tenure, as, otherwise, within age, the two time metrics are perfectly correlated.

Tenure. Given meta-analysis results indicating that the length of time participants have spent in their organization (i.e., organizational tenure), but not the length of time they have spent in their current job (i.e., job tenure), is associated with job satisfaction (Brush et al.,

1987), we focus on organizational tenure. Both NLSY studies measured participants' organizational tenure in weeks. We transformed this weekly tenure measure to annual tenure by dividing the weekly measure by 52. As a result, our measures of age and tenure use comparable scales (i.e., years).

Pay Measure

Both NLSY studies asked participants detailed information about their incomes. The NLSY calculated a measure of hourly pay for all participants, which is income adjusted for the time unit in which participants were paid and the number of hours they worked. This conversion from total income to hourly pay creates a consistent pay metric across all participants, regardless of their original pay scale (i.e., annual salary vs. hourly wage vs. other). Consistent with other researchers' use of the NLSY data (e.g., Judge & Hurst, 2008), we accounted for the role of inflation by adjusting these wages on the basis of the Consumer Price Index for each year. We then calculated the logarithm of the adjusted hourly pay rate for use in our analyses. We omitted observations from the analyses for time periods with extreme pay values (i.e., less than \$0.50 or greater than \$300 per hour).

Analytical Strategy

Our data have a nested structure with three different levels. Level 1 is the within-organization level, such that participants' annual observations were nested within the same organization when they stayed in the same organization. We model the influence of tenure at this level because we are interested in how participants' job satisfaction changes as they stay longer in the same organization. Level 2 is the between-organization level, such that individuals' observations across different organizations are nested within the same individual. We model the influence of age at this level so that we can examine how individuals' mean job satisfaction in an organization changes as they move to different organizations over time. Level 3 is the between-person level, such that different individuals have different working experiences (e.g., number of organization changes). Given the nested structure of the data, we test our hypotheses with multilevel modeling techniques by using the software Mplus 7 (Muthén & Muthén, 2012).

Specifically, we are primarily interested in job satisfaction's dynamics over time across individuals' career paths (i.e., within-person differences) rather than how job satisfaction varies from person to person (i.e., between-person differences). Thus, we modeled relationships only at the within-organization and between-organization levels (i.e., Levels 1 and 2, respectively), both of which represent within-person levels of analysis, and used a sandwich estimator to account for between-person differences (i.e., by including the syntax TYPE = TWOLEVEL COMPLEX in Mplus 7; Muthén & Muthén, 2012). This estimator takes into account the nonindependence of observations due to cluster sampling, corrects the potential bias in estimation that may result from potential sampling differences, and has been shown to provide a robust estimation of standard errors and, so, in effect, controls for potential individual differences (Huber, 1967; Rogers, 1993; White, 1980; see also Liu, Wang, Chang, Shi, Zhou, & Shao, 2015, for more technical details). In other words, with our three levels of data, we accounted for Levels 1 and 2 by using a model-based approach (i.e., estimating a multi-level model) and Level 3 by using a parameter-based approach (i.e., by using a sandwich estimator to correct the standard error estimation).

Guided by the above principles, we built a single comprehensive two-level model separately for the NLSY79 and NLSY97 data sets, as depicted in Figure 1 and described in detail below. To facilitate the interpretation of the findings and to obtain unbiased estimates, we group-mean centered all Level 1 variables (i.e., centered within the same organization) and grand-mean centered all Level 2 variables (i.e., centered between different organizations and within the same individual), per Hofmann and Gavin's (1998) suggestions. We tested mediation effects via Monte Carlo simulation procedures by using the open-source software R (Selig & Preacher, 2008), which can accurately reflect the asymmetric nature of an indirect effect's sampling distribution (Preacher, Zyphur, & Zhang, 2010).³

