

# Relating Age, Decision Authority, Job Satisfaction, and Mental Health: A Study of Construction Workers

Sara Zaniboni<sup>1</sup>, Donald M. Truxillo<sup>2</sup>, Jennifer R. Rineer<sup>2</sup>, Todd E. Bodner<sup>2</sup>,  
Leslie B. Hammer<sup>2</sup>, and Mariah Krainer<sup>2</sup>

1. Department of Psychology, University of Bologna, Bologna, Italy

2. Department of Psychology, Portland State University

## ABSTRACT

Job autonomy is a critical job characteristic in the construction industry, with lower levels of autonomy compared to the general working population. Moreover, there is a paucity of work on individual difference moderators, such as age, considering the effect of job autonomy in important outcomes, such as job satisfaction and mental health. The purpose of the present study was to test a model of moderated-mediation, in which the interaction between decision authority (i.e., a type of autonomy) and age affects job satisfaction, which in turn affects mental health. The model tested is significant, and as expected, decision authority increased the satisfaction of older construction workers more than their younger colleagues, which in turn increased their mental health. We discuss our results in terms of selective optimization and compensation theory and implications for organizational practices.

The workforce is aging, and the construction industry is no exception. In 1985, the average construction worker was approximately 36; in 2010, that age had jumped to approximately 41 and may continue to rise (CPWR, 2013). The economic downturn in the construction industry made it more likely that older workers will retain their jobs and retire at a later age. This can be problematic, as extensive research has demonstrated the physically demanding nature and the resulting health risks of construction jobs (Schneider, 2001). Moreover, occupational stress has increased in the construction industry in recent years (Beswick, Rogers, Corbett, Binch, & Jackson, 2007), and work psychosocial risk factors, such as lack of job control (i.e., a term that represents one conceptualization of low experienced autonomy) should be considered when dealing with construction workers (Alavinia, Van Den Berg, Van Duivenbooden, Elders, & Burdorf, 2009; Alavinia, Van Duivenbooden, & Burdorf, 2007; Boschman, van der Molen, Sluiter, & Frings-Dresen, 2013). For example, Boschman and colleagues (2013) found that Dutch bricklayers experienced lower job control, and that this can have an impact on their mental health. Alavinia and colleagues (2007, 2009) showed that the lack of job control in construction workers negatively affected their ability to cope with physical and mental requirements at work. In other words, besides the physical demands inherent in their work, other job characteristics such as autonomy may be important to consider in the construction industry (Beswick et al., 2007; Boschman et al., 2013). Across the article, we use the terms of job autonomy, job control, and decision authority. These can be

considered different labels to refer to a similar construct, autonomy related to the job, but to be consistent with the previous studies that we are referring to we kept the original label used in the specific research studies.

Research has shown that older workers may benefit from different job characteristics compared to their younger colleagues affecting satisfaction, well-being, engagement, and performance (Truxillo, Cadiz, Rineer, Zaniboni, & Fraccaroli, 2012). For example, Zaniboni, Truxillo, and Fraccaroli (2013) showed that older workers benefit from increased skill variety compared to younger workers, reducing their turnover intentions. In addition, autonomy has been hypothesized to be especially beneficial for older workers, as it allows them to capitalize on their accumulated work experience (Truxillo et al., 2012). This is consistent with selective optimization and compensation theory (SOC; P. B. Baltes & Baltes, 1990) which has been used as a framework to explore the link between age and job characteristics (e.g., Zacher & Frese, 2011; Zaniboni, Truxillo, Fraccaroli, McCune, & Bertolino, 2014; Zaniboni et al., 2013).

In short, older construction workers are a vulnerable population (Bodner, Kraner, Bradford, Hammer, & Truxillo, 2014), and research is needed to determine how to keep them satisfied and healthy at work. Job characteristics may be one way to do this. Job control, a form of autonomy, has already been pointed out as an important job characteristic for construction workers (Alavinia et al., 2007, 2009; Boschman et al., 2013). But whether autonomy is beneficial for older

or younger workers, and in specific jobs such as construction workers, is still unclear (Ng & Feldman, 2015). Moreover, it is important to determine which specific job characteristics are most helpful for different age groups (Truxillo et al., 2012), and only a few studies have examined differential age effects of job characteristics (e.g., de Lange et al., 2010; Shultz, Wang, Crimmins, & Fisher, 2010; Zacher & Frese, 2011; Zaniboni et al., 2013, 2014). More importantly, none of these has examined the interaction of age and decision authority.

The current study addressed these issues by examining how age interacts with decision authority, a dimension of job control and a type of autonomy, to affect job satisfaction which in turn affects mental health in construction workers. We base our moderated-mediation model on SOC theory (P. B. Baltes & Baltes, 1990). In particular, we expected that decision authority would increase job satisfaction more for older, compared to younger, construction workers, which would subsequently increase their mental health. Thus, the present study advances the literature in two ways. First, it examines the possibility of differential relations between decision authority, job satisfaction, and mental health for older and younger workers, as suggested by SOC theory (P. B. Baltes & Baltes, 1990) and theoretical work on age and job design (Truxillo et al., 2012). That is, we examine whether decision authority is especially important to the satisfaction and mental health of older workers, an issue that has not been examined in past research. Second, we examine this issue in a particularly vulnerable population of older workers, those in the construction industry.

