

DISSERTATION

APPLYING THE THEORY OF WORK ADJUSTMENT TO RECENT AND NON-RECENT
LATINO IMMIGRANT WORKERS

Submitted by

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ABSTRACT

APPLYING THE THEORY OF WORK ADJUSTMENT TO RECENT AND NON-RECENT LATINO IMMIGRANT WORKERS

Introduction: Latino immigrant workers suffer from greater injury and fatality rates compared to American-born workers. The cause of this occupational health disparity is not well-understood. Recently, the theory of work adjustment (TWA) was successfully applied toward understanding the work experiences of Latino immigrant workers. Understanding how Latino workers think about and respond to occupational safety and health (OSH) issues may be critical in developing effective trainings for this vulnerable population. The purpose of this study was to investigate whether there are significant and meaningful differences in how Latino immigrant workers (recent and non-recent) and American-born workers tend to think about and respond to issues at work using the theory of work adjustment framework.

Method: A total of 612 workers (i.e., 189 RLIW, 229 NRLIW, 194 ABW) were recruited from Santa Fe, New Mexico (an old settlement area) and Cincinnati, Ohio (a new settlement area) - 318 participants were male and 294 were female. Recent Latino immigrant workers (RLIW) represented Hispanic individuals who had lived in the United States for 2 years or less; while non-recent Latino immigrant workers represented individuals who had lived in the United States for 5 years or more. Work adjustment (i.e., behavior to change the self or the environment), flexibility (i.e., the range of dissatisfaction that a person will tolerate before adjustment behavior is initiated), and perseverance (i.e., the length of time that a person or environment will persist in their adjustment behavior before an employment interaction is terminated) were measured with English and Spanish scales that were developed for this study.

Results: The main finding from this study was that compared to ABW, RLIW and NRLIW were significantly more like to utilize a reactive ($F(4, 602) = 42.72, p = .000$) work adjustment approach adjusting for gender and years of school completed. NRLIW were found to be significantly more flexible ($F(4, 602) = 11.65, p = .000$) and likely to persevere ($F(4, 602) = 13.17, p = .000$) compared to RLIW and ABW after adjusting for gender and years of school completed. Among Latino immigrant workers, fraction of lifetime in the United States was contrary to what was predicted significantly and positively associated with flexibility ($r = .14, p = .005$) and perseverance ($r = .19, p = .000$), but not work adjustment ($r = .03, p = .480$). Lastly, type of settlement area did not moderate the relationship between immigrant status group and work adjustment style.

Discussion and Implications: This is the first study to empirically examine whether there are meaningful and significant differences in how RLIW, NRLIW, and ABW tend to think about and respond to OSH issues using the TWA framework. The evidence from this study suggests that compared to ABW, NRLIW may tolerate greater dissatisfaction at work before initiating work adjustment behavior and may be more likely to persevere when dissatisfied at work. Both RLIW and NRLIW were significantly more likely to utilize a reactive work adjustment approach compared to ABW who were more likely to utilize an active work adjustment approach. Such findings offer a new perspective in which to develop effective OSH trainings and interventions and contribute to the growing literature that seeks to address the occupational health disparity of Latino immigrant workers.

Keywords: Latino immigrant workers, theory of work adjustment, occupational health disparity

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INTRODUCTION

The demographics of the American workforce are rapidly changing. By 2050, it is projected that about 30% of the U.S. population or 133 million people will be of Latino origin or Hispanic descent (U.S. Census Bureau, 2012). Currently, about 52 million Latino individuals live in the United States, representing 16.7% percent of the total U.S. population (U.S. Census Bureau, 2012). Nearly half of these individuals are foreign-born (Pew Hispanic Center, 2010) and roughly 24% of Latino immigrants are believed to be undocumented (Hofer, Rytina & Campell, 2009; Passel & Cohn, 2009). Hispanic individuals represent the fastest growing ethnic group in the United States and occupy a significant portion of the American workforce both in the present and foreseeable future.

Individuals are classified as being Hispanic or Latino if they self-reported that they are members of this ethnic group (U.S. Census Bureau, 2012). Latino immigrant workers represent a subset of Latino workers who are foreign-born (Richardson, 2005) and tend to be from Mexico, Guatemala, Puerto Rico, Cuba, Central and Southern America and other Spanish-speaking countries (Pew Hispanic Center, 2010). For the purposes of this study, the terms "Latino" and "Hispanic" will be used interchangeably when describing members of this group.

The ethnic makeup of the United States labor force is important to consider because Latino immigrant workers suffer from greater injury and fatality rates compared to American-born workers (Acrury & Quandt, 2007; Center for Disease Control, 2008; Dong & Platner, 2004; Forst, Avila, Anozie, & Rubin, 2010; Goodrum & Dai, 2005; Loh & Richardson, 2004; Richardson, 2005; Richardson, Ruser, & Suarez, 2003). For example, Richardson and colleagues (2003) found that while the overall workplace fatality rate for all workers has declined nearly 20% in the last decade, work-related death among Latino workers rose

approximately 35% during this same time period. Of these fatalities, 59% involved foreign-born Latino workers primarily from Mexico, Cuba, Salvador, Guatemala, and the Dominican Republic (Richardson et al., 2003). Indeed, the Center for Disease Control and Prevention (2008) found that the rate of fatal workplace injuries was significantly higher for Latino immigrant workers (5.9 per 100,000 workers) compared to all workers (4.1 per 100,000 workers) in the United States. Such findings suggest a correlation between being a foreign-born Latino worker and an elevated risk of occupational injuries and fatalities. Confounding this issue, is the fact that Latino workers are more likely to underreport their injuries (Dong, Men, Ringen, 2010; Dong & Platner, 2004; Richardson et al., 2003). Due to this trend, the true injury and fatality rate of Latino workers may be masked or unknown at best.

The cause of this occupational health disparity is not well-understood in the literature (Brunette, 2004; Flynn, 2010; Forst et al., 2010). Various researchers have proposed that the following factors may help explain this disparity: (a) *legal status* (Flynn, 2010; O'Connor, Loomis, Runyan, Abboud dal Santo, & Schulman, 2005), (b) *language barriers* (Dong & Platner, 2004; McGlothlin, Hubbard, Aghazadeh, & Hubbard, 2012; Roelofs, Sprague-Martinez, Brunette, & Azaroff, 2011; Ruttenberg & Lazo, 2004), (c) *overrepresentation in risky occupations and industries* (Brown, 2003; Forst et al., 2010; Goodrum & Dai, 2005; Hudson, 2007; O'Connor et al., 2005; Loh & Richardson, 2004; Orrenious & Zavodny, 2009; Richardson et al., 2003), (d) *inadequate training* (Canales et al., 2009; Eggerth, DeLaney, Flynn, & Jacobson, 2012; McGlothlin et al., 2012; O'Connor et al., 2005; Ruttenberg & Lazo, 2004), and (e) *cultural differences* (Antsel, 2002; Brown, 2003; Rabinowitz & Duran, 2001; Roelofs et al., 2011). While such factors may partially explain this occupational health disparity; they do not

adequately address the role of volition in occupational safety and health (OSH)¹ decision-making. Such explanations ignore how workers *respond* to OSH issues.

A number of researchers have argued that Latino workers may respond differently to OSH issues compared to American-born workers as a function of the aforementioned factors (Dai & Goodrum, 2011; Dong, Men, & Ringen, 2010; Flores, Hsieh, & Chiao, 2011; Goodrum & Dai, 2005; Orrenius & Zavodny, 2009). For example, Dai and Goodrum (2011) found that while English- and Spanish-speaking craft workers shared similar OSH concerns, barriers such as difficulty communicating with supervisors and lack of training made it more challenging for Spanish-speaking workers to respond to OSH issues. Similarly, Gilkey, Lopez del Puerto, Chen, and Rosecrance (2013) found that Latino workers reported that language was a barrier to effective training.

Another plausible explanation is that the marginalized status of Latino workers may contribute to their occupational health disparity (de Castro, Fujishiro, Sweitzer, & Oliva, 2006; Eggerth et al., 2012; Kanagui-Munoz, Garriott, Flores, Cho, & Groves, 2011; Shinnar, 2007). For example, Latino workers may find it difficult to appropriately respond to OSH issues because these individuals feel like both their rights and choices are limited. It is also possible that Latino workers may be concerned with their safety, but feel that there is little they can do to protect themselves (Gilkey et al., 2013).

Some researchers (Brown, 2003; Brunette, 2005; Eggerth & Flynn, 2012; McGlothlin et al., 2012; O'Connor et al., 2005) have stressed the importance of developing and disseminating linguistically and culturally appropriate OSH training materials to this population. In fact, the Occupational Safety and Health Administration (OSHA) has developed several OSH resources

¹ Occupational safety and health focuses on protecting the safety, health, and well-being of workers and others (e.g., family members, customers) who may be negatively impacted by a work environment (Cohen & Colligan, 1998).

(e.g., trainings, fact sheets, workers' rights documents) for Spanish-speaking workers. Latino immigrant workers can access these materials online or call a toll free number and be connected with a Spanish-speaking operator. Unfortunately, these training materials are poorly translated or fail to address the cultural, legal, and socio-economic realities of Latino workers (Ahonen, Benevides, & Benach, 2007; Brown, 2003; McGlothlin et al., 2012; O'Connor et al., 2005). For example, limited literacy and Internet access make it more difficult for Latino immigrant workers to access online materials. Alternatively, it may be that the content of the materials are not appropriate for this population.

Fortunately, some researchers (Brunette, 2005; Canales et al., 2009; Williams, Ochsner, Marshall, Kimmel, & Martino, 2010) have developed and evaluated training materials specific to Latino workers. For example, Canales and colleagues (2009) designed a construction training course for American-born supervisors (i.e., Spanish as a second language materials) and their Latino workers (i.e., English as a second language materials). This training increased Latino workers' OSH confidence and improved communication between American-born supervisors and Latino employees. In another study, Williams and associates (2010) assessed a peer-led one-day interactive Spanish-language OSH training among 300 day laborers in the construction industry. This training increased certain types of personal protective behavior, the frequency of self-protective work practices, and reduced the rate of self-reported injuries between the pre-test and post-test.

Findings from these studies demonstrate that this occupational health disparity can be addressed with interventions that target Latino workers' increased injury risk (e.g., language barriers, lack of training). Indeed, Eggerth and Flynn (2012) made the point that researchers, practitioners, and policymakers need to better understand the work experiences of Latino

workers from both a practical and theoretical perspective to adequately address this occupational health disparity. Understanding how Latino workers think about and respond to OSH issues may be critical in developing effective trainings for this vulnerable population. However, to date, there have not been any trainings tailored to how Latino workers think about and tend to respond to OSH issues. Such findings might help future researchers, practitioners, and policymakers tailor more effective OSH training materials for this vulnerable population.

The theory of work adjustment (TWA; Lofquist & Dawis, 1984) offers a promising theoretical framework to understand potential differences in how Latino immigrant workers (recent and non-recent) and American-born workers tend to respond to OSH issues. TWA is a robust, flexible, and reciprocal person-environment fit model that can be meaningfully applied to the work behaviors of individuals and organizations. Recently, Eggerth and Flynn (2012) successfully applied TWA to a sample of Latino immigrant workers ($N = 10$) and found that six values (e.g., achievement, status) and 17 of 20 work reinforcers (e.g., compensation, security) proposed within TWA could describe the work experiences of Latino immigrant workers. However, the study did not address the potentially critical question of whether there are significant and meaningful differences in how Latino immigrant workers (recent and non-recent) and American-born workers tend to respond to OSH issues. Building on Eggerth and Flynn's (2012) findings, the purpose of this study was to investigate whether there are significant and meaningful differences in how Latino immigrant workers (recent and non-recent) and American-born workers tend to think about and respond to issues at work using the theory of work adjustment framework.

Theory of work adjustment

The theory of work adjustment (Dawis & Lofquist, 1984) first originated in 1964 and was based on findings from the Minnesota work adjustment project which began in 1957 (Dawis, Lofquist, & Weiss, 1968; Weiss, Dawis, England, & Lofquist, 1967). The fundamental purpose of the Minnesota work adjustment project was to measure and predict how individuals tend to adjust to their work environment. This original model was comprised of nine propositions which focused on: (1) work adjustment, (2) values, (3) abilities, (4) needs, (5) work reinforcers, (6) requirements, (7) satisfaction, (8) satisfactoriness, and (9) tenure. TWA was further developed in the book *Adjustment to Work* (Lofquist & Dawis, 1969) and later refined by the originators of the theory. Over the last few decades, TWA has gone through several revisions and refinements. Currently, TWA consists of 17 propositions and 10 corollaries that make additional predictions regarding correspondence, flexibility, and perseverance (refer to Dawis, 2005).

TWA represents a sophisticated, dynamic, and reciprocal work theory that can help researchers understand how individuals and organizations behave in the work environment. TWA began as a person-environment fit model and later expanded into a process model. The complete TWA framework contains two models: (a) the *predictive model*, which describes the match between a person and environment, and (b) the *interaction model*, which describes the ongoing interaction process between a person and environment. Both the person and environment are important in understanding the TWA framework; however, most studies adopt an individual difference perspective in which aspects of the person are meaningfully measured in relation to the environment (Dawis, 2005; Dawis & Lofquist, 1984). In the application of TWA, most researchers measure characteristics of the person more often than the environment. Similarly, this study follows the individual difference perspective.