Specifically, at the within-organization level (Level 1), we modeled the effects of tenure on pay and job satisfaction in the same year (i.e., Year T), as well as the effect of pay in Year T on job satisfaction in Year T. In addition, we included the cross-lagged effects of tenure in Year T on pay and job satisfaction in Year T+1, the cross-lagged effect of pay in Year T on job satisfaction in Year T+1, and the cross-lagged effect of job satisfaction in Year T on pay in Year T+1. Exploring these cross-lagged effects helps us better understand the direction of causality among tenure, pay, and job satisfaction (McArdle, 2009). We also estimated the effects of pay and job satisfaction in Year T on the same variables, respectively, in Year T+1 to control for their autoregressive effects across time (McArdle). It is worth noting that we did not examine a full cross-lagged model among tenure, pay, and job satisfaction (Selig & Preacher, 2008). This is because tenure reflects a linear effect of time and therefore does not serve as an endogenous variable. Thus, it is reasonable to consider tenure only as an exogenous variable and to not model the effects of other endogenous variables on tenure (e.g., the effects of pay/job satisfaction in Year T on tenure in Year T and Year T+1 are not theoretically meaningful).

At the between-organization level (Level 2), we estimated the effects of mean age on mean pay and mean job satisfaction during participants' stay in the same organization. We also estimated the effect of mean pay on mean job satisfaction. We did not include the cross-lagged effects of pay and job satisfaction at Level 2 because comparing pay and job satisfaction across individuals' different organizations—that is, examining the lagged effects of participants' pay and job satisfaction during their time in one organization on the pay and job satisfaction during their time in the next organization—is not theoretically meaningful in light of our research questions.

Results

Tables 1 and 2 show means, standard deviations, and correlations for all measures (NLSY79 and NLSY97, respectively).⁴ In both data sets, the correlations of age (i.e., between-organization time) with job satisfaction are positive, but the correlations of tenure (i.e., within-organization time) with job satisfaction are negative. This discrepancy between age and tenure represents the main finding of the paper. It suggests that the processes associated with time are different on the between-organization and within-organization levels.

Below, we present the results of our hypothesis testing; we use unstandardized coefficients in the text unless otherwise indicated. We also present our results in Table 3 and Figure 2, in which we instead use standardized estimates, which allows comparison across our two data sets.

Table 1
Descriptive Statistics and Correlations Among the Study Variables: NLSY79

Variable	1	2	3	<i>M</i>	<i>SD</i>
1. Time ^a	—	.44**	.14**	3.60/31.01	4.54/7.60
2. Pay	.24**	(.77)	.12**	1.80	0.60
3. Job satisfaction	-.07**	.01	(.49)	3.30	0.73

Note: Correlations below the diagonal are at the within-organization level ($N = 101,020$). Correlations above the diagonal are at the between-organization level ($N = 52,695$). Intraclass correlations (ICC1) are presented in parentheses along the diagonal. Pay is the logarithm of the hourly rate of pay. Job satisfaction is measured on a scale from 1 to 4. NLSY79 = 1979 cohort of the National Longitudinal Survey of Youth.

^aTime captures tenure at the within-organization level and captures age at the between-organization level, both of which are measured in years. Numbers before slashes represent statistics of tenure at the within-organization level, and numbers after slashes represent statistics of age at the between-organization level. ICC cannot be calculated for time because it has different conceptualizations at the two levels.

** $p < .01$.

Table 2
Descriptive Statistics and Correlations Among the Study Variables: NLSY97

Variable	1	2	3	<i>M</i>	<i>SD</i>
1. Time ^a	—	.64**	.11**	1.21/21.02	1.47/3.08
2. Pay	.31**	(.39)	.12**	1.85	0.66
3. Job satisfaction	-.13**	-.03**	(.51)	2.90	1.06

Note: Correlations below the diagonal are at the within-organization level ($N = 19,609$). Correlations above the diagonal are at the between-organization level ($N = 12,290$). Intraclass correlations (ICC1) are presented in parentheses along the diagonal. Pay is the logarithm of the hourly rate of pay. Job satisfaction is measured on a scale from 1 to 5. NLSY97 = 1997 cohort of the National Longitudinal Survey of Youth.

^aTime captures tenure at the within-organization level and captures age at the between-organization level, both of which are measured in years. Numbers before slashes represent statistics of tenure at the within-organization level, and numbers after slashes represent statistics of age at the between-organization level. ICC cannot be calculated for time because it has different conceptualizations at the two levels.