### THE INTERACTION BETWEEN DECISION AUTHORITY AND AGE AFFECTS JOB SATISFACTION WHICH IN TURN AFFECTS MENTAL HEALTH: SELECTIVE OPTIMIZATION WITH COMPENSATION PROCESSES

Hackman and Oldham's Job Characteristics Model (JCM; 1975) conceptualized autonomy as the extent to which the job provides workers with freedom and independence over their work schedules and processes. A few years later, Karasek's Job Demands-Control (JD-C) model (1979), focusing more on job stressors rather than specific job characteristics, pointed out autonomy as a key aspect of job control; it was defined as the extent to which a worker has the opportunity to make decisions about his or her work (i.e., decision authority). Spector (1986) showed in a meta-analysis that perceptions of job control, such as decision authority, were associated with higher job satisfaction and performance, and with lower stress and turnover. More recently, another meta-analytic study showed that work autonomy was positively related to job satisfaction and performance, and negatively related to burnout/exhaustion (Humphrey, Nahrgang, & Morgeson, 2007). In particular, work autonomy was positively related to job satisfaction ( $p = .48$ ), growth satisfaction ( $p = .69$ ), and internal work motivation ( $p = .38$ ; Humphrey et al., 2007). In summary, previous research contributions confirm the relationship between work autonomy and satisfaction. In particular, increasing the work autonomy, such as the freedom and the independence over work schedules and processes of a worker, enhance job satisfaction.

Moreover, job satisfaction is an important dimension of work-related well-being (Rothmann, 2008). A meta-analysis of 485 studies, with a combined sample size of 267,995 individuals employed in a large variety of different organizations based throughout the world, showed

that job satisfaction is an important factor influencing the mental/psychological health of workers (Faragher, Cass, & Cooper, 2005). The authors systematically reviewed a vast number of studies that have suggested a link between job satisfaction and physical and mental health, and they found that job satisfaction was most strongly associated with mental/psychological health rather than physical health. These results suggest that if work is failing to provide adequate personal satisfaction, workers are more likely to feel unhappy or unfulfilled, lowering general mood and feelings of self-worth, and culminating in depression and/or anxiety (Faragher et al., 2005). Therefore, the well-being of employees may be compromised if they experience dissatisfaction, suggesting important implications for the design of employee health intervention programs. In particular, effective workplace health interventions should identify and eradicate causes of job dissatisfaction to improve employee health (Faragher et al., 2005). In summary, previous research seems to confirm the relationship between job satisfaction and mental/psychological health. Furthermore, research shows that job characteristics such as work autonomy may positively affect personal job satisfaction, thus indirectly affecting the mental health of employees through satisfaction, suggesting that job satisfaction can be an underlying mechanism in the relationship between work autonomy and mental health.

Autonomy and mental health seem to be critical factors in the construction industry that need further investigation (Alavinia et al., 2007, 2009; Boschman et al., 2013), especially as this workforce ages. Boschman and colleagues (2013) found that Dutch bricklayers experienced less job control compared to the general Dutch working population, and that this can have an impact on their mental health. Moreover, Alavinia and colleagues (2007, 2009) found that the lack of job control negatively affected work ability (i.e., person's ability to cope with physical and mental requirements at work), and positively affected sickness absences from work, both in the near- (i.e., 2–12 weeks) and long- (i.e., >12 weeks) term.

Moreover, age-related differences can be found in terms of need for certain work characteristics such as autonomy (Kooij, de Lange, Jansen, Kanfer, & Dikkers, 2011; Truxillo et al., 2012). In a meta-analytic study, Kooij and colleagues (2011) found a positive relationship between age and intrinsic work-related motives such as the job characteristics of autonomy, accomplishment or achievement, use of skills or interesting work, and helping people or contributing to society. Therefore, autonomy has beneficial effects in terms of job satisfaction, performance, and well-being for workers in general (e.g., Humphrey et al., 2007), and these beneficial effects may be magnified with age (Kooij et al., 2011). Accordingly, in a conceptual article, Truxillo and colleagues (2012) suggested that different job characteristics should have different outcomes for older and younger workers in term of well-being, performance, satisfaction, and engagement. In particular, the authors suggested that older workers potentially benefit more from job autonomy compared to their younger colleagues. However, whether autonomy is more important for younger or older workers is not entirely clear. In their recent meta-analysis, Ng and Feldman (2015) found mixed results for whether autonomy is more beneficial to older or younger workers in terms of a number of outcomes, and they cited the particular work context (e.g., the job) as a key factor that should be examined in future studies to help understand this relationship. In the present article, we examined a vulnerable and under-studied population, construction workers, to see whether autonomy would in

fact be more beneficial to older workers as proposed by Truxillo and colleagues.

SOC theory (P. B. Baltes & Baltes, 1990), a lifespan development theory, can also provide theoretical support for this proposition. SOC theory suggests that successful development is achieved by a process of *selecting* goals and outcomes to pursue in order to match personal resources to demands; *optimizing* performance through the allocation of efforts and resources; and *compensating* for age-related declines through strategies to maintain a certain level of performance. Therefore, SOC theory delineated three adaptive strategies that people can use to fit their current resources to demands, adapting to personal age-related changes as well as to changes occurring in the workplace (B. B. Baltes & Dickson, 2001). Older workers can use these strategies to adapt to the workplace and continue to work successfully. Working autonomously (i.e., having decision authority) can be especially important in this regard, allowing older workers to fit their resources and needs to their job demands. Therefore, decision authority may permit older workers to successfully adapt to age- and job-related changes, maintaining their performance and enhancing job satisfaction and health. Moreover, working independently can give older workers opportunities to use their greater work experience and crystallized intelligence (Kanfer & Ackerman, 2004). Indeed, older workers might select goals that give them the opportunity to use the broad experience that they already have accumulated, allowing them to optimize their efforts to maintain good performance and achieve desired results. Meanwhile, they can compensate for declines in other domains through their accumulated work experience.