Focusing on the TWA predictive model, it is important to note that a person exists and behaves within an environment. The environment might represent a supervisor, department, or an organization. TWA posits that individuals and environments adjust their behaviors because they *want* to achieve correspondence or a match between the abilities and skills that workers supply and the reinforcers and ability requirements that characterize their workplace (Dawis & Lofquist, 1984; Rounds, Dawis, & Lofquist, 1987). According to Lofquist and Dawis (1991), individuals and organizations are intrinsically motivated to replicate behaviors that are rewarding and avoid behaviors that are punishing.

When individuals experience correspondence, this creates 'satisfaction' or the extent to which individuals perceive that their needs are being met by the environment. Equally, an environment seeks 'satisfactoriness' or the extent to which the environment perceives that its labor needs are fulfilled (Dawis, 2005; Dawis & Lofquist, 1984). In this framework, correspondence drives satisfaction which in turn leads to tenure or the length of time that a person remains employed (Dawis, 2005). On the individual level, TWA has been found to predict satisfaction and tenure (Bretz & Judge, 1994; Dawis, 2005; Dawis & Lofquist, 1984; Eggerth, 2008; Rounds et al., 1987).

TWA suggests that there are four states which individuals and environments can experience at work: (a) satisfied and satisfactory, (b) satisfied and unsatisfactory, (c) dissatisfied and satisfactory, and (d) dissatisfied and unsatisfactory. TWA postulates that the first state will maintain behavior; whereas the other three states will produce work adjustment behaviors to promote correspondence. Work adjustment behavior serves as a common response from both the person and environment to achieve correspondence.

TWA proposes that each person has a work personality that consists of needs and abilities. The work environment seeks employees who fulfill the ability requirements that the environment needs to function and in exchange provides employees with a reinforcer system (i.e., pay, benefits) to reinforce desirable behaviors. TWA posits that employees' behavior is shaped and maintained by the work reinforcers that are provided by the environment (Hesketh & Griffin, 2005). Given the nature of work (i.e., a situation that is meant to fulfill needs), it makes sense that individuals seek work environments that fulfill their needs or requirements for work-related reinforcers (Hesketh & Griffin, 2005). Indeed, TWA is rooted in the concept of work reinforcement (Shubsachs, Rounds, Dawis, & Lofquist, 1978).

To better conceptualize work reinforcement within the TWA framework, Dawis (1994) recommended the 20 work reinforcers of the Minnesota importance questionnaire (MIQ; Weiss et al., 1967) to help explain how needs and values can be reinforced by the work environment. According to Dawis (1994), the MIQ work reinforcers can be grouped into six value dimensions: (a) *achievement*, which emphasizes feedback and accomplishment, (b) *autonomy*, which provides employees with initiative and self-control, (c) *status*, which provides recognition, (d) *altruism*, which emphasizes harmony and service to others, (e) *safety*, which focuses on an environment free from stress, and (f) *comfort*, which focuses on stability and predictability. Findings from Shubsachs and colleagues (1978) suggest that various occupational reinforcer patterns corresponded well with these six values. Such values may be important in understanding how individuals get their needs met by the work environment.

Some researchers (e.g., Dawis, Dohm, Lofquist, Chartrand, & Due, 1987; Eggerth & Flynn, 2012; Hesketh & Griffin, 2005; Shubsachs et al., 1978) have proposed that these six values can be further classified into the following three factors: (a) *self* (i.e., internal), (b)

other people (i.e., social), and (c) *the environment* (i.e., external). Within this factor structure, achievement and autonomy are reinforced by the self, status and altruism are reinforced by other people, and safety and comfort are reinforced by the external environment (see Table 1). Such factors have received support in the literature (Doering, Rhodes, & Kaspin, 1988). Therefore, it seems plausible that by identifying the source of value fulfillment (i.e., self, other people, the environment), researchers may better understand strategies to promote greater correspondence between a person and their environment.

The second component of TWA is the interaction model. This model emphasizes how dissatisfaction drives work adjustment behavior (Dawis, 2005). Dawis and Lofquist (1984) describe work adjustment as a process by which individuals or environments change their behavior to achieve correspondence. The interaction model reflects the ongoing process of work adjustment behavior between a person and their environment. Dawis (2005) suggests that successful work adjustment consists of the following three outcomes: (a) satisfaction, (b) satisfactoriness, and (c) tenure. When correspondence is lacking between a person and their environment this often results in voluntary turnover on the part of the employee or termination by the environment.

Dawis and Lofquist (1984) proposed four work adjustment style variables that are posited to influence this interaction process: (a) flexibility, (b) perseverance, (c) activeness, and (d) reactivity (see figure 1). Flexibility is defined as the range of discorrespondence that a person or environment will accept or tolerate before action is taken. TWA posits that each person and environment has a unique range of flexibility before reaching the point at which work adjustment behavior become necessary (i.e., the lower threshold). Perseverance represents the length of time that a person or environment will persist in their adjustment behavior before

reaching the point at which the interaction is terminated (i.e., the upper threshold). Like flexibility, TWA posits that individuals and environments may vary in how long they will persist in their work adjustment behavior.

Once the work adjustment cycle begins, individuals may respond to discorrespondence with two adjustment modes: (a) *activeness*, action intended to change the environment, and (b) *reactiveness*, action intended to change the self (Dawis & Lofquist, 1984). Individuals who adopt an active adjustment mode may choose to speak with a supervisor when they see hazards at work; whereas, a person with a reactive adjustment mode might purchase their own personal protective equipment in response to a safety concern. Dawis (2005) proposed that over time, work adjustment modes will likely stabilize. When this occurs, the four adjustment styles may be considered as traits or behavioral tendencies rather than states. Although activeness and reactiveness are conceptualized as traits in TWA, it seems plausible that these characteristics or behavioral tendencies may vary between Latino immigrant workers (recent and non-recent) and American-born workers. Furthermore, from the intervention standpoint, it may be crucial to encourage workers to utilize a range of coping strategies in response to OSH issues.

TWA and Latino immigrant workers

Eggerth and Flynn (2012) found that TWA may be instrumental in understanding the work experiences of Latino immigrant workers. The purpose of this exploratory qualitative study was to determine if TWA could be utilized to describe the work experiences of Latino immigrant workers. Ten Latino immigrant workers were interviewed and asked to describe their work experiences in the United States and also in their home countries (e.g., Mexico, Guatemala). Participants had lived in the United States between 2 and 10 years. Recall that

within TWA, 20 work reinforcers can be grouped into six value dimensions that are grouped into three factors.

Results from this study support all six values (i.e., achievement, comfort, status, altruism, safety, autonomy) proposed in TWA (Eggerth & Flynn, 2012). However, three work reinforcers (i.e., creativity, moral values, supervision-technical) did not clearly emerge during the interviews. This means that one work reinforcer from each reinforcer class was not found during the qualitative analysis (see Table 1).

Table 1
Needs, Values, and Reinforcer Class in the Theory of Work Adjustment
Table Adapted from Eggerth and Flynn (2012)

Need	Value	Reinforcer Class
Ability utilization	Achievement	Internal
Achievement		
Creativity	Autonomy	
Responsibility		
Advancement		
Recognition	Status	
Authority		
Status		
Coworker relations	Altruism	Social
Social service		
Moral values		
Activity	Comfort	External
Independence		
Variety		
Compensation		
Security		
Working conditions		
Company policies	Safety	
Supervision - human relations		
Supervision - technical		

Conversely, compensation and security (both part of the external reinforcer class) were mentioned more frequently than the other work reinforcers. Such findings suggest that Latino immigrant workers (recent and non-recent) may prioritize comfort more than the remaining five values (i.e., achievement, autonomy, status, altruism, safety).

While these preliminary findings support the application of TWA in a Latino immigrant sample, such results are exploratory and should be interpreted cautiously. For example, another plausible explanation for these findings is that the sample size was too small and saturation (i.e., the number of participants necessary to obtain a representative sample) was not achieved. Conversely, it is also possible that all twenty work reinforcers would have been supported with a larger sample size. Nonetheless, this study provides support for the application of TWA toward understanding the work experiences of Latino immigrant workers and provides sufficient justification to further investigate if Latino immigrant workers tend to think about and respond differently to OSH issues.

Predicting TWA work adjustment styles among RLIW, NRLIW, and ABW

Building on the findings from Eggerth and Flynn (2012), the present study utilizes the TWA interaction model to understand how recent and non-recent Latino immigrant workers and American-born workers tend to respond to OSH issues. To date, no study has directly examined the TWA work adjustment modes among recent Latino immigrant workers (RLIW), non-recent Latino immigrant workers (NRLIW), and American-born workers (ABW). Understanding the work adjustment modes of RLIW, NRLIW, and ABW may help predict how each group tends to think about and respond to OSH issues. It is posited that RLIW may use different work adjustment strategies compared to NRLIW and ABW. In the following section, factors that may

influence the work adjustment behavior of each group (i.e., demographic characteristics, context) will be discussed in greater detail.

Recent and non-recent Latino immigrant workers

For this study, recent Latino immigrant workers (RLIW) represent Mexican or Central American immigrants who have been in the United States for 2 years or less; whereas, non-recent Latino immigrant workers (NRLIW) represent Mexican or Central American immigrants who have lived in the United States for 5 years or more. It could be argued that NRLIW are simply RLIW who have been in the United States for a longer duration of time, know English better, and may be more likely to have legal status. Since this is the first study to explore whether there may be meaningful differences between RLIW and NRLIW, it may be difficult to determine which factors may change over time. However, it seems plausible that NRLIW may better understand characteristics of the work environment (i.e., co-workers, supervisors, safety culture and climate) and as a result, have more options in how they can respond to OSH issues. Nevertheless, both RLIW and NRLIW represent a subset of Hispanic individuals who live in the United States and are significantly more likely to suffer from non-fatal and fatal work injuries on the job (Anderson, Hunting, & Welch, 2000; Brunette, 2005; Loh & Richardson, 2004; Richardson et al., 2003).

To date, no studies have been conducted that differentiate the injury and fatality rates of RLIW and NRLIW. It is proposed that the unique demographic characteristics of RLIW and NRLIW may influence the work adjustment styles of these workers and their subsequent OSH behaviors. Therefore, the following factors were considered in relation to TWA: (a) demographic characteristics (b) previous work experiences, (c) immigration process (d) legal status, (e) discrimination, and (f) type of settlement area.

Demographic characteristics: The terms "Hispanic" and Latino" refer to individuals from a variety of countries (e.g., Mexico, Puerto Rico, Brazil, Cuba) who differ in important ways such as language and culture. In general Latino immigrant workers tend to be: (a) younger, (b) less educated, (c) part of a lower SES, (d) earn less, and (e) have larger families compared to ABW (Brunette, 2005; Dong et al., 2010; Flores et al., 2011; Pew Hispanic Center, 2010). Consequently, Latino immigrant workers may be in greater occupational risk because such individuals may lack the experience, education, and resources necessary to adequately address OSH issues (Gilkey et al., 2013).

Previous work experiences: Latino immigrant workers' previous work experiences in their country of origin might influence their OSH expectations and behaviors in the United States. Supporting this perspective, Brunette (2005) found that Latino immigrant workers arrive in the United States with: (a) a poor understanding of OSH, (b) lack of awareness regarding the role that the government plays in creating and enforcing safety regulations, and (c) general distrust of government agencies. Moreover, Brunette's (2005) findings suggest that Latino immigrant workers may be less aware of safety policies and practices in the United States because working conditions in their native countries were lacking (e.g., inadequate training, abusive supervisors, absence of personal protective equipment). For example, Latino immigrant workers have reported that they rarely see others in their native countries use personal protective equipment at work (Ruttenberg & Lazo, 2004).

Once in the United States, Latino immigrant workers are typically unable to find work in their previous occupation, experience unemployment, or face underemployment. For those who do find work, Shinar (2007) found that previous occupational skills and knowledge may not directly transfer across borders. This finding may indicate a problem of scale. For example,

someone who worked on a family farm in their native country may believe that they are familiar with agricultural work and hazards. However, this same individual may be unprepared for agricultural work at the industrial level in the United States. Thus, previous work experience may negatively influence the likelihood that Latino immigrant workers will follow appropriate safety and health regulations in the United States.

Another possibility is that prior work experience may be irrelevant because compared with ABW, Latino immigrant workers are significantly more likely to work in dangerous, low-skilled, and physically demanding occupations (Dong et al., 2010; Hudson, 2007; Orrenious & Zavodny, 2009). Additionally, Latino immigrant workers tend to seek jobs that require minimal English language skills (Brunette, 2004). For instance, in a sample of undocumented Mexican immigrants, Rivera-Batiz (1999) found that approximately 31% of men and 41% of women could not speak English. Indeed, Orrenius and Zavody (2009) found that workers who have poor English skills are more likely to work in riskier jobs. Thus, Latino immigrant workers may be at greater risk for occupational injuries and fatalities at work because such individuals: (a) have inaccurate perceptions of safety in the United States, (b) are more willing to accept dangerous occupations, and (c) are employed in jobs that do not provide opportunities to learn English, and therefore are unable to understand safety procedures.

In the context of TWA, it is predicted that RLIW and NRLIW may be more flexible and persevere longer when such individuals experience discorrespondence at work. Furthermore, compared to ABW, Latino immigrant workers may be more likely to adopt a reactive work adjustment mode rather than an active adjustment mode. The rationale for this prediction is that Latino immigrant workers may feel like they lack the resources to change their work situation.