** $p < .01$.

Hypothesis Testing

We tested all of our hypotheses in a comprehensive model. Specifically, we tested Hypothesis 1 by using the estimated total effect of mean age on mean job satisfaction (i.e., the direct effect of mean age on mean job satisfaction plus the indirect effect of mean age on mean job satisfaction via mean pay) at Level 2. We tested Hypothesis 2 by using the estimated total effect of tenure in Year T on job satisfaction in Year T (i.e., the direct effect of tenure on job satisfaction in Year T plus the indirect effect of tenure on job satisfaction via pay in Year T) at Level 1. We tested Hypothesis 3a by estimating the indirect effect of mean age on mean job satisfaction via mean pay at Level 2. We examined Hypothesis 3b in two ways. First, we examined the indirect effect of tenure in Year T on job satisfaction in Year T via pay in Year T at Level 1 (i.e., the simultaneous effect of pay on job satisfaction). Second,

Table 3
Standardized Estimates of the Hypothesized Model: Relationships of Age
and Tenure With Job Satisfaction as Mediated by Pay

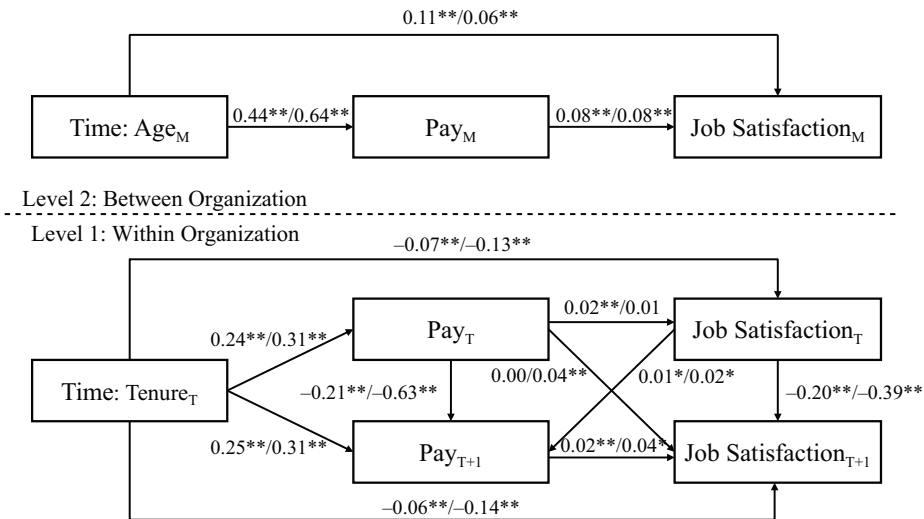
Predictors	Pay in Year T			Job Satisfaction in Year T			Pay in Year T+1			Job Satisfaction in Year T+1		
	NLSY79		NLSY97	NLSY79		NLSY97	NLSY79		NLSY97	NLSY79		NLSY97
	Est.	SE	Est.	Est.	SE	Est.	Est.	SE	Est.	SE	Est.	SE
Level 1												
Intercept	0.00	0.00	0.00	0.00**	0.00	0.00	0.16**	0.00	0.22**	0.00	-0.06**	-0.12**
Tenure in Year T	0.24**	0.01	0.31**	-0.07**	0.01	-0.13**	0.25**	0.01	0.31**	0.01	-0.06**	-0.14**
Pay in Year T				0.02**	0.01	0.01	-0.21**	0.01	-0.63**	0.02	0.00	0.01
Job satisfaction in Year T							0.01*	0.00	0.02*	0.01	-0.20**	-0.39**
Pay in Year T+1											0.02**	0.01
Residual variance	0.94**	0.00	0.91**	1.00**	0.00	0.98**	0.92**	0.00	0.63**	0.02	0.96**	0.84**
Level 2												
Intercept	0.00**	0.00	0.00**	0.00**	0.00	0.00**						
Mean age	0.44**	0.01	0.64**	0.11**	0.01	0.06**						
Mean pay				0.08**	0.01	0.08**						
Residual variance	0.80**	0.01	0.59**	0.98**	0.00	0.98**						
Pseudo R ² (%)	18		31	2		2	2		23		2	9

Note: Number of observations included in the analysis of the NLSY79 data set (in subjects-years) = 101,020. Number of observations included in the analysis of the NLSY97 data set (in subjects-years) = 19,609. All coefficients are standardized. NLSY79 and NLSY97 = 1979 and 1997 cohorts of the National Longitudinal Survey of Youth, respectively.