In short, deciding freely how to perform their tasks (i.e., decision authority) can give older workers more opportunities to craft their job to better suit their needs and resources, achieving the desired results and goals. For example, older workers performing a physically demanding job, such as a construction job, but with the possibility of deciding how to do their tasks, can find other ways to perform their work (e.g., using different tools or selecting tasks with lower physical demand), ultimately continuing to work successfully and remaining satisfied and healthy in their job. However, the effect of the interaction of decision authority and age on job satisfaction, which in turn may have an impact on mental health, has not been examined empirically.

Thus, the goal of the present study was to test a moderated-mediation model in which the interaction between decision authority and age affects job satisfaction, which in turn affects mental health (Figure 1). In particular, we expected that older construction workers would benefit more in terms of job satisfaction from decision authority compared to their younger colleagues. Moreover, we expected that

the indirect effect of decision authority on mental health through job satisfaction depends on the age of the construction worker where the strength of the indirect effect is stronger for older workers. We base our hypothesis on SOC theory (P. B. Baltes & Baltes, 1990) and theorizing on the differential effects of job characteristics on older and younger workers (Truxillo et al., 2012).

Hypothesis 1: Age moderates the relationship between decision authority and job satisfaction, such that decision authority is more positively related to job satisfaction for older construction workers compared to their younger colleagues.

Hypothesis 2: The indirect effect of decision authority on mental health through job satisfaction depends on the age of the construction worker, such that decision authority will have a larger positive impact on older construction workers' satisfaction, which in turn will increase their mental health (moderated-mediation model).

## METHOD

### Participants and Procedure

Participants were 528 U.S. construction workers. Of these, 306 completed the variables of interest to this study (response rate 57.95%). The sample was 90% male ( $n = 275$ ) and 77.8% white ( $n = 235$ ), and the average age was 44.46 years ( $SD = 9.5$ ; range: 24–71). More specifically, the age distribution by decade was as follows: 23 participants (7.5%) were 30 years or younger, 87 (28.4%) were between 31 and 40 years, 104 (34%) were between 41 and 50 years, 81 (26.5%) were between 51 and 60 years, and 11 (3.6%) were 61 years or older. In addition, 40.1% ( $n = 122$ ) had completed high school, 58.9% ( $n = 179$ ) had some college education, and 1% ( $n = 3$ ) attended graduate school. Regarding the organizational role held by participants, 8.8% ( $n = 27$ ) were supervisors, 18.3% ( $n = 56$ ) were crew leaders, 64.7% ( $n = 198$ ) were crew members, and 8.2% ( $n = 25$ ) held other positions. The average job tenure was 10.83 years ( $SD = 8.08$ ), and the average hours worked per week was 40.85 ( $SD = 8.86$ ; range: 4–80 hours).

Data for this study were collected through cross-sectional self-reported surveys between August and December 2012. Surveys were given during paid work hours, at the beginning of the shift. Participants were provided with a \$25 gift card for participating. Procedural remedies were used to reduce common method variance (Podsakoff, MacKenzie,

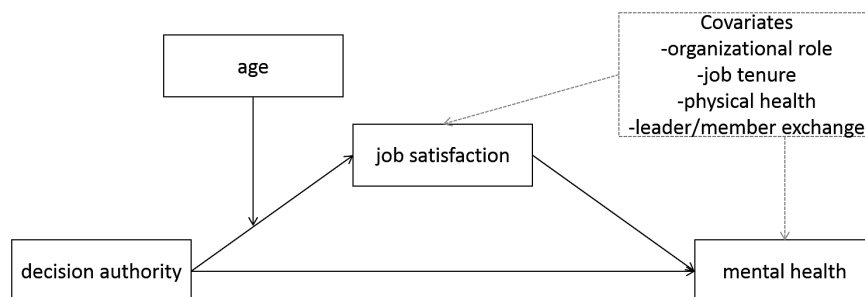


Figure 1. Moderated-mediation model.

Lee, & Podsakoff, 2003). The respondents' anonymity was protected with respect to their employer. Respondents were advised that there were no right or wrong answers, and they were asked to answer the questions as honestly as possible (Podsakoff et al., 2003). Moreover, the model includes an interaction effect, in which the relation between decision authority and satisfaction and in turn in mental health is proposed to be different for older and younger workers. Thus, it is not likely that the hypothesized model is part of the respondents' cognitive map, reducing the threat of respondents "guessing" (Chang, van Witteloostuijn, & Eden, 2010; Harrison, McLaughlin, & Coalter, 1996).

## Measures

### Decision authority

We used the three items from Karasek (R. A. Karasek, 1979; R. Karasek et al., 1998) to assess the amount of freedom and independence that a worker has in terms of carrying out his or her work assignment. A sample item is "On my job, I am given a lot of freedom to decide how I do my work." Items are on a 5-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Coefficient alpha in the present study was .88.

### Job satisfaction

Three items based on Hackman and Oldham's (1975) general job satisfaction scale were used to assess the job satisfaction of the respondents. A sample item is "You are generally satisfied with the kind of work you do in this job." Items are scored on a 5-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Coefficient alpha in the present study was .87.

### Mental health

The SF-12 (Ware, Kosinski, & Keller, 1996) was used to assess the mental health of the respondents. A sample item is "How much of the time during the past 4 weeks have you felt calm and peaceful?" Items are scored on a 5-point Likert scale ranging from 1 (*none of the time*) to 5 (*all the time*). Mental health composite scores were created, based on the validated process for creating scale scores SF-12 (Ware et al., 1996), and are based on sums of population-based standardized scores, rescaled to have population means of 50 and standard deviations of 10. Coefficient alpha in the present study was .78.