Moreover, Latino immigrant workers realize that their jobs are dangerous or that there are aspects of their job that are suboptimal, but feel like their options are limited

Immigration process: A number of economic factors motivate Latino immigrant workers to immigrate to the United States (Rumbaut, 1999; Yakushko, Backhaus, Watson, Ngaruiya, & Gonzalez, 2008; Zarrugh, 2007). Latino immigrant workers believe that the United States offers better job opportunities, higher wages, and improved educational opportunities than their native country (Valdivia & Flores, 2012). Supporting this perspective, Ruhs (2010) found evidence that working conditions in the United States were typically better than those in Latino immigrant workers' countries of origin.

However, the cost of immigrating to the United States is high. Latino immigrant workers typically face extreme hardships in crossing the border (Eggerth & Flynn, 2012). For example, Latino immigrant workers may be exploited by their guides, robbed, or raped (Loh & Richardson, 2004). Additionally, Flynn (2010) found that the financial costs of crossing the border are considerable; in many cases forcing Latino immigrant workers to begin their new lives in debt. Once in the United States, prospects may be grim. Perpetual poverty and a constant fear of deportation permeate the work experiences of Latino immigrant workers (Arcury & Quandt, 2007; De Genova, 2002). Indeed, depression is common among this population (Connor, Rainer, Semco, & Thomasine, 2007; Rosenbaum & Shinn, 2005).

Given the difficult nature of the immigration process, it seems plausible that hazards at work may appear minimal to Latino immigrant workers. Supporting this perspective, Eggerth and Flynn (2012) argued that immigrating to the United States could make Latino immigrant workers underestimate risks at work. Furthermore, Latino immigrant workers might feel that the benefits of immigrating to the United States (e.g., higher wages, better future for their children)

may outweigh potential costs (e.g., exploitation, poverty, discrimination). What seems clear is that Latino immigrant workers begin their journey in the United States at an economic and social disadvantage.

Within the TWA framework, it is predicted that the immigration process may influence how flexible or to what extent Latino immigrant workers persevere in the face of OSH issues. Specifically, it may take a greater amount of discorrespondence before Latino immigrant workers reach their lower threshold or point at which individuals initiate work adjustment behavior (see Figure 1).

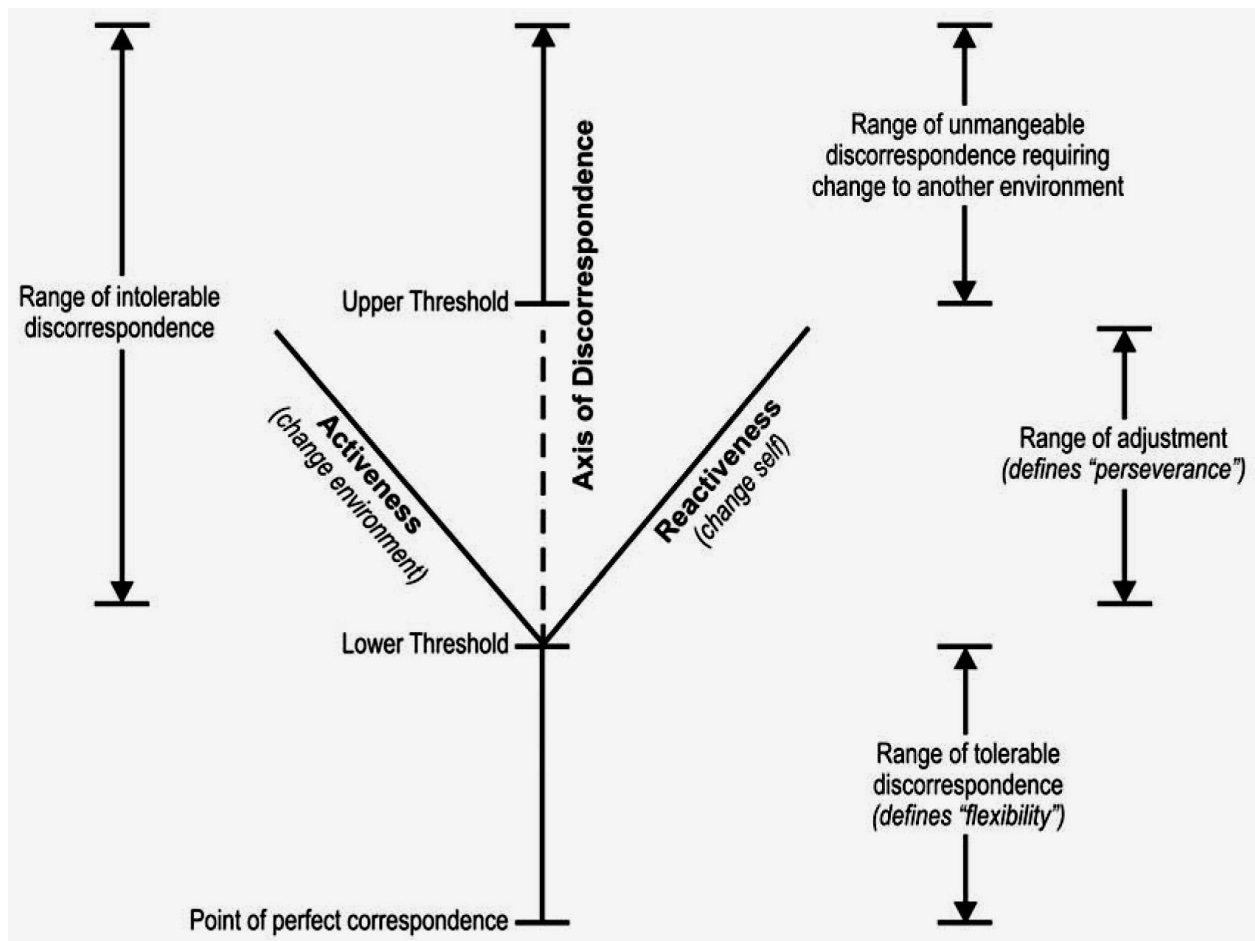


Figure 1
Work Adjustment Process and Style Dimensions
 Adapted from Dawis and Lofquist (1984) and Eggerth (2008)

In addition, Latino immigrant workers may persist longer when they are dissatisfied, meaning that it might take longer before Latino immigrant workers reach their upper threshold or point at which they cease their work adjustment behavior (see Figure 1).

Legal status: Various terms (e.g., illegal, unauthorized) have been used to describe the legal status of undocumented workers (De Genova, 2002). In the context of Latino immigrant workers, Flynn (2010) found four themes that capture the experience of being an undocumented worker: (a) fear of deportation, (b) economic concerns, (c) limited mobility, and (d) limited access to institutional resources. A common thread among these themes is fear, a concept that has appeared across a number of studies (Brunette, 2005; De Genova, 2002; Flynn, 2010, Nuñez & Heyman, 2007).

Being undocumented makes Latino immigrant workers more vulnerable to exploitation. For instance, undocumented status may lead such workers to seek and accept lower-skilled occupations (Davila, Mora, & Gonzalez, 2011; Orrenius & Zavodny, 2009). Flynn (2010) argued that without legal status, Latino immigrant workers are less likely to leave dangerous jobs or request that their jobs be safer. Moreover, de Castro and colleagues (2006) found that employers may find loopholes (e.g., listing two names for the same person, not paying overtime) that may shortchange such workers. Some employers may even come to expect that Latino immigrant workers will work hard without complaint because of their previous experiences with similar workers (de Castro et al., 2006; Flynn, 2010).

Considering TWA, undocumented status may increase the likelihood that Latino immigrant workers will be more flexible and persevere longer compared to ABW. Additionally, Latino immigrant workers could be more likely to use a reactive work adjustment mode when

faced with discordance at work. It seems logical that it would be easier for Latino immigrant workers to try to change themselves than a system that systematically exploits them.

Discrimination: As a vulnerable and undocumented population, Latino immigrant workers have fewer rights than their ABW counterparts (Brunette, 2005; Flynn, 2010; Ruhs, 2010; Yakushko et al., 2008). In fact, discrimination toward Latino immigrant workers has been well-documented in the literature (de Castro et al., 2006; Flores et al., 2011; Flynn, 2010; Loh & Richardson, 2004). For example, Latino immigrant workers typically earn less than ABW (Rivera-Batiz, 1999), are employed in more dangerous occupations (Ahonen et al., 2007; Dong & Platner, 2004; Dong et al., 2010; Hudson, 2007; Orrenious & Zavodny, 2009), and have fewer resources available for OSH issues (Dong & Platner, 2004). Further complicating matters, should an injury occur, Latino immigrant workers are less likely to have health insurance or be covered by workers' compensation claims (Dong & Platner, 2004; Rhodes, Foley, Zometa, & Bloom, 2007).

Discrimination by managers (de Castro et al., 2006; Shinnar, 2007) and other Latino immigrant workers (Eggerth & Flynn, 2012) is common. Managers and co-workers may discriminate against Latino immigrant workers through differential treatment. For instance, a number of studies (Brunette, 2005; de Castro et al., 2006, Flynn, 2010; Eggerth & Flynn, 2012) have found that Latino immigrant workers are treated worse than other racial or ethnic groups at work. Such discrimination persists because it may be difficult for Latino immigrant workers to advocate for themselves. Indeed, researchers (Brunette, 2005; de Castro et al., 2006; Flynn, 2010) have found that Latino immigrant workers fear retaliation from their supervisors (e.g., withheld wages, unsafe working conditions, being fired) if they complain about issues at work. In addition, Flynn (2010) found that Latino immigrant workers might blame themselves for

inequality at work, especially if such individuals recently immigrated to the United States.

Discrimination is likely to be a factor in how Latino immigrant workers choose to respond to OSH issues.

In the context of the TWA, discrimination might help explain why Latino immigrant workers may be more flexible when dissatisfied with conditions at work or that members of this group might persevere for a longer duration of time compared to ABW. Moreover, Latino immigrant workers who are victims of discrimination may be more likely to utilize a reactive adjustment mode rather than an active mode. Such workers might be afraid to speak up and defend their rights. Furthermore, if discrimination is a common occurrence, Latino immigrant workers may blame themselves for their own mistreatment which would also lead them to choose a reactive adjustment approach as a safer option.

Type of settlement area: Another factor that was considered for this study is the type of settlement area (i.e., new versus old) in which Latino immigrant workers reside. Traditionally, Latino immigrant workers immigrated to the Southwest region of the United States (Flynn, 2010; Fry, 2008; Striffler, 2007). However, the Pew Hispanic Center (2005a) proposed that Latino immigrant workers located in the Midwest and Southeast (i.e., new settlement areas) may face additional challenges compared to Latino immigrant workers in the Southwest (i.e., old settlement areas). It was argued that new settlement areas may lack the same infrastructure (i.e. an established Hispanic community, access to community service agencies) that old settlement areas provide. Therefore, type of settlement area was considered in this study.

Recent versus non-recent Latino immigrant workers - potential differences in acculturation: While RLIW and NRLIW are members of the same ethnic group, it is possible that NRLIW may have a better understanding of working conditions in the United States

compared with RLIW. As a result, NRLIW could possess a better repertoire of coping skills in response to OSH issues. The next section examines potential differences in how RLIW and NRLIW may respond differently to OSH issues as a function of acculturation. It seems plausible that the longer Latino immigrant workers live in the United States, the more acculturated such individuals may become.

Acculturation is a process in which immigrant populations choose to adopt the cultural practices, values, and behaviors of a majority culture (Yakushko et al., 2008). Berry (2003) defined acculturation as a process in which individuals adapt to the socio-cultural and psychological characteristics of a new society. During the process of acculturation, individuals continuously accept or reject the cultural values and behaviors of their home culture while simultaneously accepting or rejecting similar values and behaviors of their new culture (Berry & Sam, 1997). Some researchers (Berry, 2003; Valdivia & Flores, 2012) suggest that acculturation involves building human capital through proficiency and use of a new language, generation status, and years of residence in the United States. Human capital in this context refers to immigrants developing skills and abilities that will facilitate acculturation with American culture.

Gonzalez, Haan, and Hinton (2001) found evidence that biculturalism (i.e., accepting one's home and new culture) may be the healthiest outcome for new immigrants. Supporting this perspective, Valdivia and Flores (2012) found evidence that Anglo acculturation and ethnic identity had a positive effect on the job satisfaction of Latino workers. Unfortunately, acculturation might be difficult to achieve for both recent and non-recent Latino immigrant workers. For example, similar to RLIW, NRLIW may lack resources that could facilitate acculturation and many are isolated from the majority society. Moreover, NRLIW may

experience similar barriers (e.g., lack of transportation, low wages, lack of health care) as RLIW and this might slow, if not prevent, the process of acculturation.

One frequently studied and important component of acculturation is language proficiency. English language proficiency may be an especially important skill that may facilitate the acculturation of Latino immigrant workers. In fact, a number of studies have examined the effects of English language skills among Hispanic workers, finding that they are positively correlated with higher earnings (Valdivia et al., 2008; Valdivia & Flores, 2012), career development (Shinnar, 2007; Valdivia & Flores, 2012), and better health outcomes (Flannery, Reise, & Yu, 2001; Pachter & Weller, 1993). Indeed, Latino immigrant workers who know more English receive more training compared to workers who do not know English (O'Connor et al., 2005). In addition, English language proficiency might improve communication between supervisors, co-workers, and Hispanic workers as well as job prospects via the flow of information (Valdivia & Flores, 2012). Workers who can communicate their needs and concerns may have more options in how they adjust to discordance in the work environment.