* $p < .05$.

** $p < .01$.

Figure 2
Graphical Depiction of the Standardized Estimates of the Hypothesized Model:
Relationships of Age and Tenure With Job Satisfaction as Mediated by Pay



Note: Results of the NLSY79 data set are presented before slashes, and results of the NLSY97 data sets are presented after slashes. At Level 1, the subscript T indicates variables measured in Year T and the subscript T+1 indicates variables measured in Year T+1 when participants worked in the same organization. At Level 2, the subscript M represents the mean value of the Level 1 variable across different years when participants worked in the same organization. NLSY79 and NLSY97 = 1979 and 1997 cohorts of the National Longitudinal Survey of Youth, respectively.

* $p < .05$.

** $p < .01$.

we examined the mediation effect of tenure in Year T on job satisfaction in Year T+1 via pay in Year T (i.e., the cross-lagged effect of pay on job satisfaction).

In support of Hypothesis 1, at Level 2, job satisfaction increased as people aged, accounting for tenure, in both the NLSY79 (total effect: $\gamma = .01$, $p < .01$; direct effect: $\gamma = .01$, $p < .01$) and the NLSY97 (total effect: $\gamma = .03$, $p < .01$; direct effect: $\gamma = .02$, $p < .01$) data sets.

In support of Hypothesis 2, at Level 1, job satisfaction decreased as people's tenure in their current organization increased, accounting for age, in both the NLSY79 (total effect: $\gamma = -.01$, $p < .01$; direct effect: $\gamma = -.01$, $p < .01$) and the NLSY97 (total effect: $\gamma = -.07$, $p < .01$; direct effect: $\gamma = -.07$, $p < .01$) data sets.⁵

Hypothesis 3a predicted that pay mediates the positive relationship between age and job satisfaction at the between-organization level over time. At Level 2, our multilevel analyses showed that participants' mean age positively related to their mean pay (NLSY79: $\gamma = .03$, $p < .01$; NLSY97: $\gamma = .14$, $p < .01$), which in turn positively related to mean job satisfaction (NLSY79: $\gamma = .10$, $p < .01$; NLSY97: $\gamma = .11$, $p < .01$). Mediation analyses showed that, consistent with our prediction, pay had a significant indirect effect on the relationship between age and job satisfaction in both data sets (NLSY79 95% confidence interval, CI: [.002, .003]; NLSY97 95% CI: [.009, .023]).

Overall, the results regarding age indicate that as employees became older and moved between different organizations, they tended to experience an increase in job satisfaction

(Hypothesis 1), which can be partially explained by earning higher pay in the new job (Hypothesis 3a).

Hypothesis 3b predicted that, in contrast to the overall negative effect of tenure on job satisfaction, tenure could also have a positive effect on job satisfaction via the mediating role of pay at the within-organization level. The first examination of this hypothesis (the examination of the effect of tenure in Year T leading to job satisfaction in Year T via pay in Year T) showed that tenure was positively related to pay in the same year in both the NLSY79 and the NLSY97 data sets ($\gamma = .02, p < .01$ and $\gamma = .12, p < .01$, respectively) at Level 1, which in turn had a positive effect on job satisfaction of that same year in the NLSY79, but not in the NLSY97, data set ($\gamma = .04, p < .01$ and $\gamma = .01$, n.s., respectively). A mediation analysis showed that pay had a significant indirect effect on the relationship between tenure and job satisfaction in the NLSY79 data set (95% CI: [.001, .002]) but not in the NLSY97 data set (95% CI: [-.002, .005]). The second examination of Hypothesis 3b (the examination of the effect of tenure in Year T on job satisfaction in Year T+1 via pay in Year T) showed tenure did not relate to job satisfaction in the next year in the NLSY79 data set ($\gamma = .01$, n.s.) but positively related in the NLSY97 data set ($\gamma = .07, p < .01$) at Level 1. A mediation analysis showed the same results: a significant indirect effect in the NLSY79 data set (95% CI: [-.001, .001]) but not in the NLSY97 data set (95% CI: [.002, .015]). Each data set thus provides partial support for the mediation effect proposed in Hypothesis 3b. In sum, despite the overall negative relationship between tenure and job satisfaction, there is also some evidence employees can experience increased job satisfaction over time in the same organization (i.e., as their tenure increases) if their pay increases (Hypothesis 3b).