### Demographic information

The demographic section of the questionnaire asked questions about the participants' chronological age, gender, ethnicity, education level, organizational role, job tenure, and average hours worked in a week.

### Control variables

The participants' *organizational role* was used as a control given the possible differences in decision authority, and related effects on mental health. For example, Boschman and colleagues (2013) found lack of job control for bricklayers but not for their supervisors, and this in turn may have an impact on mental health. We thus created dummy variables, which were used as control variables in the regression analyses (Supervisor = 1 and otherwise = 0, crew leader = 1 and otherwise = 0, crew member = 1 and otherwise = 0, other = 1 and otherwise = 0). *Job tenure* was also used as a control to deal with the issue of the potential confounding effect of age and tenure, just as Ng and Feldman (2010) controlled for tenure in their meta-analysis of the effects of age on job

attitudes. There is no clear consensus among scholars regarding what is meant by "older worker" and "younger worker" (Finkelstein & Farrell, 2007). Chronological age and occupational/organizational age might or might not exactly overlap (e.g., Kooij, de Lange, Jansen, & Dikkers, 2008). However, chronological age is not only the most widely used index of age in research, but is also extensively used in public policy (Settersten & Mayer, 1997). *Physical health* was measured with the SF-12 (Ware et al., 1996) and was used as a control because of the positive association with job satisfaction (e.g., Faragher et al., 2005) and mental health (e.g., Russ et al., 2012). The physical health composite score was created following the validated process for creating scale scores SF-12 (Ware et al., 1996) (Cronbach's alpha of .76). *Leader/member exchange* (Scandura & Schriesheim, 1994) was used as a control given the positive association with autonomy (e.g., Volmer, Spurk, & Niessen, 2012), job satisfaction (e.g., Volmer, Niessen, Spurk, Linz, & Abele, 2011), and mental health (e.g., Singh & Srivastava, 2009) (Cronbach's alpha of .92).

## RESULTS

Means, standard deviations, intercorrelations, and alpha reliabilities of the variables are presented in Table 1. Age was not significantly correlated with job satisfaction ( $r = -.04$ ,  $ns$ ) nor mental health ( $r = .03$ ,  $ns$ ). Decision authority was positively correlated with job satisfaction ( $r = .32$ ,  $p < .01$ ) and mental health ( $r = .14$ ,  $p < .05$ ). Moreover, job satisfaction was positively correlated with mental health ( $r = .28$ ,  $p < .01$ ). In addition, between the different organizational roles there were differences in term of decision authority,  $F(3, 302) = 11.49$ ,  $p < .001$ . Post hoc comparisons using the Scheffé's test indicated that crew members ( $M = 3.11$ ,  $SD = .99$ ) have significantly lower decision authority compared to supervisors ( $M = 3.90$ ,  $SD = .86$ ) and crew leaders ( $M = 3.80$ ,  $SD = .82$ ).

PROCESS macro (Hayes, 2012), specifically model 7, was used to test our moderated-mediation model where the interaction between decision authority (independent variable) and age (moderator) affects job satisfaction (mediator) which in turn affects mental health (outcome). We specified 10,000 bootstrap samples to obtain robust estimates of standard errors and confidence intervals (Preacher, Rucker, & Hayes, 2007), and we mean-centered independent and moderator variables. In addition, we included organizational role, job tenure, physical health, and leader/member exchange as control variables.

Table 2 reports the results of the moderated-mediation model tested. The mediator variable model (job satisfaction) shows that decision authority ( $B = .19$ ,  $p = .00$ ) and the interaction between decision authority and age ( $B = .01$ ,  $p = .03$ ) are significant and positive in affecting job satisfaction. According to our Hypothesis 1, age moderates the relationship between decision authority and job satisfaction, such that there is a more positive relationship between decision authority and job satisfaction for older than for younger construction workers. Thus, Hypothesis 1 was confirmed. The dependent variable model (mental health) shows that job satisfaction significantly and positively affects mental health ( $B = .19$ ,  $p = .00$ ). According to Hypothesis 2, the indirect effect of decision authority on mental health through job satisfaction depends on the age of the construction worker. Specifically, decision authority will have a stronger effect on older construction workers' satisfaction, which in turn will increase their mental health. The lower part of Table 2 reports critical values of the conditional indirect effect (Hayes, 2012). Results indicate that the indirect effect of decision authority on mental health through satisfaction is significant at all



**Table 1. Means, Standard Deviations, and Intercorrelations Among Study Variables**

|                           | <i>M</i> | <i>SD</i> | 1      | 2      | 3      | 4     | 5     | 6     | 7     | 8    | 9     | 10    | 11    |
|---------------------------|----------|-----------|--------|--------|--------|-------|-------|-------|-------|------|-------|-------|-------|
| 1. Supervisor             | .09      | .28       | —      |        |        |       |       |       |       |      |       |       |       |
| 2. Crew leader            | .18      | .39       | -.15** | —      |        |       |       |       |       |      |       |       |       |
| 3. Crew member            | .65      | .48       | -.42** | -.64** | —      |       |       |       |       |      |       |       |       |
| 4. Other                  | .08      | .27       | -.09   | -.14*  | -.40** | —     |       |       |       |      |       |       |       |
| 5. Job tenure             | 10.83    | 8.08      | .19**  | .08    | -.23** | .09   | —     |       |       |      |       |       |       |
| 6. Physical health        | 47.56    | 6.79      | .02    | .04    | -.05   | .01   | -.10  | (.76) |       |      |       |       |       |
| 7. Leader/member exchange | 3.11     | .92       | .03    | .07    | -.01   | -.12* | .00   | .07   | (.92) |      |       |       |       |
| 8. Age                    | 44.46    | 9.49      | .18**  | -.07   | -.13*  | .15** | .50** | -.07  | -.00  | —    |       |       |       |
| 9. Decision authority     | 3.32     | 1.00      | .18**  | .22**  | -.29** | .00   | .20** | .16** | .43** | .11* | (.88) |       |       |
| 10. Job satisfaction      | 3.90     | .78       | -.06   | -.00   | .07    | -.06  | .00   | .09   | .38** | -.04 | .32** | (.87) |       |
| 11. Mental health         | 38.55    | 8.19      | -.09   | .07    | .04    | -.07  | .06   | -.12* | .28** | .03  | .14*  | .28** | (.78) |