Indeed, Orrenius and Zavodny (2009) found that as language skills increase, injury and fatality rates decrease. In fact, Richardson (2005) found that American-born Hispanic workers had the lowest fatality rate (3.8 deaths per 100,000 workers) compared to all workers (4.1 deaths per 100,000 workers) and foreign-born Hispanic workers (5.9 deaths per 100,000 workers). Although English language proficiency was not directly examined in this study, it can be inferred that something about being born in the United States (i.e., acculturation, language proficiency) protected Hispanic workers from increased injury and fatality rates.

In the context of the TWA framework, compared to RLIW, NRLIW may respond differently to OSH issues. Specifically, NRLIW may be: (a) less flexible, (b) less likely to

persevere, and (c) report more active behavioral tendencies compared to RLIW. In addition, given that NRLIW are identical to RLIW albeit duration of time in the United States, it is predicted that this group will also utilize a reactive approach compared to ABW. Overall, RLIW are predicted to be: (a) more flexible, (b) more likely to persevere, and (c) report less active behavioral tendencies compared to ABW. Many of these proposed group differences will be further examined in the present study.

American-born workers: For the purpose of this study, American-born workers represented individuals who were born in the United States. It was difficult to generalize the overall work experiences of ABW. What could be inferred about these workers would be that they are of various nationalities and ethnic backgrounds. In addition, ABW were recruited who were legal citizens and were fluent in English. ABW were also men and women who were employed in similar blue collar occupations as the RLIW and NRLIW samples. However, for this study, it was believed that ABW would be more likely to: (a) have a better understanding of their rights as U.S. citizens, (b) be more educated, (c) receive better OSH training, and (d) enjoy a higher SES compared to their RLIW and NRLIW counterparts. As a result, it seemed plausible that ABW would be more likely to: (a) utilize an active adjustment mode, (b) be less flexible, and (c) persevere less in response to OSH issues compared to RLIW and NRLIW.

Present Study

The purpose of this study was to investigate whether there are significant and meaningful differences in how Latino immigrant workers (recent and non-recent) and American-born workers tend to think about and respond to issues at work using the theory of work adjustment framework. Specifically, this study focused on how components of TWA (activeness/reactiveness, flexibility, perseverance) varied across immigrant status group. It was

proposed that understanding how Latino immigrant workers (recent and non-recent) tend to respond to OSH issues could help identify the training needs of this vulnerable population. Indeed, understanding how workers adjust their behavioral tendencies at work may help researchers, practitioners, and policymakers develop more effective OSH training programs and interventions. Findings from this study might also provide valuable insight into what training strategies may help ameliorate the occupational health disparities that exist in this group. Based on the review of the literature, this study made a number of predictions regarding the work adjustment styles of RLIW, NRLIW, and ABW:

Hypothesis 1a: Latino immigrant workers (recent and non-recent) are expected to report significantly higher levels of reactivity compared to American-born workers who are predicted to report significantly higher levels of activeness

Hypothesis 1b: Recent Latino immigrant workers (RLIW) are expected to demonstrate significantly higher reactivity scores compared to non-recent Latino immigrant workers (NRLIW)

Hypothesis 2a: Latino immigrant workers (recent and non-recent) are expected to report significantly higher levels of flexibility compared to American-born workers

Hypothesis 2b: Recent Latino immigrant workers (RLIW) are expected to demonstrate significantly higher flexibility scores compared to non-recent Latino immigrant workers (NRLIW)

Hypothesis 3a: Latino immigrant workers (recent and non-recent) are expected to report significantly higher levels of perseverance compared to American-born workers

Hypothesis 3b: Recent Latino immigrant workers (RLIW) are expected to demonstrate significantly higher perseverance scores compared to non-recent Latino immigrant workers (NRLIW)

Hypothesis 4: Duration of time in the United States among Latino immigrant workers (recent and non-recent) is expected to be significantly and positively associated with work adjustment scores (i.e., activeness) and significantly and negatively associated with flexibility and perseverance scores

Hypothesis 5: Settlement area (new versus old) is expected to have a moderating effect on the relationship between recency of immigration and work adjustment style (activeness/reactiveness, flexibility, perseverance). Consequently, mean score differences between recent and non-recent Latino immigrant workers in old settlement areas are expected to be significantly smaller compared to new settlement areas

Given that Latino immigrant workers tend to be undocumented, undereducated, and exploited by their environments, members of this group may be more likely to utilize reactive work adjustment styles. For instance, such workers may be afraid to voice their concerns or bring attention to themselves. Therefore, it was postulated that it would be easier and in some ways safer for Latino immigrant workers to focus on changing their own behaviors and perceptions rather than their environment. Hypotheses 1 through 3 predicted that Latino immigrant workers (recent and non-recent) would be more likely to: (a) change themselves to fit the work environment, (b) be more flexible in the face of adversity, and (c) persevere longer when dissatisfied with their jobs. Latino immigrant workers (recent and non-recent) were predicted to adopt more reactive work adjustment styles that could preserve their limited status in the United States. Furthermore, it was predicted that there would be significant differences in

how RLIW and NRLIW responded to OSH issues via work adjustment, flexibility, and perseverance due to acculturation.

To date, no other studies have examined whether there may be meaningful differences in how Latino immigrant workers respond to OSH issues based on duration of time in the United States. Hypothesis 4 examined the role of duration of time in the United States and posited that NRLIW might possess different upper and lower thresholds compared to RLIW as a function of acculturation. For example, the benefits associated with acculturation (i.e., stronger social ties, greater job opportunities, attainment of legal status) were predicted to empower NRLIW to respond more actively to OSH issues compared to RLIW.

Hypothesis 5 examined whether there was a relationship between type of settlement area (new versus old) and work adjustment style (activeness/reactiveness, flexibility, perseverance) between recent and non-recent Latino immigrant workers. To date, there are no known studies that have assessed whether type of settlement area might influence how Latino immigrant workers tend to respond to OSH issues. It seemed plausible that there could be meaningful differences in how Latino immigrant workers from old settlement areas might respond to OSH issues compared to Latino immigrant workers from new settlement areas.

Finally, it was important to understand what other characteristics of being a Latino immigrant worker (recent and non-recent) might influence the work adjustment style of this population. Specifically, it was critical to examine what antecedents may help explain differences between the three groups. Therefore, demographic data (e.g., gender, years of school completed, job duration) was measured and in some cases served as covariates in this study.

In summary, the purpose of this study was to investigate whether there are significant and meaningful differences in how Latino immigrant workers (recent and non-recent) and American-

born workers tend to think about and respond to issues at work using the theory of work adjustment framework. This is the first study to empirically apply TWA toward understanding the work experiences of Latino immigrant workers. Furthermore, this is the first study to examine whether duration of time in the United States or settlement area might influence the work adjust styles of recent and non-recent Latino immigrant workers. Findings from this study may help researchers, practitioners, and policymakers develop more effective OSH trainings and interventions for Latino immigrant workers by providing a new direction in which to address this occupational health disparity.

METHOD

Participants

A total of 612 workers stratified by settlement area, immigrant status group, and gender took part in this study (see Table 2). Approximately half of the sample (52.4%) consisted of workers from Cincinnati, Ohio (i.e., a new settlement area), while the other half of the sample (47.6%) consisted of workers from Santa Fe, New Mexico (i.e., an old settlement area). Each site was further stratified into the following immigrant status groups: (1) recent Latino immigrant workers (RLIW), (2) non-recent Latino immigrant workers (NRLIW), and (3) American-born workers (ABW). The complete sample consisted of 189 RLIW, 229 NRLIW, and 194 ABW. A total of 318 males and 293 females were surveyed in this study (refer to Table 2). In Table 3, the demographic composition of the sample was further explored with the following class variables: (1) marital status, (2) country of origin, (3) ethnicity, and (4) job type² by immigrant status group and total sample (see Table 3).

Table 2
Sample Stratified by Settlement Area, Immigrant Status Group, and Gender

	Cincinnati				Santa Fe				<i>TOTAL</i>	Percent
	Male	Percent	Female	Percent	Male	Percent	Female	Percent		
ABW	52	31.0%	45	29.6%	52	34.4%	45	31.9%	194	31.7%
NRLIW	69	41.0%	61	40.1%	49	32.5%	50	35.5%	229	37.4%
RLIW	47	28.0%	46	30.3%	50	33.1%	46	32.6%	189	30.9%
<i>TOTAL</i>	168		152		151		141		612	

² Job type was categorized using the North American Industry Classification System (NAICS). This classification system contains 18 distinct job categories (e.g., accommodation and food services, public administration, mining) that describe the industries in which individuals are employed. Demographic statistics were run for the entire sample and 5 categories emerged most frequently: (1) accommodation and food services, (2) administrative and support services, (3) manufacturing, (4) construction, and (5) agriculture / landscaping. To aid in analyzing and interpreting the data, a new variable was created based on the most frequently mentioned job types including the addition of an "other" category.

Table 3

Percent Frequencies of Marital Status, Country of origin, Ethnicity, and Job Type by Immigrant Status Group

Marital Status ^a	RLIW	NRLIW	ABW	Total Sample
Single	59.1%	46.2%	65.4%	56.3%
Married	39.2%	50.2%	29.3%	40.2 %
Other (e.g., divorced, widowed)	1.6%	3.6%	5.2%	3.5%
Country of Origin ^b	RLIW	NRLIW	ABW	Total Sample
United States	0.0%	0.0%	100.0%	31.9%
Mexico	48.7%	48.2%	0.0%	33.0%
Guatemala	40.7%	43.8%	0.0%	28.9%
Honduras	7.4%	2.7%	0.0%	3.3%
Other (e.g., El Salvador, Panama)	3.2%	5.3%	0.0%	3.0%
Ethnicity ^c	RLIW	NRLIW	ABW	Total Sample
Caucasian	0.0%	0.0%	36.0%	12.7%
African American	0.0%	0.0%	19.6%	6.9%
Other (e.g., Asian, Mixed Ethnicity)	0.6%	1.6%	4.2%	2.2%
Hispanic	90.0%	79.6%	40.2%	68.8%
Indigenous	9.4%	18.8%	0.0%	9.3%
Job Type ^d	RLIW	NRLIW	ABW	Total Sample
Accommodation and food services	22.8%	26.4%	20.9%	23.4%
Administrative and support services	31.7%	21.4%	7.5%	20.1%
Manufacturing	10.0%	21.9%	8.0%	13.6%
Construction	12.2%	10.0%	17.6%	13.2%
Agriculture / landscaping	14.4%	6.0	3.2%	7.7%
Other (e.g., mechanic, retail)	8.9%	14.4%	42.8%	22.0%

^a Note. 2 ABW, 5 NRLIW, and 3 RLIW did not answer this question

^b Note. 0 ABW, 3 NRLIW, and 0 RLIW did not answer this question

^c Note. 5 ABW, 42 NRLIW, and 29 RLIW did not answer this question

^d Note. 6 ABW, 27 NRLIW, and 9 RLIW did not answer this question

Eligibility requirements varied based on immigrant status group. For Latino immigrant workers, RLIW and NRLIW had to meet the following inclusion criteria: (1) be at least 18 years of age or older (2) be of Mexican or Central American origin, and (3) live in the United States for 2 years or less (RLIW) or 5 years or more (NRLIW). ABW participants had to be at least 18 years of age or older and be born in the United States. Participants who did not meet these

eligibility requirements were excluded from the study. Although no constraints were placed on ABW participants' ethnicity, a relatively high proportion (i.e., approximately 40%) self-identified as Hispanic/Latino.

Procedure

As part of a larger study conducted by the National Institute of Occupational Safety and Health (NIOSH), *La Coalición por los Derechos y la Dignidad de los Immigrantes* (CODEDI, the Coalition for the Rights and Dignity of Immigrants) and *Somos Un Pueblo Unido* (SUPU, We are One People) recruited participants through personal relationships and referrals. CODEDI is a grass-roots advocacy group working with Latino immigrants in Cincinnati, Ohio. SUPU is a community-based, immigrant-led advocacy organization serving the Latino immigrant community in Santa Fe, New Mexico. Both organizations provide resources to Latino immigrant workers and are trusted by their respective communities.

Each agency was given the task of finding participants who met the inclusion criteria. Qualified participants were invited to take part in this study. A partial snowball sample was utilized. Specifically, RLIW and NRLIW were asked to identify and refer ABW whom they knew from work to take part in this study.

Participation for this study was voluntary and strictly confidential. Eligible men and women signed a consent form before participating in this study. Participants received \$25 for their time and were debriefed about the purpose the study. All participants were treated in accordance with APA guidelines (American Psychological Association, 2002). Furthermore, this study was conducted with the approval of the CDC/NIOSH institutional review board.