Finally, our model also enables us to examine the effect of job satisfaction in Year T on pay in Year T+1. Results show significant and positive effects in both data sets ($\gamma_s = .01, ps < .05$). Thus, consistent with previous studies, our results suggest that the relationship between job satisfaction and pay is both dynamic and reciprocal (cf. Judge & Hurst, 2008).

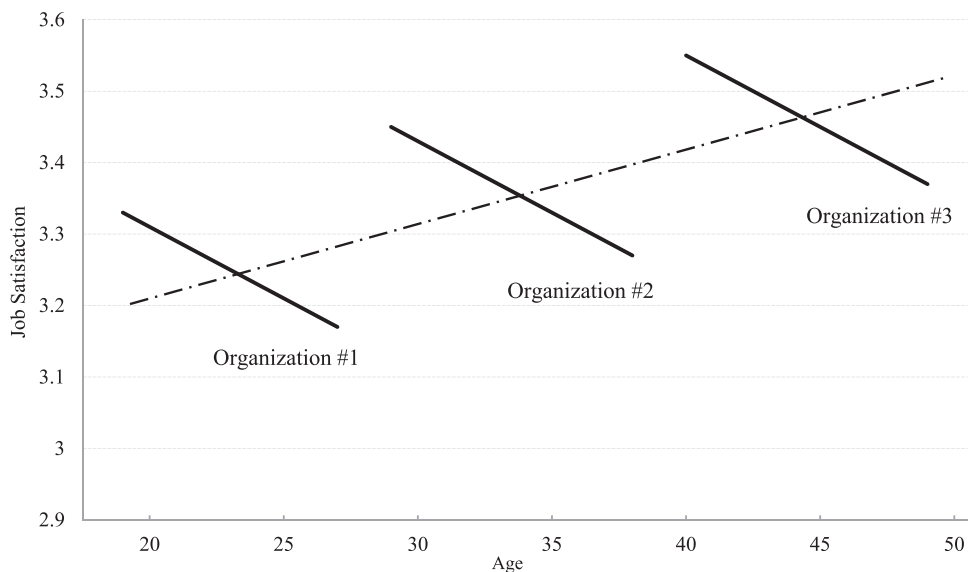
Goodness of Fit

We obtained information on variances and residual variances of our studied variables in Mplus and then calculated pseudo- R^2 statistics to measure the total amount of variation in outcomes explained by the predictors in our multilevel model by using Snijders and Bosker's (1999) formula. Overall, predictors included in our models across both data sets accounted for between 2% and 9% of the variance in job satisfaction, reflecting small to moderate portions of variance. For pay, pseudo- R^2 estimates suggested our models predicted between 2% and 31% of the variance, reflecting overall larger portions of variance in this outcome variable.

Synthesis and Interpretation

To interpret our findings about the relationships among age, tenure, and job satisfaction, we generated predicted values of job satisfaction for an average participant over time drawing on both data sets (see Figure 3). The figure provides a representative depiction of the combined effect of age and tenure on job satisfaction on the basis of our regression results using the mean number of organizations per participant (i.e., three organizations, which spans from age 18 to 50). Specifically, we calculated the sample size-weighted total effects of tenure and mean age on job satisfaction across the two data sets (i.e., after unstandardized

Figure 3
Predicted Trajectory of Job Satisfaction Over Time as a Function
of Age and Tenure



Note: The solid lines depict the predicted values of job satisfaction during tenure in each organization (i.e., at the within-organization level). The dashed line depicts the predicted values of job satisfaction as people age at the between-organization level.

coefficients are weighted by sample size, the formula for the predicted value of job satisfaction is $\text{Job Satisfaction} = \text{Intercept} + 0.01 \text{ Mean Age} - 0.02 \text{ Tenure}$).

We calculated the intercept as the weighted average mean job satisfaction across the two samples. Because the NLSY97 data set measured job satisfaction on a 5-point scale, whereas the NLSY79 data set used a 4-point scale, we first transformed the mean for NLSY97 onto a 4-point scale (i.e., the NLSY97 mean of 2.9 on a 5-point scale becomes 2.32 on a 4-point scale). The weighted average of the NLSY79 mean of 3.30 and the NLSY97 mean of 2.32 is 3.14.