Note. *N* = 306. Supervisor = 1 and otherwise = 0, crew leader = 1 and otherwise = 0, crew member = 1 and otherwise = 0, other = 1 and otherwise = 0. Cronbach's alpha in brackets on the diagonal.

\**p* < .05. \*\**p* < .01.

**Table 2. Results of the Moderated-Mediation Model**

| Variable   | Model of Job Satisfaction (M) |         | Model of Mental Health (Y) |      |
|--|-------------------------------|---------|----------------------------|------|
|  | Coefficient                   | SE      | Coefficient                | SE   |
| Supervisor   | −.21                          | .20     | −1.46                      | 2.15 |
| Crew leader  | −.06                          | .17     | 2.03                       | 1.87 |
| Crew member  | .16                           | .15     | 1.41                       | 1.66 |
| Job tenure   | .00                           | .01     | .06                        | .06  |
| Physical health  | .00                           | .01     | −.17**                     | .07  |
| Leader/member exchange   | .24**                         | .05     | 1.75**                     | .56  |
| Decision authority (X)   | .19**                         | .05     | .15                        | .54  |
| Age (W)  | −.01                          | .01     |                            |      |
| Decision authority × Age   | .01*                          | .00     |                            |      |
| Job satisfaction (M)   |                               |         | 2.14**                     | .63  |
| Model of M summary   | R <sup>2</sup> = .21**        |         |                            |      |
| Model of Y summary   |                               |         | R <sup>2</sup> = .15**     |      |
| Conditional indirect effect of Decision authority (X) on Mental health (Y) through Job satisfaction (M) at values of Age (W) |                               |         |                            |      |
| Age  | Effect                        | Boot SE | Boot 95% CI                |      |
| Younger worker   | .23                           | .14     | .03–.59                    |      |
| Middle age worker  | .42                           | .17     | .16–.85                    |      |
| Older workers  | .60                           | .24     | .23–1.23                   |      |

Note. *N* = 306. Supervisor = 1 and otherwise = 0, crew leader = 1 and otherwise = 0, crew member = 1 and otherwise = 0. The organizational role *other* was not entered in the regression (categorical variable with *k* levels was transformed into *k* – 1 variables each with two levels).

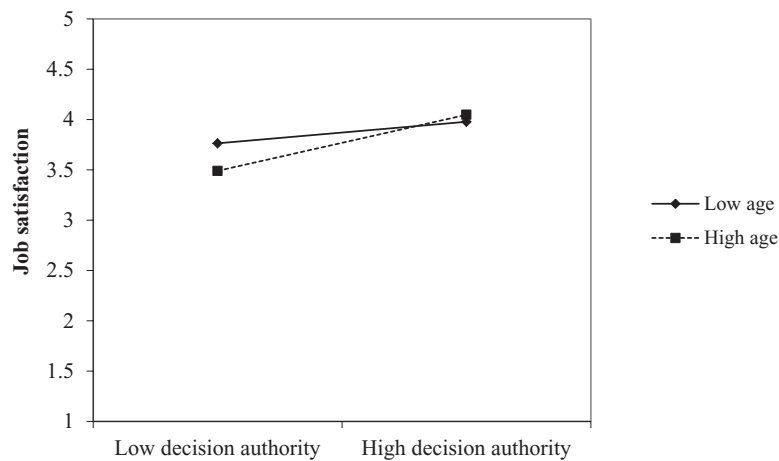
\**p* < .05. \*\**p* < .01.

age levels. In particular, the effect increases in a positive way with age, such that it is stronger for older (.60, CI = [.23, 1.23]) than for younger construction workers (.23, CI = [.03, .59]). Thus, our Hypothesis 2 was confirmed. Figure 2 plots in more detail the interaction effect between decision authority and age on job satisfaction, showing that for older construction workers, there was a stronger positive relationship between decision authority and job satisfaction than for younger construction workers. To re-test the statistically significant effects of the moderated-mediation model, the analysis was also performed with no control variables, and the effects were still statistically significant. Moreover, as an additional analysis, we tested a model where age also

moderates the direct effect of decision authority on mental health, and we found that this interaction was not significant, but the interaction of decision authority and age affecting job satisfaction is still significant.

## DISCUSSION

The purpose of this study was to address a gap in the literature by examining how age interacts with decision authority to affect the job satisfaction and in turn the mental health of construction workers. We used SOC theory (P. B. Baltes & Baltes, 1990) as the theoretical framework for our moderated-mediation model. As hypothesized, we found that decision authority increased the job satisfaction of older



**Figure 2. Workers' age and decision authority interact to affect job satisfaction.** *Note.* Low age (younger construction workers): 1 standard deviation below the mean ( $M - 1 SD = 34.97$ ); High age (older construction workers): 1 standard deviation above the mean ( $M + 1 SD = 53.95$ ).

construction workers more than their younger colleagues, and this increased satisfaction led to better mental health. Our results illustrate that age moderated the relationship between decision authority and job satisfaction, such that decision authority was more positively related to job satisfaction for older compared to younger construction workers. Moreover, the indirect effect of decision authority on mental health through job satisfaction depended on the age of the construction worker, such that decision authority increases more of the older workers satisfaction which in turn increase their mental health.