The full survey was administered by a trained agency staff member who was fluent in both English and Spanish to any participant who needed assistance. The questionnaire took

participants approximately 1 hour to complete. Participants chose whether they wanted to complete the questionnaire in English or in Spanish. In total, 188 RLIW, 228 NRLIW, and 1 ABW completed the survey in Spanish. In an effort to protect the confidentiality of participants, this survey was anonymous and void of personal identifiers such as the participant's name, address, phone number, or email. It was important that the data remain anonymous given the fact that RLIW and NRLIW are members of a vulnerable population. In addition, data were collected via paper survey, then manually entered by a trained research assistant.

Measures

To measure work adjustment style, the following scales were developed for this study: (1) work adjustment (i.e., activeness/reactiveness), (2) flexibility, and (3) perseverance (see Appendices A-F for initial items and final scales). These scales were driven and guided by the theory of work adjustment (TWA; Dawis & Lofquist, 1984), existing relevant literature, and feedback from key stakeholders (e.g., community and academic research partners). Only items that were found to be reliable and valid for each immigrant status group were retained during the final data analysis. Scores for these dependent variables were measured as mean scores for each work adjustment style. The process for selecting relevant items is described in the subsequent section. Moreover, this study provides the first application of these scales among RLIW, NRLIW, and ABW samples.

The work adjustment scales were developed through multiple rounds of cognitive testing. Cognitive testing can reduce measurement error by evaluating respondents' comprehension of each item and determining how well respondents' comprehension matches researchers' intention (Collins, 2003; Tran, 2009). Initially, a total of 80 items were written in English to measure activeness/reactiveness, flexibility, and perseverance. This pool of items was translated into

Spanish at a fifth grade reading level. To reduce the possibility of cognitive load during the testing process, each group of participants only evaluated 20 items per interview. In other words, each group of Spanish-speaking stakeholders only evaluated 20 items during their respective cognitive testing session.

During the first round, four groups with 9 participants each evaluated the 80 items collectively. These participants assessed whether the items would be understood by Latino workers and identified any potentially problematic items or procedures. Once problematic items were identified, these items were revised and further tested. Specifically, these items were tested among another group of 9 Spanish-speaking stakeholders. When the problematic items were deemed understandable, these items were further evaluated among a new group of 9 Spanish-speaking stakeholders. As before, 20 items were cognitively tested at a time with 9 individuals per group. In total, 3 rounds of iterative cognitive testing were performed.

These revised items were then translated into their English version and were reviewed by 10 English-speaking stakeholders, many of whom were internal NIOSH reviewers. Next, the English version of these scales was cognitively tested with 27 English-speaking ABW who were employed in similar occupations as the representative sample of RLIW and NRLIW. The feedback from the ABW resulted in the final English version of the activeness/reactiveness, flexibility, and perseverance scales, respectively (refer to Appendices A-F).

Work adjustment. Initially, activeness and reactivity were measured with a 20-item forced-choice questionnaire (see Appendix A). Each item represented one of the 20 work reinforcer dimensions (e.g., security, creativity) of TWA. For example, the ‘advancement’ item asked participants the following question: "What would you do if you were unhappy with your opportunities for advancement at work?" Participants could choose from the following response

options: (a) I would tell myself that at least I had a job (i.e., reactivity), or (b) I would talk to my boss about a promotion (i.e., activity). All items provided participants with two viable solutions for situations in which dissatisfaction was likely to occur.

The active and reactive work adjustment modes were conceptualized as ends of a work adjustment continuum. Participants with a high score on this scale were more likely to utilize an active work adjustment mode; whereas, participants who evidenced a low score were more likely to use a reactive adjustment mode. Following the results of an exploratory factor analysis (EFA) and scale reliability analysis, the final scale contained eight items ($\alpha = .75$). Refer to Table 4 to examine the factor loadings from the EFA. In addition, the selected work adjustment items shared a similar underlying factor structure for each immigrant status group. Specifically, each group produced the following alpha level: (1) ABW ($\alpha = .74$), (2) NRLIW ($\alpha = .70$), and (3) RLIW ($\alpha = .61$). The final scale can be found in Appendix B.

Table 4
Factor Loadings for Exploratory Factor Analysis with Direct Oblimin Rotation of Work Adjustment Scale Items

	Total Sample	ABW	NRLIW	RLIW
(2) What would you do if you were unhappy because you couldn't take pride in the work that you do?	.62	.59	.41	.06
(3) What would you do if you were unhappy about not having enough to do at work?	.55	.60	.38	.33
(6) What would you do if you were unhappy that your company did not enforce its rules fairly?	.56	.45	.69	-.04
(8) What would you do if you were unhappy that your coworkers didn't help each other out?	.37	.43	.30	.13

(11) What would you do if you were unhappy that your job asked you to do things that went against your sense of right and wrong?	.54	.48	.49	.80
(12) What would you do if you were unhappy for not getting praise for being a good worker?	.57	.40	.61	.29
(16) What would you do if you were unhappy that you didn't get respect from the community for the type of work you do?	.49	.53	.58	-.08
(20) What would you do if you were unhappy with the working conditions at your job?	.54	.66	.48	.08

Flexibility. Originally, the flexibility scale consisted of 11 items (see Appendix C). All of the items asked participants to indicate their level of agreement or disagreement: (1) strongly agree, (2) somewhat agree, (3) somewhat disagree, or (4) strongly disagree to possible behavioral and emotional reactions to problems at work. A neutral response was purposely excluded from these items because previous researchers have found that Hispanic individuals are more likely to select a neutral response compared to other immigrant status groups (Marin, Gamba, & Marin, 1992). Based on the results of the EFA and the underlying factor structure of each immigrant status group, the final scale contained 8 items ($\alpha = .71$). Refer to Table 5 to examine the factor loadings of the items. In addition, each group demonstrated the following alpha level: (1) ABW ($\alpha = .74$), (2) NRLIW ($\alpha = .66$), and (3) RLIW ($\alpha = .69$). Example items included, "I can easily adapt to changing conditions at work" and "I am fairly easy to please at work". The flexibility scale was found to be significantly, moderately, and positively correlated with the perseverance scale ($r = .51, p = .000$). Such findings indicated that individuals who are more flexible are also more likely to persevere when dissatisfied at work. Refer to Appendix D to examine the final flexibility scale.

Table 5

Factor Loadings for Exploratory Factor Analysis with Direct Oblimin Rotation of Flexibility Items

	Total Sample	ABW	NRLIW	RLIW
(21) There are usually several ways to solve any given problem at work	.41	.50	.15	.47
(24) I expect a lot from where I work.	.36	.29	.48	.23
(25) People think of me as being a "flexible" person at work	.47	.51	.47	.50
(26) If I get upset at work, I can usually get over it quickly	.53	.61	.36	.53
(27) The situation has to be pretty bad for me to get angry at work	.48	.52	.44	.41
(28) I can easily adapt to changing conditions at work	.66	.70	.62	.72
(29) I am fairly easy to please at work	.48	.53	.45	.51
(30) I find satisfaction in everything I do at work	.49	.46	.55	.45

Perseverance. Initially, the perseverance scale contained 9 items (see Appendix E). The item prompt and response options for this scale were identical with the flexibility scale (i.e., 4-point Likert scale without a neutral response). Findings from the EFA and examination of the underlying factor structure of each immigrant status group lead to the creation of a 6-item perseverance scale ($\alpha = .64$). See Table 6 to explore the factor loadings of the selected items. Specifically, each group demonstrated the following alpha level: (1) ABW ($\alpha = .69$), (2) NRLIW ($\alpha = .58$), and (3) RLIW ($\alpha = .60$). Example items included, "I am not a quitter when things get tough at work" and "I don't get bothered by problems at work". Refer to Appendix F for the final perseverance scale.

Table 6

Factor Loadings for Exploratory Factor Analysis with Direct Oblimin Rotation of Work Adjustment Scale Items

	Total Sample	ABW	NRLIW	RLIW
(32) I am not a quitter when things get tough at work	.41	.50	.15	.47
(34) I don't get bothered by problems at work	.36	.29	.48	.23
(35) When there is trouble at work, I am good at finding solutions	.47	.51	.47	.50
(36) If I try and fail, I try another approach at work	.53	.61	.36	.53
(37) Even when things get hard at work, I don't give up	.48	.52	.44	.41
(40) I will not give up when things at work become difficult	.48	.53	.45	.51

In terms of scale reliability, the work adjustment and flexibility scales produced acceptable coefficient alpha levels (i.e., .70 or above) based on criteria recommended for research (Nunnally & Bernstein, 1994). This indicates that these two scales had an adequate internal reliability. However, the coefficient alpha for the perseverance scale ($\alpha = .64$) was less than optimal. When the underlying factor structure of this construct was further examined, it became clear that the perseverance items may have been better understood by ABW (see Table 6). For example, when the alpha level of this scale was examined for each immigrant status group, alpha was higher for ABW ($\alpha = .69$) compared to RLIW ($\alpha = .58$) and NRLIW ($\alpha = .60$). Such findings are not unusual in the development of cross-cultural measurement (Tran, 2009). In fact, Tran (2009) suggested that cross-cultural scales typically undergo numerous iterations in the process of internal and external validity. As previously mentioned, the present study represented the first empirical application of these particular work adjustment scales.

It should also be noted that previous TWA researchers who developed work adjustment scales (e.g., Humphrey, 1980; Lawson, 1991; 1993; Maximovitch, 1997) found support for the activeness and flexibility constructs. However, reactiveness and perseverance proved to be more difficult to measure (Lawson, 1993; Maximovitch, 1997). For instance, Lawson (1993) expressed concern that the reactiveness scale that was developed in her study was not valid because it seemed to measure poor mental health rather than how workers might respond to discordance at work. As a result, Lawson (1993) recommended that future researchers should develop their own scales to accurately measure work adjustment style. This study followed this recommendation and created work adjustment scales that were specific to the characteristics of the sample (i.e., immigrant status group, education level).

Data analysis

Aberrant responses and missing data were identified prior to analysis. The dataset was checked for duplicate entries, ineligible participants, incomplete records, and transcription errors. Descriptive statistics were performed for each item and scale, along with measures of skewness and kurtosis. Scale reliabilities were conducted for each work adjustment style. The data were analyzed using the Statistical Package for the Social Sciences (SPSS) version 22.

Missing data method. Before the preliminary data analysis began, it was important to identify an appropriate missing data method. According to Graham (2008), missing data can be missing completely at random (MCAR), missing at random (MAR), or missing not at random (MNAR). When data are MCAR this suggests that: (a) the probability of a missing value is unrelated to the values of other variables, and (b) the missing values are distributed randomly between the variables of interest. Next, MAR represents a subset of MCAR in which missing data may vary because of some third variable. Lastly, MNAR refers to cases in which missing

data are: (a) systematic, (b) potentially influenced by unobserved data, and (c) related to the dependent variable. Cases in which data are MNAR are problematic because such patterns of missing data can bias sample parameter estimates (Little & Rubin, 2002; Roth, 1994).

In the present study, cases in which more than 25% of data were missing were excluded from the final analysis using case-wise deletion. Applying this method, a total of 14 cases were excluded (2 participants could not be classified as either RLIW or NRLIW, 3 ABW, 4 RLIW, and 5 NRLIW). Next, using SPSS, a missing data value analysis was conducted. This approach can help researchers examine patterns of missing data or mechanisms of missingness (Graham, 2008). Tabachnick and Fidell (2007) have argued that the pattern of missing data may be more important than the amount of data missing. Therefore, both the pattern of missing data and the amount of missing data per case were assessed for this study.

Findings from the Little's MCAR test (Little, 1988) suggest that the missing data values were missing completely at random ($\chi^2 = 844.89$, $df = 821$, $p = .274$). This finding indicated that the pattern of missing data was independent from both observed and unobserved measurements in the dataset. In fact, the majority of retained TWA scale items had very little missing data per item. For example, only 0.50% and 2.60% of these items had missing values (refer to Table 7). Such findings (i.e., non-significant Little's MCAR test, small amount of missing data) suggested that the missing data values could be replaced using an appropriate missing data method.

After careful consideration of various missing data methods (e.g., mean imputation, pair-wise deletion), the expectation maximization (EM) algorithm (Dempster, Laird, & Rubin, 1977), a single imputation algorithm was selected for this study. This missing data method estimates missing data values based on maximum likelihood estimates of observed and missing data (Enders, 2001; Graham, 2008; Roth, 1994). EM substitutes missing data with predicted values

that are derived from various regression equations (Enders, 2001). Moreover, cross products and sums of squares for these predicted values are calculated from observed and imputed data (Enders, 2001). In addition, EM utilizes an iterative model-based procedure to replace missing values in which multiple iterations of missing values may occur during the EM process (Little & Rubin, 1988; Tabachnick & Fidell, 2007).

Table 7
Missing Value Analysis Results

Item	Missing	
	Count	Percent
Adjustment2	9	1.50
Adjustment3	14	2.30
Adjustment6	5	0.80
Adjustment8	14	2.30
Adjustment11	9	1.50
Adjustment12	10	1.60
Adjustment16	4	0.70
Adjustment20	3	0.50
Flexibility1	16	2.60
Flexibility4	12	2.00
Flexibility5	7	1.10
Flexibility6	7	1.10
Flexibility7	6	1.00
Flexibility8	7	1.10
Flexibility9	6	1.00
Flexibility10	5	0.80
Perseverance1	4	0.70
Perseverance3	7	1.10
Perseverance4	6	1.00
Perseverance5	12	2.00
Perseverance6	7	1.10
Perseverance9	6	1.00

EM is one of the most widely utilized maximum likelihood methods (Raghunathan, 2004). In fact, Acock (2005) argued that EM is a superior missing data method compared to more traditional missing data methods (e.g., case-wise deletion, mean imputation) because it

accounts for random error in estimating missing value parameters. A benefit of using SPSS in the context of EM is that the program injects a degree of random error into the estimates (Acock, 2005; Tabachnick & Fidell, 2007). However, EM has some limitations. Specifically, EM does not account for error from the overall dataset (Graham, 2008) and this approach tends to underestimate the standard error (Acock, 2005). Nonetheless, EM has been widely supported in the literature (Raghunathan, 2004; Rubin et al., 2007; Schafer & Graham, 2002) and was applied in this study.