Figure 3 highlights our study's core result: Job satisfaction somewhat paradoxically increases with age yet decreases as tenure advances. When people's tenure in a given organization ends and they move to a new organization, they experience a boost in job satisfaction, thus starting the cycle anew. Furthermore, we can characterize this figure as "meta-analytic," as it takes into account both of our large samples and, thus, clearly and rigorously displays the relation between time and job satisfaction across two levels of analysis.

Discussion

In this paper, we examined for the first time the relationships between age and job satisfaction and tenure and job satisfaction over time in two large nationally representative longitudinal databases. Our analyses support the hypotheses that controlling for tenure, job satisfaction increases

with age (Hypothesis 1), and while controlling for age, job satisfaction decreases with tenure (Hypothesis 2). As people grew older, they became increasingly satisfied with their jobs, while during employment in a given organization, they became decreasingly satisfied as time advanced. We found consistent evidence that pay had an indirect effect on the relationship between age and job satisfaction at the between-organization level (Hypothesis 3a) in both data sets, and it had an indirect effect on the relationship between tenure and job satisfaction at the within-organization level (Hypothesis 3b) in one of our two data sets. These findings offer contributions to research on job satisfaction as well as to the temporal dynamics of work attitudes literature.

The most important contribution of the paper is to provide a more definitive answer to the question of whether and how age and tenure are related to job satisfaction than has existed in previous job satisfaction research. We utilized multilevel analyses, featuring a nested structure with three levels, to examine a dynamic model of job satisfaction that includes both metrics of time (age and tenure) simultaneously and generalizes across a wide array of occupational contexts. We demonstrated that age and tenure have opposite relationships with job satisfaction, such that job satisfaction increased as people aged yet decreased as tenure advanced—and received a boost when people moved to a new organization, thus starting the cycle anew (see Figure 3). Our core result, that job satisfaction somewhat paradoxically increased with age yet decreased with tenure, thus sheds light on the nature of job satisfaction's evolution over the course of individuals' careers.

Importantly, our core finding also contributes to the multilevel literature (e.g., Klein, Tosi, & Cannella, 1999; Kozlowski & Klein, 2000; Morgeson & Hofmann, 1999; Ostroff, 1993) by providing evidence of a variable—time—that functions differently at different levels of analysis. This study offers a nuanced example of how this happens longitudinally, such that we see between-organization time (i.e., age) behaving in the opposite direction as within-organization time (i.e., tenure). Therefore, future research should strive to include both metrics of time and should not consider the time metrics as interchangeable, either theoretically or empirically. Future research that extends our findings from the representative samples used in our study to more specific or in-depth contexts (e.g., organizations of different sizes or ages, across hierarchical ranks within organizations, or nontraditional work contexts) would lead to a fuller understanding of the relationship between time and job satisfaction.

A second contribution of the study is showing a key mechanism, job rewards as exemplified by pay, that connects age and tenure to job satisfaction. Our analyses show the general pattern that as people aged and as their organizational tenure increased, they received higher pay, which in turn led to higher job satisfaction. The nuances of this general pattern are in the analyses involving tenure, in which we found that pay was a mediator of the relationship between tenure and job satisfaction in the *same year* for the NLSY79 data set, but not for the NLSY97 data set, while pay was a mediator of the relationship between tenure and job satisfaction in the *next year* for the NLSY97 data set, but not for the NLSY79 data set. These results thus suggest that pay has a longer-lasting effect on job satisfaction, as indicated by the relationship between tenure in Year T and job satisfaction in Year T+1, in the NLSY97 data set than in the NLSY79 data set. This may be due to generational differences, and their associated variations in career values, represented in the two data sets (e.g., Cennamo & Gardner, 2008; Dries, Pepermans, & De Kerpel, 2008; Twenge, Campbell, Hoffman, & Lance, 2010). Moreover, the fact that we found both a lagged effect of pay on job satisfaction and a lagged effect of job satisfaction on pay suggests a dynamic interplay between pay and job satisfaction as a result of individuals' organizational tenure. Again, these findings reinforce our

suggestion that future job satisfaction research should adopt a long-term, dynamic perspective in order to fully account for job satisfaction's complexities over time.