### Contributions to Theory and Research

As already shown in a large research literature (e.g., [Humphrey et al., 2007](#); [Spector, 1986](#)), autonomy is related to job satisfaction and health, and therefore it is beneficial for workers in general; thus, it is not surprising that in the present study decision authority is significantly correlated with both job satisfaction and mental health. However, whether autonomy always benefits older or younger workers is unclear ([Ng & Feldman, 2015](#)), and the particular work context has been cited as an important future research issue. What is new in the present study is the finding that autonomy is especially beneficial for older construction workers in terms of increasing their satisfaction and, through this, leading to better mental health. Specifically, SOC theory ([P. B. Baltes & Baltes, 1990](#)) would suggest that work autonomy is especially important for older workers. The present findings support the idea that the relationship between job characteristics, such as job autonomy, and important outcomes, such as job satisfaction and mental health, may differ across the life span ([Truxillo et al., 2012](#)). In particular, decision authority allows older workers to fit their resources and needs to their job demands, selecting domains that can help them to optimize the use of their resources and compensating with those domains that are in decline. Therefore, freedom and independence to carry out work assignments (i.e., decision authority) can give older workers opportunities to use their work experience and crystallized intelligence, enhancing job satisfaction and mental health. In other words, decision authority allows older workers to craft their jobs, adapting the workplace demands to their needs and resources, and achieving the expected results and goals. This finding is also consistent with the Job Demands-Resources (JD-R) model ([Demerouti, Bakker, Nachreiner,](#)

[& Schaufeli, 2001](#)). Specifically, it could be that age causes increased demands in particular because of decreased physical skills for older construction workers. However, decision authority can be an important resource for older construction workers. Having the opportunity to decide how to do their job, older workers can craft different ways to successfully perform their work, such as selecting tasks with lower physical demands and using supporting tools to achieve working goals.

The results of this study are consistent with the meta-analytic study of [Kooij and colleagues \(2011\)](#), and the theoretical paper by [Truxillo and colleagues \(2012\)](#). Kooij and colleagues found that the need for autonomy increases with age. Likewise, Truxillo and colleagues suggested that autonomy should be more beneficial for older workers, as it allows them to capitalize on their accumulated work experience. Our results support these hypotheses, showing that decision authority more greatly increases job satisfaction for older construction workers compared to their younger colleagues, and in turn increase also their mental health. Results also support suggestions by [Truxillo, Cadiz, and Hammer \(2015\)](#), that workplace interventions should incorporate ways of increasing control and flexibility for older workers to better integrate their work and non-work demands into later life. Moreover, our results complement those found by [Alavinia and colleagues \(2007, 2009\)](#) and [Boschman and colleagues \(2013\)](#). The authors suggested that the work characteristic of job autonomy can be a key critical aspect in the construction industry, and our study showed that decision authority is particularly important for older construction workers. Therefore, we can expect that the absence of decision authority for construction workers could have major consequences in terms of stress-related outcomes, sickness absence, and turnover for older workers, although these specific relationships are topics for future research.

### Practical Implications

Our findings have implications for organizations. First, given that the workforce is aging, there is an increasing need for organizations to support workers into their later years. The present study provides an example of one way to do this, namely, by providing workers with increased decision authority. Second, considering that one of the main purposes of job design is to optimize the fit between the worker's resources and the job's demands, it is important to understand individual differences

such as age that intervene in this fit process. Indeed, some job characteristics such as decision authority may have more positive effects for older than for younger workers. Third, occupational stress is increasing in the construction industry (Beswick et al., 2007), and workers in this sector seem to have less autonomy compared to the general working population (e.g., Boschman et al., 2013). Therefore, increasing job autonomy would seem to be particularly important in the construction industry, considering the differential effects for older and younger workers. However, these findings may likely generalize to other occupational settings where low levels of job autonomy and control exist, such as lower wage hourly workers in the healthcare and service industries. Organizations and supervisors might consider providing greater decision authority to all employees, but especially to older employees who may have the accumulated skills needed to craft their jobs in effective ways. Finally, just as the general workforce is aging, so too is the construction industry, and to keep older construction workers satisfied and healthy at work we need to understand which working conditions are the best for them. Therefore, in practice, organizations need to design jobs that fit workers across their lifespan in order to increase employees' satisfaction and well-being.

### Limitations and Future Research

Although this study makes an important contribution, it has also some potential limitations that future research should address. First, the data currently available were cross-sectional surveys that may have been affected by common method variance (Podsakoff et al., 2003). As suggested by Podsakoff and colleagues (2003), procedural remedies were used to control common method variance; specifically, the respondents' anonymity was protected with respect to their employer, respondents were advised that there were no right or wrong answers, and they were asked to answer questions as honestly as possible. Moreover, a moderated relationship was considered, reducing the threat of respondents "guessing" patterns (Chang et al., 2010; Harrison et al., 1996). Future research should repeat the study using a longitudinal or time-lagged research design. Second, other moderators besides chronological age (e.g., personality) can affect the relationships between decision authority, job satisfaction, and mental health, and future research should explore this possibility as well. Finally, given recent mixed findings for the moderating effects of age on autonomy (Ng & Feldman, 2015), future studies should examine additional job contexts and jobs to see when autonomy is valuable to workers of different ages and why. Indeed, to increase the external validity the study, the results should be retested with different working populations beyond a construction worker sample.