Covariates. The following variables were assessed as potential covariates for this study: (a) age, (b) years of school completed, (c) job duration, (d) gender, (e) marital status, (f) job type, and (g) ethnicity. As will be described later, country of origin was tested as a covariate in hypothesis 5, but not included in any of the other models. These variables were selected because it seemed plausible that they could confound the relationship between immigrant status group and work adjustment style (activeness/reactiveness, flexibility, and/or perseverance). Furthermore, it was postulated that investigating these variables would provide clarity into characteristics of RLIW, NRLIW, and ABW that could influence work adjustment behavior. Because of gender differences in occupational injury and fatality rates (U.S. Census Bureau, 2011), gender was examined more closely than the other proposed covariates.

To test these potential covariates, correlation, chi-square, one-way analysis of variance (ANOVA), one-way analysis of covariance (ANCOVA), and multiple linear regression (MLR) analyses were performed. Covariates were selected based on their significance level and findings from the literature. The seven identified covariates were considered in each initial model. However, only statistically significant covariates were included during hypothesis testing. As Tabachnick and Fidell (2007) recommended, only a few covariates were selected in

the final analyses in order to prevent the possibility of over-fitting the models and potential error. Specifically, to reduce the total number of covariates included in this study, a conservative Bonferonni correction was applied ($p \leq .01$) during the background analysis process. Furthermore, given the large sample size ($N = 612$) in this study, this same Bonferonni correction ($p \leq .01$) was applied during hypothesis testing to aid in the interpretation of the findings.

RESULTS

Background analysis. Prior to hypothesis testing, background analyses were conducted to identify potential covariates for this study. As mentioned previously, correlation, chi-square, one-way ANOVA, one-way ANCOVA, and MLR analyses were performed. Examination of potential covariates began with the following continuous variables: (1) age, (2) years of school completed, and (3) job duration. In most cases, these particular covariates were found to be significantly correlated with the TWA variables of work adjustment, flexibility, and perseverance (refer to Table 8). For example, age was significantly correlated with flexibility ($r = .08, p < .05$) and perseverance ($r = .09, p < .05$); years of school completed was significantly correlated with work adjustment ($r = .22, p < .01$) and perseverance ($r = .08, p < .05$); and job duration was significantly correlated with work adjustment ($r = .12, p < .01$) and perseverance ($r = .12, p < .01$). Overall, such findings indicated a significant, positive, albeit weak correlation (i.e., $r = .08$ to $r = .22$) between the proposed covariates and the outcome variables.

Table 8
Means, Standard Deviations, Minimum Values, Maximum Values, and Correlations

Variable	M	SD	Min	Max	1	2	3	4	5	6
1. Age	32.25	10.97	18.00	79.00	-	.09*	.48**	.07	.08*	.09*
2. Years of school completed	9.62	3.52	0	18.00		-	.13**	.22**	.02	.08*
3. Job duration	3.33	4.37	0.02	32.00			-	.12**	.03	.12**
4. Work adjustment	2.84	2.30	0	8.00				-	-.03	-.04
5. Flexibility	3.33	0.47	1.63	4.00					-	.51**
6. Perseverance	3.33	0.51	1.17	4.00						-

Note. Correlations are based on expectation maximization of missing work adjustment style data
* $p < .05$ (two-tailed), ** $p < .01$ (two-tailed)

Next, one-way ANCOVAs were conducted to examine the relationship between immigrant status group and each TWA variable with the following potential covariates: (1) age,

(2) years of school completed, and (3) job duration. The main effect for each overall model was found to be significant: (1) work adjustment ($F(5, 564) = 30.20, p = .000$), (2) flexibility ($F(5, 564) = 9.36, p = .000$), and (3) perseverance ($F(5, 564) = 10.65, p = .000$). However, when age was examined as a potential covariate, this simple main effect was not significant in any of the TWA models: (1) work adjustment ($F(1, 564) = .00, p = .966$), (2) flexibility ($F(1, 564) = 1.45, p = .233$), and (3) perseverance ($F(1, 564) = .43, p = .514$). Post-hoc analyses indicated that RLIW ($M = 28.95, SD = 9.08$) were significantly ($p = .000$) younger than NRLIW ($M = 33.73, SD = 9.14$) and ABW ($M = 33.73, SD = 13.65$). The simple main effect for years of school completed was found to be significant for perseverance ($F(1, 564) = 12.02, p = .001$), but not for work adjustment ($F(1, 564) = .19, p = .664$) or flexibility ($F(1, 564) = 5.32, p = .022$). Moreover, post-hoc tests revealed that ABW ($M = 12.14, SD = 2.18$) had completed significantly more years of school ($p = .000$) compared to NRLIW ($M = 8.84, SD = 3.57$) and RLIW ($M = 8.00, SD = 3.17$). Lastly, the simple main effect for job duration was not found to be significant for any of the TWA models: (1) work adjustment ($F(1, 564) = .31, p = .581$), (2) flexibility ($F(1, 564) = .12, p = .730$), and (3) perseverance ($F(1, 564) = 2.49, p = .115$). However, RLIW ($M = .96, SD = .75$) were found to have spent significantly ($p = .000$) less time at their current job than NRLIW ($M = 4.21, SD = 3.45$) and ABW ($M = 4.66, SD = 6.19$).

Although the ANCOVA results indicated that only years of school completed was significant in the perseverance model, findings from the post-hoc tests and correlation analyses supported further exploration of these three covariates. For example, the post-hoc tests showed differences in age and job duration across immigrant status group. In addition, results from the correlation analysis indicated that age, years of school completed, and job duration covaried (see Table 8). Specifically, job duration was significantly related to age ($r = .48, p < .01$) and years of

school completed ($r = .13, p < .01$). Thus, to determine which predictor variables were independently and significantly associated with the TWA variables, a multiple linear regression (MLR) model was performed. Results from this analysis indicated that while age, years of school completed, and job duration were not significantly associated with flexibility and perseverance; years of school completed ($p = .000$) remained significant in the work adjustment model (see Table 9). Therefore, this variable was confirmed as a potential covariate for hypothesis testing.

Table 9
Multiple Linear Regression Model with Age, Years of School Completed, and Job Duration

Model	Variable	B	SE B	β	t
1 Work Adjustment	Constant	1.47	0.38		3.84**
	Age	0.00	0.01	-0.01	-0.22
	Years of school completed	0.13	0.03	0.20	4.89**
	Job duration	0.05	0.02	0.10	2.12*
2 Flexibility	Constant	2.81	0.07		39.62**
	Age	0.00	0.00	0.07	1.41
	Years of school completed	0.00	0.01	0.02	0.43
	Job duration	0.00	0.01	0.00	-0.01
3 Perseverance	Constant	3.14	0.09		35.60**
	Age	0.00	0.00	0.04	0.87
	Years of school completed	0.01	0.01	0.07	1.60
	Job duration	0.01	0.01	0.09	1.81

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

Next, chi-square analyses were performed to examine the relationship between immigrant status group and the following categorical variables: (1) settlement area ($\chi^2(2, N = 612) = 2.97, p = .227$), (2) gender ($\chi^2(2, N = 612) = .25, p = .881$), (3) marital status ($\chi^2(4, N = 602) = 22.00, p = .000$), and (4) job type ($\chi^2(10, N = 569) = 120.24, p = .000$). Post-hoc analyses demonstrated that for marital status, 50.2% of NRIW were married compared to approximately 39.2% of

RLIW ($p = .023$) and 29.3% of ABW ($p = .005$). Significant differences were also found in the frequency of job types held by ABW and NRLIW ($p = .000$) and ABW and RLIW ($p = .000$). For instance, the top three job types among ABW were: (1) other (42.8%), (2) accommodation and food service (20.9%), and (3) construction (17.6%); the top three job types among NRLIW were: (1) accommodation and food service (26.4%), (2) manufacturing (21.9%), and (3) administrative and support services (21.4%); and the top three job types among RLIW were: (1) administrative and support services (31.7%), (2) accommodation and food services (22.8%), and (3) agriculture and landscaping (14.4%). Such findings suggest that ABW were employed in a wider range of occupations (e.g., nurse, business owner, landscaping, tax preparer, Starbucks employee) as reflected by the "other" category compared to NRLIW and RLIW.

Finally, one way ANCOVAs were conducted to examine the relationship between immigrant status group and each TWA variable with the following potential covariates: (1) settlement area, (2) gender, (3) marital status, and (4) job type. The main effect for each overall model was found to be significant: (1) work adjustment ($F(6, 554) = 27.12, p = .000$), (2) flexibility ($F(6, 554) = 6.48, p = .000$), and (3) perseverance ($F(6, 554) = 6.86, p = .000$). The simple main effect for settlement area was not significant for any of the TWA variables: (1) work adjustment ($F(1, 554) = .08, p = .775$), (2) flexibility ($F(1, 554) = .06, p = .804$), and (3) perseverance ($F(1, 554) = 3.24, p = .072$). In contrast, the simple main effect for gender was found to be significant only for work adjustment ($F(1, 554) = 7.60, p = .006$), but not for flexibility ($F(1, 554) = .22, p = .622$) or perseverance ($F(1, 554) = .05, p = .827$). Post-hoc analyses demonstrated that women ($M = 3.05, SD = 2.37$) evidenced significantly higher ($p = .000$) work adjustment scores compared to men ($M = 2.63, SD = 2.22$).

The main effect of marital status was not found to be significant for any of the TWA variables: (1) work adjustment ($F(1, 554) = .05, p = .823$), (2) flexibility ($F(1, 554) = .31, p = .576$), and (3) perseverance ($F(1, 554) = 2.27, p = .133$). Lastly, the main effect for job type was not found to be significant for any of the TWA variables (1) work adjustment ($F(1, 554) = 4.23, p = .040$), (2) flexibility ($F(1, 554) = .150, p = .699$), and (3) perseverance ($F(1, 554) = 2.68, p = .102$). Although there were significant differences in job type across immigrant status group, the main effect of job type which examined these differences in relation to the TWA variables was not found to be significant. Thus, job type was not included as a covariate in the final analyses.

Based on the results of the correlation, chi-square, MLR, one-way ANCOVA analyses coupled with findings from a thorough review of the literature, gender and years of school completed were considered as covariates during hypothesis testing. It seemed plausible that each of these variables could influence the relationship between immigrant status group and work adjustment style. For the sake of comparability across the different aspects of TWA, these potential covariates were included in each work adjustment style model whether they were significant or not significant for that outcome variable during the background analysis.

Continuing the background analysis, three one-way analyses of variances (ANOVAs) were conducted to examine whether there were any significant between-group differences between immigrant status and work adjustment style before adjusting for the selected covariates. First, each ANOVA model was found to be statistically significant: (1) work adjustment ($F(2, 609) = 82.35, p = .000$), (2) flexibility ($F(2, 609) = 20.41, p = .000$), and (3) perseverance ($F(2, 609) = 18.43, p = .000$). Specifically, planned comparisons revealed that ABW ($M = 4.39, SD = 2.34$) evidenced significantly higher ($p = .000$) work adjustment scores (i.e., a more active work adjustment approach) compared to NRLIW ($M = 2.14, SD = 1.98$) and RLIW ($M = 2.08, SD =$

1.78) who did not differ significantly from one another. Second, NRLIW (M = 3.04, SD = .38) showed significantly higher ($p = .000$) flexibility scores compared to ABW (M = 2.81, SD = .44) and RLIW (M = 2.85, SD = .39) who did not differ significantly from one another. Finally, NRLIW (M = 3.49, SD = .46) demonstrated significantly higher ($p = .000$) perseverance scores compared to ABW (M = 3.23, SD = .55) and RLIW (M = 3.24, SD = .49) who did not differ significantly from one another. Thus, the findings from the one-way ANOVAs demonstrated that there were significant differences in how RLIW, NRLIW, and ABW tend to respond to OSH issues using the TWA framework. Refer to Table 10 to examine mean scores, standard deviations, standard errors, and confidence intervals for each immigrant status group by work adjustment style.

Table 10
Descriptive Statistics for Work Adjustment, Flexibility, and Perseverance by Immigrant Status

Work Adjustment	N	Mean	SD	SE	95% Confidence Interval for Mean	
					Lower	Upper
ABW	194	4.39	2.339	0.168	4.06	4.71
NRLIW	229	2.14	1.982	0.131	1.88	2.39
RLIW	189	2.08	1.778	0.129	1.83	2.34
Total	612	2.83	2.300	0.093	2.65	3.02
Flexibility						
ABW	194	2.81	0.437	0.031	2.75	2.88
NRLIW	229	3.04	0.376	0.025	2.99	3.09
RLIW	189	2.85	0.392	0.285	2.79	2.90
Total	612	2.91	0.414	0.167	2.88	2.94
Perseverance						
ABW	194	3.23	0.550	0.039	3.15	3.33
NRLIW	229	3.49	0.460	0.304	3.43	3.55
RLIW	189	3.24	0.495	0.036	3.17	3.31
Total	612	3.33	0.515	0.021	3.29	3.37

Hypothesis testing: To test hypotheses 1 through 3, one-way ANCOVAs were performed for each dependent variable (i.e., work adjustment, flexibility, perseverance). To maintain consistency during hypothesis testing, both gender and years of school completed served as covariates and were adjusted in each model. The following section describes the findings that emerged from hypotheses 1 through 3.