A third contribution of the study is that it provides insight into job satisfaction's change over the *long term* through leveraging two long-term longitudinal data sets, spanning 29 and 11 years. We investigated whether the 1-year job satisfaction hangover effect documented by Boswell et al. (2005) and Boswell et al. (2009) continues over the long term. We found that job satisfaction continued to decrease beyond the 1st year of employment and, indeed, displayed a cyclical effect: It continued to decrease throughout people's tenure in a given organization until they switched organizations, at which point their job satisfaction experienced a boost—and then started to decline again. We thus extend the honeymoon-hangover results from both of the studies by Boswell and colleagues to demonstrate the long-term nature of the relationship between time and job satisfaction that could not be explored in cross-sectional studies or short-term studies. Our findings suggest that future job satisfaction research, as well as research on a broader set of job attitudes, would benefit from longitudinal research, rather than being studied only cross-sectionally or with two waves of data.

Limitations and Future Directions

Although our analyses could not conclusively determine causality (Edwards, 2008), our analyses may imply a causal model leading from time to pay to job satisfaction. We suggest that the combination of the theoretical rationales for our hypotheses as well as our longitudinal data and multilevel analyses make our work less prone to causality issues than extant cross-sectional research on time and job satisfaction. That is, although we were not able to test a causal theory directly, our study provides suggestive evidence regarding causal connections among our variables. Future theoretical and empirical work that explicitly examines causal questions about the antecedents and consequences of change in job satisfaction over time will be an important extension of the present study.

Although our study examined one mechanism—an exemplar of job rewards, pay—linking time to job satisfaction, further research is needed to understand more fully the mechanisms underlying why age positively relates to job satisfaction and tenure negatively relates. Indeed, scholars have noted that “little is known about the causes for this observed relation” between age and job satisfaction (Spector, 1997: 25) as well as between tenure and job satisfaction. Future research is needed to directly explore causal explanations for the time–job satisfaction relationship. Methodologically, our choice of job rewards measures was limited by the variables included in the NLSY data sets. Although pay is a strong exemplar of job rewards both conceptually and empirically, future research would benefit from testing a wider array of job rewards measures as possible mechanisms, including incorporating nuances in types of pay (e.g., hourly vs. salary).

Practical Implications

This research suggests several practical implications that could influence the actions of both managers and individual workers. Figure 3, which shows how job satisfaction can increase as people age, yet decrease as tenure advances, is helpful in portraying these implications. The percentage of variance in job satisfaction explained by our models (i.e., 2%–9% of variance across models) highlights that time is, indeed, a significant factor to consider in regards to job

satisfaction. It further highlights that other predictors of job satisfaction exist and, so, neither age nor tenure should be viewed as a sole determinant of job satisfaction outcomes.

Managers should anticipate seeing their employees'—and their own—job satisfaction decline as their organizational tenure continues and, thus, calibrate their own and their employees' expectations accordingly about these expected within-individual changes. To proactively counteract job satisfaction's expected decline, managers can seek ways to cultivate novelty that mimics the job satisfaction boost individuals typically experience in changing organizations, even while remaining in their same organization. For instance, they can provide opportunities for job rotations, temporary or permanent relocation assignments domestically or internationally, or sabbaticals and other forms of leave. Managers can also seek ways to leverage the expertise of longer-term employees and so potentially prevent some of the decline in job satisfaction, such as through engaging them as mentors for newer employees. Managers can also benefit from an awareness of the positive relationship between age and job satisfaction. This insight into between-individual differences in job satisfaction can be important for managing a generationally diverse workforce (e.g., Cennamo & Gardner, 2008; Dries et al., 2008; Twenge et al., 2010). For instance, managers will likely see age-related differences in job satisfaction levels among their employees, such that on average older employees are more satisfied than younger employees, regardless of their organizational tenure. Managers can then consider adapting decisions and behaviors for which employees' job satisfaction is relevant accordingly.