### CONCLUSION

In conclusion, this study makes an important contribution by addressing a gap in the research about how age interacts with decision authority to affect job satisfaction and in turn mental health. Specifically, we found that decision authority increases the job satisfaction of older construction workers more compared to their younger colleagues, which in turn increases their mental health. Notably, we found this in a particularly vulnerable population of older workers, those in the construction industry. We believe these findings have important implications for both practice and research and we encourage future research on the interaction of age with other job characteristics in affecting

employee job attitudes and well-being in a range of job and industry types.

### ACKNOWLEDGMENTS

Funding for this project was through the Oregon Healthy Workforce Center ([www.ohsu.edu/ohwc](http://www.ohsu.edu/ohwc)), a National Institute for Occupational Safety and Health Total Worker Health Center of Excellence (Grant: U19OH010154). The authors declare no conflicts of interest.

### REFERENCES

- Alavinia, S. M., Van Den Berg, T. I. J., Van Duivenbooden, C., Elders, L. A. M., & Burdorf, A. (2009). Impact of work-related factors, life-style, and work ability on sickness absence among Dutch construction workers. *Scandinavian Journal of Work, Environment & Health*, 35, 325–333. doi:10.5271/sjweh.1340
- Alavinia, S. M., Van Duivenbooden, C., & Burdorf, A. (2007). Influence of work-related factors and individual characteristics on work ability among Dutch construction workers. *Scandinavian Journal of Work, Environment & Health*, 33, 351–357. doi:10.5271/sjweh.1151
- Baltes, B. B., & Dickson, M. W. (2001). Using life-span models in industrial-organizational psychology: The theory of selective optimization with compensation. *Applied Developmental Science*, 5, 51–62. doi:10.1207/S1532480XADS0501\_5
- Baltes, P. B., & Baltes, M. M. (1990). Psychological perspectives on successful aging: The model of selective optimization with compensation. In P. B. Baltes & M. M. Baltes (Eds.), *Successful aging: Perspectives from the behavioral sciences* (pp. 1–34). New York, NY: Cambridge University Press.
- Beswick, J., Rogers, K., Corbett, E., Binch, S., & Jackson, K. (2007). *An analysis of the prevalence and distribution of stress in the construction industry*. Buxton, UK: Health and Safety Executive.
- Bodner, T., Kraner, M., Bradford, B., Hammer, L., & Truxillo, D. (2014). Safety, health, and well-being of municipal utility and construction workers. *Journal of Occupational and Environmental Medicine*, 56, 771–778. doi:10.1097/JOM.0000000000000178
- Boschman, J. S., van der Molen, H. F., Sluiter, J. K., & Frings-Dresen, M. H. W. (2013). Psychosocial work environment and mental health among construction workers. *Applied Ergonomics*, 44, 748–755. doi:10.1016/j.apergo.2013.01.004
- Chang, S. J., van Witteloostuijn, A., & Eden, L. (2010). From the editors: Common method variance in international business research. *Journal of International Business Studies*, 41, 178–184. doi:10.1057/jibs.2009.88
- CPWR. (2013). *The construction chart book: The US construction industry and its workers*. Silver Spring, MD: CPWR-The Center for Construction Research and Training.
- de Lange, A. H., Taris, T. W., Jansen, P., Kompier, M. A. J., Houtman, I. L. D., & Bongers, P. M. (2010). On the relationships among work characteristics and learning-related behavior: Does age matter? *Journal of Organizational Behavior*, 31, 925–950. doi:10.1002/job.649
- Demerouti, E., Bakker, A. B., Nachreiner, F., & Schaufeli, W. B. (2001). The job demands-resources model of burnout. *Journal of Applied Psychology*, 86, 499–512. doi: 10.1037/0021-9010.86.3.499
- Faragher, E. B., Cass, M., & Cooper, C. L. (2005). The relationship between job satisfaction and health: A meta-analysis. *Occupational*