Hypotheses 1a-1b: Hypothesis 1a predicted that RLIW and NRLIW would be significantly more likely to use a reactive adjustment mode compared to ABW who would be significantly more likely to use an active adjustment mode. Note that the way the scale was constructed, higher scores reflected a more active style. Thus, results consistent with the hypothesis would reflect higher work adjustment scores for ABW participants.

Findings from the one-way ANCOVA analysis indicated that the main effect of this overall model was significant ($F(4, 602) = 42.72, p = .000$) and that this final model explained 22.2% of the variance in work adjustment score (see Table 11).

Table 11
ANCOVA for Between Subject Effects of Work Adjustment and Immigrant Status, Adjusted for Gender and Years of School Completed

Source	Sum of Squares	Df	Mean Square	F	Sig	Partial Eta Squared
Corrected Model	704.754	4	176.188	42.97	0.000	0.222
Intercept	165.050	1	165.050	40.26	0.000	0.063
Gender	34.044	1	34.044	8.30	0.004	0.014
Years of School Completed	0.640	1	0.640	0.16	0.693	0.000
Immigrant Status	531.665	2	265.832	64.84	0.000	0.177
Error	2468.177	602	4.100			
Total	819.923	607				
Corrected Total	3172.930	606				

R Squared = .222 (Adjusted R Squared = .217)

Adjusting for gender ($F(1, 602) = 7.87, p = .005$) and years of school completed ($F(1, 602) = .09, p = .767$), the simple main effect of immigrant status group was significant ($F(2, 602) = 266.74, p = .000$) and explained 17.7% of the variance in work adjustment score. Indeed, post-hoc analyses revealed that women ($M = 3.05, SD = 2.37$) evidenced significantly higher ($p = .000$) work adjustment scores compared to men ($M = 2.63, SD = 2.22$). While this finding is interesting to note, it may be less important to consider given the fact that gender only explained 1.4% of the total variance in work adjustment score.

When the adjusted work adjustment score was compared across immigrant status groups, NRLIW ($M = 2.14$) and RLIW ($M = 2.08$) were found to have significantly lower ($p = .000$) work adjustment scores (i.e., more reactive style) compared to ABW ($M = 4.42$). **Thus, hypothesis 1a was fully supported.** However, post-hoc tests comparing mean scores between NRLIW and RLIW revealed that contrary to what was predicted in hypothesis 1b, RLIW did not evidence significantly higher work adjustment scores compared to NRLIW ($p = .961$). Post-hoc test results can be found in Tables 12-13. **Therefore, hypothesis 1b was not supported.**

Table 12
Adjusted Means and Standard Errors for Work Adjustment, Flexibility, and Perseverance by Immigrant Status Group

Immigrant Status Group	Work Adjustment		Flexibility		Perseverance	
	M	SE	M	SE	M	SE
ABW	4.42 ^{**}	0.16	2.78	0.03	3.17	0.04
NRLIW	2.14	0.14	3.05 ^{**}	0.03	3.51 ^{**}	0.03
RLIW	2.08	0.16	2.87	0.03	3.28	0.04

^{**} $p < 0.01$, ^{*} $p < 0.05$

Table 13

Comparison of Work Adjustment, Flexibility, and Perseverance Mean Adjusted Scores Between Recent and Non-Recent Latino Immigrant Workers

	Work Adjustment			95% Confidence Interval		Flexibility		95% Confidence Interval		Perseverance		95% Confidence Interval	
	N	Mean	SE	Lower Bound	Upper Bound	Mean	SE	Lower Bound	Upper Bound	Mean	SE	Lower Bound	Upper Bound
NRLIW	229	2.14	0.14	1.87	2.41	3.05**	0.03	3.00	3.10	3.51**	0.03	3.45	3.58
RLIW	189	2.08	0.16	1.77	2.38	2.87	0.03	2.81	2.93	3.28	0.04	3.20	3.35

** $p < 0.01$, * $p < 0.05$

Hypotheses 2a-2b: Hypothesis 2a predicted that RLIW and NRLIW would report significantly higher flexibility scores compared to ABW. Findings from the one-way ANCOVA analysis indicated that the main effect of this overall model was significant ($F(4, 602) = 11.65, p = .000$) with the final overall model explaining 7.2% of the variance in flexibility score (see Table 14). Adjusting for gender ($F(1, 602) = .17, p = .722$) and years of school completed ($F(1, 602) = 5.64, p = .018$), the simple main effect of immigrant status group was significant ($F(2, 602) = 23.01, p = .000$) and explained 7.1% of the variance in flexibility. The simple main effect for years of school completed was found to be marginally significant ($p = .018$) perhaps as a function of differences in years of school completed between immigrant status group. Although this finding is interesting to note, it only explained .9% of the variance in flexibility score.

Table 14

ANCOVA for Between Subject Effects of Flexibility and Immigrant Status, Adjusted for Gender and Years of School Completed

Source	Sum of Squares	df	Mean Square	F	Sig	Partial Eta Squared
Corrected Model	7.462	4	1.866	11.65	0.000	0.072
Intercept	240.508	1	240.408	1501.23	0.000	0.714
Gender	0.020	1	0.020	0.13	0.722	0.000
Years of School Completed	0.904	1	0.904	5.64	0.018	0.009
Immigrant Status	7.373	2	3.687	23.01	0.000	0.071
Error	96.445	602	0.160			
Total	5238.644	607				
Corrected Total	103.907	606				

R Squared = .072 (Adjusted R Squared = .066)

In order to test hypotheses 2a and 2b, post-hoc tests compared the adjusted flexibility score across immigrant status groups (refer to Tables 12-13). NRLIW (M = 3.05) evidenced significantly higher ($p = .000$) flexibility compared to ABW (M = 2.78). However, the flexibility scores between RLIW (M = 2.87) and ABW were not significantly different ($p = .188$). Since only NRLIW achieved significantly higher flexibility scores compared to ABW, **hypothesis 2a was partially supported.**

Hypothesis 2b predicted that RLIW would show significantly higher flexibility scores compared to NRLIW. Contrary to what was expected, NRLIW (M = 3.05) evidenced significantly higher ($p = .000$) flexibility scores compared to RLIW (M = 2.87). This finding runs counter to what was initially predicted. **Therefore, hypothesis 2b was not supported.**

Hypotheses 3a-3b: Hypothesis 3a predicted that RLIW and NRLIW would report significantly higher perseverance scores compared to ABW. Findings from the one-way ANCOVA analysis indicated that the overall main effect of this model was significant ($F(4, 602)$

= 13.17, $p = .000$) and that the final model explained 8% of the variance in perseverance score (see Table 15).

Table 15
ANCOVA for Between Subject Effects of Perseverance and Immigrant Status, Adjusted for Gender and Years of School Completed

Source	Sum of Squares	df	Mean Square	F	Sig	Partial Eta Squared
Corrected Model	12.963	4	3.241	13.17	0.000	0.800
Intercept	306.573	1	306.573	1246.14	0.000	0.674
Gender	0.098	1	0.098	0.40	0.528	0.001
Years of School Completed	3.465	1	3.465	14.09	0.000	0.023
Immigrant Status	11.790	2	5.895	23.96	0.000	0.074
Error	148.103	602	0.246			
Total	6887.354	607				
Corrected Total	161.066	606				

R Squared = .080 (Adjusted R Squared = .074)

After adjusting for gender ($F(1, 602) = .40, p = .528$) and years of school completed ($F(1, 602) = 14.09, p = .000$), the simple main effect of immigrant status group ($F(2, 602) = 23.96, p = .000$) was significant and explained 7.4% of the variance in perseverance score. In addition, the simple main effect of years of school completed was significant ($p = .000$) and explained 2.3% of the variance in perseverance score.

In post-hoc analyses conducted to test hypotheses 3a and 3b (see Tables 12-13), NRLIW ($M = 3.51$), demonstrated significantly higher ($p = .000$) perseverance scores compared to ABW ($M = 3.17$). However, RLIW ($M = 3.28$) did not evidence significantly higher ($p = .206$) perseverance scores compared to ABW ($M = 3.17$). This means that only NRLIW demonstrated significantly higher perseverance scores compared to ABW. **Therefore, hypothesis 3a was partially supported.**

Post-hoc comparisons of the adjusted perseverance scores of NRLIW ($M = 3.51$) and RLIW ($M = 3.28$) revealed that, contrary to the prediction of hypothesis 3b, NRLIW demonstrated significantly higher levels of perseverance than RLIW ($p = .000$). **Thus, hypothesis 3b was not supported.**

Hypothesis 4: This hypothesis examined whether duration of time in the United States among recent and non-recent Latino immigrant workers would be significantly and positively associated with work adjustment score and significantly and negatively associated with flexibility and perseverance scores. Based on a thorough review of the literature, it seemed plausible that individuals who had lived in the United States for a longer duration of time would be more likely to use active adjustment approaches, be less flexible, and persevere less as a function of acculturation. Prior to testing this hypothesis, a bivariate correlation was calculated between age and duration of time in the United States ($r = .31, p = .000$). Since these variables were moderately correlated to each another, a new variable³ (i.e., fraction of lifetime in the United States) was created to account for this relationship.

To examine and test hypothesis 4, RLIW and NRLIW's fraction of lifetime in the United States was correlated with work adjustment, flexibility, and perseverance (refer to Table 16). Two of three correlations were found to be statistically significant. Specifically, flexibility ($r = .14, p = .005$) and perseverance ($r = .19, p = .000$) were found to be significantly and positively associated with fraction of lifetime in the United States; whereas, work adjustment was unrelated to fraction of lifetime in the United States ($r = .03, p = .480$). This means that as RLIW and NRLIW spend a larger portion of their lifetime in the United States, such individuals were

³ This new variable represented the proportion of time Latino immigrant workers (recent and non-recent) had lived in the United States as a function of their age. Scores ranged from 0 to 1 with zero representing none of their life and 1 representing all of their life. For example, a 25-year old NRLIW who had lived in the United States for 5 years would be given a score of .20 because this individual has spent 20% of their life living in the United States.

significantly more likely to be flexible and persevere. This finding contradicts what was predicted in hypothesis 4 in which fraction of lifetime in the United States was posited to be significantly and positively associated with work adjustment (i.e., active work adjustment style) and significantly and negatively associated with flexibility and perseverance. **Therefore, hypothesis 4 was not supported.**

Table 16
Correlation Matrix for Recent and Non-recent Latino Immigrant Workers, Duration of Time in the U.S., Adjustment Mode, Flexibility, and Perseverance

Variable	M	SD	Min	Max	1	2	3	4
1. Fraction of lifetime in the US	0.19	0.16	0	0.95	-	0.04	.14**	.18**
2. Work adjustment	2.83	2.3	0	8		-	-0.03	-0.04
3. Flexibility	2.91	0.41	1.38	3.51			-	.51**
4. Perseverance	3.33	0.51	1.17	4.01				-

Note. Correlations are based on expectation maximization of missing work adjustment style data

* $p < .05$ (two-tailed), ** $p < .01$ (two-tailed)

Hypothesis 5: Hypothesis 5 predicted that settlement area (i.e., new versus old) would moderate the relationship between type of Latino immigrant worker (i.e., RLIW vs. NRLIW) and work adjustment style (i.e., reactivity, flexibility, perseverance). Old settlement area (i.e., Santa Fe, New Mexico) was predicted to strengthen the relationship between type of Latino immigrant worker and work adjustment style compared with new settlement area (i.e., Cincinnati, Ohio). However, because hypotheses 2b (i.e., flexibility) and 3b (i.e., perseverance) contradicted what was initially predicted regarding RLIW and NRLIW, only work adjustment was examined in hypothesis 5.

A one-way ANCOVA analysis was performed between the following variables: (1) type of Latino immigrant worker (i.e., recent vs. non-recent), (2) settlement area (i.e., new vs. old),

(3) the interaction between type of Latino immigrant worker and settlement area, and (4) work adjustment. ABW were excluded from this analysis because hypothesis 5 made no predictions about this immigrant status group. In addition, gender and years of school completed were included as covariates.