Our results can also help individuals manage their expectations about their job satisfaction level's likely trajectory over time, thereby both normalizing the likely decline and providing useful information for career decision making (e.g., turnover intentions; Boswell et al., 2005). To counteract job satisfaction's expected decline, individuals can take advantage of opportunities provided by their organizations, such as those described above, as well as actively seek to cultivate more meaning in their work through job crafting (Berg, Grant, & Johnson, 2010; Wrzesniewski & Dutton, 2001) or other means of redesigning their work to make it more motivating and meaningful (Grant & Parker, 2009; Hackman & Oldham, 1976). Individuals can also proactively leverage the honeymoon-hangover effect (Boswell et al., 2005; Boswell et al., 2009) by changing organizations periodically, thus shifting themselves from being at an already-declined job satisfaction level (i.e., the "hangover") and benefiting from the increase associated with starting in a new organization (i.e., the "honeymoon"). Although our results do not imply that moving organizations will guarantee an increase in job satisfaction, nor do they suggest that increasing one's job satisfaction is the only important factor in making job change decisions, this implication of our results is nonetheless consistent with the Boswell et al. (2005) and Boswell et al. (2009) results as well as career patterns characterized by the frequent organizational moves so common in the new economy and boundaryless careers (e.g., Arthur, Khapova, & Wilderom, 2005).

Conclusion

Our study contributes to job satisfaction research by providing a rigorous, empirical answer to the question of whether and how the two primary time metrics, age and tenure, relate to job satisfaction and whether job rewards mediate this relationship. We leveraged

two multiyear, large-scale representative longitudinal data sets to study age and tenure in relation to job satisfaction simultaneously. We found that people became less satisfied as their tenure increased within each organization, yet as people aged—and transitioned from organization to organization—their satisfaction increased. We also found that an exemplar of job rewards, pay, mediated these relationships. Our results thus shed light on how job satisfaction changes over the course of individuals' careers and demonstrate complexities and nuances of the longitudinal relationship between time and job satisfaction that could not be explored in previous cross-sectional studies. Future research that continues to consider both time metrics simultaneously, particularly using long-term longitudinal designs and appropriate statistical techniques, has the potential to make significant empirical, theoretical, and practical contributions about the role of job satisfaction in people's work and lives.

Notes

1. Given that participants varied in the number of times they changed organizations (ranging from 0 to 13), it is possible that participants who changed organizations more often might have a different decreasing trend of job satisfaction as they stayed longer in the same organization from those who changed organizations less often. Therefore, we examined whether the number of organization changes (calculated as the total number of organizations participants had worked in over the course of the longitudinal study minus 1) moderated the effect of tenure in Year T on job satisfaction in both Year T and Year T+1 at the within-organization level. Results showed that the number of organization changes did not moderate any of the examined relationships, indicating that how many times participants changed organizations did not influence how their job satisfaction decreased during the time they stayed in the same organization.

2. We conducted the same test as described in Footnote 1 using the NLSY97 data set. As with the results using the NLSY79 data set, we did not find any significant moderation effect of the number of organization changes (ranging from 0 to 5) on the examined relationships, again suggesting that how many times participants changed organizations did not influence how their job satisfaction decreased during the time they stayed in the same organization.

3. We used Monte Carlo simulations with 20,000 replications to conduct all mediation tests in our analyses.

4. As shown in Table 2, the within-organization correlation between pay and job satisfaction was negative, which may seem surprising. However, the negative sign of the correlation is due to the negative direct effect of tenure on job satisfaction within organization. To clearly interpret this correlation, we refer the reader to our full model.

5. It is possible that the strength of the relationship between tenure and job satisfaction changes as people get older, or in statistical terms, there is a cross-level moderation effect of participants' mean age in an organization on the within-organization relationship between tenure and job satisfaction. To test this, we estimated an expanded version of our model that included this cross-level moderation effect of mean age. Results showed that the moderation effect of age on the relationship between tenure and job satisfaction was significant and positive ($\gamma = .01, p < .01$) in the NLSY79 data set but not significant ($\gamma = .00, n.s.$) in the NLSY97 data set. These results indicate that, in the NLSY79 data set, the negative effect of tenure on job satisfaction became weaker as people got older and moved to other organizations. The reason why we found this moderation effect of age in the NLSY79 data set but not in the NLSY97 data set may be that participants in the NLSY97 data set had not yet become old enough to have experienced these changes as their careers progress. We thank the associate editor for this helpful suggestion.

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