- and *Environmental Medicine*, 62, 105–112. doi:10.1136/oem.2002.006734
- Finkelstein, L. M., & Farrell, S. K. (2007). An expanded view of age bias in the workplace. In K. S. Schultz & G. A. Adams (Eds.), *Aging and Work in the 21st Century* (pp. 73–108). Mahway, NJ: Lawrence Erlbaum Associates.
- Hackman, J. R., & Oldham, G. R. (1975). Development of the job diagnostic survey. *Journal of Applied Psychology*, 60, 159–170. doi:10.1037/h0076546
- Harrison, D. A., McLaughlin, M. E., & Coalter, T. M. (1996). Context, cognition, and common method variance: Psychometric and verbal protocol evidence. *Organizational Behavior and Human Decision Processes*, 68, 246–261. doi:10.1006/obhd.1996.0103
- Hayes, A. F. (2012). *PROCESS: A versatile computational tool for observed variable mediation, moderation, and conditional process modeling*. Retrieved from <http://www.afhayes.com/public/process2012.pdf>
- Humphrey, S. E., Nahrgang, J. D., & Morgeson, F. P. (2007). Integrating motivational, social, and contextual work design features: A meta-analytic summary and theoretical extension of the work design literature. *Journal of Applied Psychology*, 92, 1332–1356. doi:10.1037/0021-9010.92.5.1332
- Kanfer, R., & Ackerman, P. L. (2004). Aging, adult development, and work motivation. *Academy of Management Review*, 29, 440–458. doi:10.5465/AMR.2004.13670969
- Karasek, R., Brisson, C., Kawakami, N., Houtman, I., Bongers, P., & Amick, B. (1998). The Job Content Questionnaire (JCQ): An instrument for internationally comparative assessments of psychosocial job characteristics. *Journal of Occupational Health Psychology*, 3, 322–355. doi:10.1037/1076-8998.3.4.322
- Karasek, R. A. (1979). Job demands, job decision latitude, and mental strain: Implications for job redesign. *Administrative Science Quarterly*, 24, 285–308. doi: 10.2307/2392498
- Kooij, D. T. A. M., de Lange, A. H., Jansen, P. G. W., & Dijkers, J. S. E. (2008). Older workers' motivation to continue to work: Five meanings of age: A conceptual review. *Journal of Managerial Psychology*, 23, 364–394.
- Kooij, D. T. A. M., de Lange, A. H., Jansen, P. G. W., Kanfer, R., & Dijkers, J. S. E. (2011). Age and work-related motives: Results of a meta-analysis. *Journal of Organizational Behavior*, 32, 197–225. doi:10.1002/job.665
- Ng, T. W. H., & Feldman, D. C. (2015). The moderating effects of age in the relationships of job autonomy to work outcomes. *Work, Aging and Retirement*, 1, 64–78. doi:10.1093/workar/wau003
- Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology*, 88, 879–903. doi:10.1037/0021-9010.88.5.879
- Preacher, K. J., Rucker, D. D., & Hayes, A. F. (2007). Addressing moderated mediation hypotheses: Theory, methods, and prescriptions. *Multivariate Behavioral Research*, 42, 185–227.
- Rothmann, S. (2008). Job satisfaction, occupational stress, burnout and work engagement as components of work-related wellbeing. *SA Journal of Industrial Psychology*, 34, 11–16. doi:10.4102/sajip.v34i3.424
- Russ, T. C., Stamatakis, E., Hamer, M., Starr, J. M., Kivimäki, M., & Batty, G. D. (2012). Association between psychological distress and mortality: Individual participant pooled analysis of 10 prospective cohort studies. *BMJ*, 345, 1–14. doi:10.1136/bmj.e4933
- Scandura, T. A., & Schriesheim, C. A. (1994). Leader-member exchange and supervisor career mentoring as complementary constructs in leadership research. *Academy of Management Journal*, 37, 1588–1602. doi:10.2307/256800
- Schneider, S. P. (2001). Musculoskeletal injuries in construction: A review of the literature. *Applied Occupational and Environmental Hygiene*, 16, 1056–1064. doi:10.1080/104732201753214161
- Settersten, R. A., & Mayer, K. U. (1997). The measurement of age, age structuring, and the life course. *Annual Review of Sociology*, 23, 233–261. doi:10.1146/annurev.soc.23.1.233
- Shultz, K. S., Wang, M., Crimmins, E. M., & Fisher, G. G. (2010). Age differences in the demand-control model of work stress: An examination of data from 15 European countries. *Journal of Applied Gerontology*, 29, 21–47. doi:10.1177/0733464809334286
- Singh, M., & Srivastava, U. R. (2009). Leader-member exchange and mental health: A study of middle level managers. *Indian Journal Social Science Researches*, 6, 60–71.
- Spector, P. E. (1986). Perceived control by employees: A meta-analysis of studies concerning autonomy and participation at work. *Human Relations*, 39, 1005–1016. doi:10.1177/001872678603901104
- Truxillo, D. M., Cadiz, D. M., & Hammer, L. B. (2015). Supporting the aging workforce: A review and recommendations for workplace intervention research. *Annual Review of Organizational Psychology and Organizational Behavior*, 2, 351–381. doi:10.1146/annurev-orgpsych-032414-111435
- Truxillo, D. M., Cadiz, D. M., Rineer, J. R., Zaniboni, S., & Fraccaroli, F. (2012). A lifespan perspective on job design: Fitting the worker to the job to promote job satisfaction, engagement, and performance. *Organizational Psychology Review*, 2, 340–360. doi:10.1177/2041386612454043
- Volmer, J., Niessen, C., Spurk, D., Linz, A., & Abele, A. E. (2011). Reciprocal relationships between leader-member exchange (LMX) and job satisfaction: A Cross-lagged analysis. *Applied Psychology*, 60, 522–545. doi:10.1111/j.1464-0597.2011.00446.x
- Volmer, J., Spurk, D., & Niessen, C. (2012). Leader-member exchange (LMX), job autonomy, and creative work involvement. *The Leadership Quarterly*, 23, 456–465. doi:10.1016/j.leaqua.2011.10.005
- Ware, J. E., Kosinski, M., & Keller, S. D. (1996). A 12-Item short-form health survey: Construction of scales and preliminary tests of reliability and validity. *Medical Care*, 34, 220–233. doi:10.1097/00005650-199603000-00003
- Zacher, H., & Frese, M. (2011). Maintaining a focus on opportunities at work: The interplay between age, job complexity, and the use of selection, optimization, and compensation strategies. *Journal of Organizational Behavior*, 32, 291–318. doi:10.1002/job.683
- Zaniboni, S., Truxillo, D. M., & Fraccaroli, F. (2013). Differential effects of task variety and skill variety on burnout and turnover intentions for older and younger workers. *European Journal of Work and Organizational Psychology*, 22, 306–317. doi:10.1080/1359432x.2013.782288
- Zaniboni, S., Truxillo, D. M., Fraccaroli, F., McCune, E., & Bertolino, M. (2014). Who benefits from more tasks? Older versus younger workers. *Journal of Managerial Psychology*, 29, 508–523. doi:10.1108/JMP-12-2012-0381