Findings from the one-way ANCOVA indicated that the main effect for the overall work adjustment model was not statistically significant ($F(5, 407) = .82, p = .534$) after adjusting for gender ($F(1, 407) = 2.01, p = .157$) and years of school completed ($F(1, 407) = .16, p = .687$). In addition, the immigrant status group ($F(1, 407) = .31, p = .580$), settlement area ($F(1, 407) = 1.41, p = .236$), and the interaction term ($F(1, 407) = .25, p = .620$) were not significant. This means that none of the proposed variables explained any variance in predicting work adjustment scores for recent or non-recent Latino immigrant workers living in new or old settlement areas. Although this overall model was not significant, the mean adjusted scores for each immigrant status group were as follows: (1) RLIW from Santa Fe ($M = 2.29$), (2) NRLIW from Santa Fe ($M = 2.16$), (3) RLIW from Cincinnati ($M = 1.97$), and (4) NRLIW from Cincinnati ($M = 2.02$). Given these overall findings, no additional analyses were interpreted. Refer to Table 17 to further examine these results. **Therefore, hypothesis 5 was not supported.**

Table 17
ANCOVA for Between Subject Effects of Work Adjustment, Immigrant Status, Settlement Area, Interaction, Adjusted for Gender and Years of School Completed

Source	Sum of Squares	df	Mean Square	F	Sig	Partial Eta Squared
Corrected Model	14.827	5	2.965	0.82	0.534	0.010
Intercept	85.253	1	85.253	23.64	0.000	0.055
Immigrant Status	1.103	1	1.103	0.31	0.580	0.001
Settlement Area	5.087	1	5.087	1.41	0.236	0.003
Interaction	0.887	1	.887	0.25	0.620	0.001
Gender	7.263	1	7.263	2.01	0.157	0.005

Years of School Completed	0.587	1	.587	0.16.	0.687	0.000
Error	1467.645	407	3.606			
Total	3347.146	413				
Corrected Total	1482.473	412				

R Squared = .010 (Adjusted R Squared = - .002)

Additional analyses: There were three immigrant status groups in this study: (1) ABW, (2) NRLIW, and (3) RLIW. Ethnicity was measured for each of these groups. Preliminary analyses revealed that the distribution of ethnicity between RLIW and NRLIW was comparable. Specifically, for RLIW, 99.4% identified as either Hispanic or Indigenous and .6% were from other countries, among NRLIW, 98.4% identified as either Hispanic or Indigenous and 1.6% were from other countries (see Table 3). However, the distribution of ethnicity within ABW proved to be different compared to RLIW and NRLIW. Specifically, 40.2% of ABW were Hispanic, 36% were Caucasian, 19.6% were African American, and 4.2% were individuals who were Asian or a combination of different ethnicities (see Table 3).

When mean scores were compared within the ABW sample as a function of ethnicity for work adjustment, flexibility, and perseverance, two key findings emerged. First, the "other" ABW group had a sample size that was too small ($n = 6$) to make meaningful comparisons so it was excluded from further analysis. Second, Caucasian ABW ($M = 3.99$) demonstrated lower (i.e., more reactive) though not significantly lower work adjustment scores compared to Hispanic ABW ($M = 4.99$) and African American ABW ($M = 4.36$). See Table 18 to further examine these findings.

Table 18
Mean Scores and Standard Deviations for ABW by Ethnicity

Ethnicity	N	Work Adjustment		Flexibility		Perseverance	
		M	SD	M	SD	M	SD
Caucasian ABW	70	3.99	2.45	2.78	0.41	3.20	0.61
Hispanic ABW	76	4.99	2.20	2.84	0.41	3.26	0.56
African American ABW	37	4.36	1.99	2.86	0.45	3.30	0.40
Other ABW (i.e., mixed ethnicity, Asian)	6	2.53	2.92	2.41	0.80	2.86	0.60

* $p < .05$ (two-tailed), ** $p < .01$ (two-tailed)

To further understand these differences in ethnicity, a new group of ABW was created that represented people of color and excluded Caucasian ABW and other ABW. The question underlying this additional analysis was: Would the results of this study be any different if Caucasian ABW and other ABW were excluded from the final analyses? To address this question, a new analysis was conducted in which ABW people of color (i.e., Hispanic and African American ABW) were substituted for the original ABW sample. At first glance, the work adjustment mean score of the new ABW sample increased from 4.37 to 4.72. However, there was only a slight increase for flexibility (i.e., 2.81 vs. 2.85) and perseverance (i.e., 3.23 vs. 3.27). When each hypothesis was further examined with this new subset of ABW, none of the main findings in this study changed. Thus, the results for the full sample of ABW have been reported for maximum representativeness.

Summary of findings

Hypothesis 1a: Latino immigrant workers (recent and non-recent) are expected to report significantly higher levels of reactivity compared to American-born workers who are predicted to report significantly higher levels of activeness

Supported

Hypothesis 1b: Recent Latino immigrant workers (RLIW) are expected to demonstrate significantly higher reactiveness scores compared to non-recent Latino immigrant workers (NRLIW)

Not supported

Hypothesis 2a: Latino immigrant workers (recent and non-recent) are expected to report significantly higher levels of flexibility compared to American-born workers

Partially supported - NRLIW evidenced significantly higher flexibility scores compared to ABW

Hypothesis 2b: Recent Latino immigrant workers (RLIW) are expected to demonstrate significantly higher flexibility scores compared to non-recent Latino immigrant workers (NRLIW)

Not supported

Hypothesis 3a: Latino immigrant workers (recent and non-recent) are expected to report significantly higher levels of perseverance compared to American-born workers

Partially supported - NRLIW evidenced significantly higher perseverance scores compared to ABW

Hypothesis 3b: Recent Latino immigrant workers (RLIW) are expected to demonstrate significantly higher perseverance scores compared to non-recent Latino immigrant workers (NRLIW)

Not supported

Hypothesis 4: Duration of time in the United States among Latino immigrant workers (recent and non-recent) is expected to be significantly and positively associated with

work adjustment scores and significantly and negatively associated with flexibility and perseverance scores

Not supported

Hypothesis 5: Type of settlement area (new versus old) is expected to have a moderating effect on the relationship between recency of immigration and work adjustment style (reactiveness / activeness, flexibility, perseverance). Consequently, mean score differences between recent and non-recent Latino immigrant workers in old settlement areas are expected to be significantly smaller compared to new settlement areas

Not supported

DISCUSSION

The purpose of this study was to investigate whether there are significant and meaningful differences in how Latino immigrant workers (recent and non-recent) and American-born workers tend to think about and respond to issues at work using the theory of work adjustment framework. Five hypotheses were proposed and tested. These hypotheses examined whether Lofquist and Dawis' (1984) work adjustment styles might offer a theoretical framework in which to understand differences in the way RLIW, NRLIW, and ABW respond to OSH issues. In the following section, the main findings from this study will be further discussed along with implications, limitations, future directions and recommendations, and conclusions.

Main findings. As predicted in hypothesis 1a, this study found that compared to ABW, RLIW and NRLIW were significantly more likely to use a reactive adjustment mode to respond to difficulties in the workplace. Within the TWA framework, a person who has a reactive adjustment mode will likely focus on changing their own behaviors or perceptions rather than the environment when faced with discorrespondence at work. For example, someone who is unhappy with the working conditions at their job may choose to cognitively reframe their perception of risk rather than try to change the environment to improve working conditions. Hypothesis 1b, which predicted that RLIW would be significantly more likely to utilize a reactive work adjustment approach compared to NRLIW was not supported. In fact, this study found that the NRLIW and RLIW in this sample obtained similar work adjustment scores, possibly due to the fact that these workers shared similar demographic characteristics (i.e., country of origin, ethnicity, job type, age) to one another.

A number of factors may potentially explain why hypothesis 1a was supported; whereas, hypothesis 1b was not supported. For instance, it seems plausible that being a Latino *immigrant*

is prominent among them. Factors associated with being an immigrant worker (e.g., demographic characteristics, legal status, discrimination) may lead both recent and non-recent Latino immigrant workers to adopt more reactive work adjustment behaviors to preserve their limited status in the United States.

As an immigrant worker, recent and non-recent Latino immigrant workers may lack the experience, education, and resources necessary to adequately address OSH issues (Brunette, 2005; Flynn, Check, Eggerth, & Tonda, 2013; Gilkey et al., 2013). For example, research shows that Latino immigrant workers tend to be younger and less educated compared to ABW (Brunette, 2005; Dong et al., 2010; Flores et al., 2011; Pew Hispanic Center, 2010). Further complicating matters, Latino immigrant workers may not receive appropriate OSH safety training once employed in the United States (Canales et al., 2009; Eggerth et al., 2012; McGlothlin et al., 2012; O'Connor et al., 2005; Pannikar et al., 2012; Ruttenberg & Lazo, 2004). As a result, Latino immigrant workers may lack the information they need to address their rights as workers (i.e., utilize a more active work adjustment approach) and work in safer work environments (Flynn et al., 2013).

The fact that a large portion of RLIW and NRLIW workers are undocumented may also contribute to the limited status of these workers (Davila et al., 2011; Lewis, 2008; O'Connor et al., 2005; Orrenius & Zavodny, 2009). Undocumented status may perpetuate the discrimination and exploitation that many of these workers face and prevent these workers from advocating for safer working conditions (de Castro et al., 2006; Flores et al., 2011; Flynn, 2010; Loh & Richardson, 2004; Shinnar, 2007). As a result, RLIW and NRLIW may be more likely to adopt a reactive approach because these individuals may find it easier to change themselves rather than a system that exploits them.

As an immigrant worker, RLIW and NRLIW may be more likely to adopt a reactive work adjustment approach because many of these workers have limited English language skills. In fact, although English language proficiency can serve as a protective factor for injury and fatality rate among this population (Canales et al., 2009; Pannikar et al., 2012), many Latino immigrant workers tend to find employment in jobs that require minimal English language skills (Brunette, 2004; Fuentes, 2007). Consequently, these workers may have a difficult time communicating with their supervisors and responding to OSH issues utilizing an active work adjustment approach (Dai & Goodrum, 2011; Gilkey et al., 2013). In summary, each of these factors (e.g., lack of education and training, undocumented status, limited English language proficiency) likely contributes to the marginalized status of Latino immigrant workers. This marginalized status may limit the rights and active choices that members of this group can safely make regarding OSH at work.

Within the lens of TWA, Latino immigrant workers adjust their work behavior because they want to achieve correspondence with their work environment (Dawis & Lofquist, 1984; Rounds et al., 1987). For example, Lofquist and Dawis (1991) suggested that individuals are intrinsically motivated to replicate behaviors that are rewarding and avoid behaviors that are punishing. By adjusting to suboptimal working conditions in the United States, Latino immigrant workers are rewarded with improved economic conditions compared to their country of origin (Ruhs, 2010; Valdivia & Flores, 2012) while avoiding consequence like deportation (Cleaveland, 2012; Roelofs et al., 2011). Discrimination and exploitation may also limit how workers *can* respond to OSH issues. For example, fear of deportation has been found to prevent Latino immigrant workers from seeking help from their employers (Sullivan & Rehm, 2005).

Therefore, RLIW and NRLIW may be highly motivated to accept the status quo by adopting more reactive work adjustment styles compared to ABW.

Another interesting finding that emerged from hypothesis 1a was that men and women may respond differently to OSH issues. Specifically, women in this sample were more likely to employ an active work adjustment style compared to men. It is important to note that this gender difference was observed in a largely Latino sample, with a majority of immigrant workers and it may not generalize to other samples. However, the simple main effect of gender accounted for only 1.4% of the variance in work adjustment score. Immigrant status explained substantially more variance (i.e., 17.7%) in work adjustment score. Nonetheless, this finding supports the recent approach in the literature that examines men and women independently (e.g., Eggerth et al., 2012; Furman, Ackerman, & Negi, 2012; Negi, 2013; Molina & Alcántara, 2013; Raffaelli & Wiley, 2013; Rhodes et al., 2013). Further, this finding suggests that workers' training and intervention needs may vary as a function of gender.

To better explain this finding for a largely Latino sample, a traditional Hispanic gender role approach was first examined. From this perspective, Latino immigrant men are described by the concept of "Machismo" or a male-dominant patriarchal approach (Gallo, Penedo, de los Monteros, & Arguelles, 2009). Machismo attitudes have been associated with both positive and negative outcomes for Latino men (Galanti, 2003). For example, Sobralske (2006) found that Machismo attitudes are linked with both high-risk behaviors (e.g., heavy drinking, unprotected sexual behaviors) and health protective behaviors (e.g., seeking medical care shortly after an injury or disability). Gilkey and colleagues (2013) suggest that Latino immigrant workers may be more accepting of high risk work environments because of Machismo attitudes. Further, Kalarao (2004) posits that Latino men may be cultured to avoid discussing safety issues or

concerns with their supervisors because it is not "manly". Therefore, RLIW and NRLIW men may be more likely to utilize a reactive adjustment mode in part because of Machismo attitudes.

For women, the traditional gender role approach would characterize Latino immigrant women with "Marianismo" or being more passive, dependent, and self-sacrificing compared to Latino men (Gallo et al., 2009). Research has found that Latino women who identify with Marianismo may be less likely to take care of themselves, exercise, and be at greater risk for depression (D'Alonzo, 2007). However, this traditional gender role perspective does not adequately address the findings in this study. For example, one would expect that a person who is characterized by Marianismo to be more likely to utilize a passive (i.e., reactive) work adjustment approach. Conversely, the women in this study had significantly higher work adjustment scores (i.e., more active work adjustment styles) compared to the men in this study.

Smith and Mannon (2009) make the point that although many scholars stress the importance of gender in the immigrant experience, Latino immigrant women themselves may not consider the role that gender plays in their own lives. There may be other factors that are more salient to this group. Supporting this perspective, Lueck and Wilson (2011) argue that Latino immigrant women often have to cope with other types of subordinate status (i.e., social class, race, immigrant status, family role) beyond traditional gender roles and that these roles may be more salient for women than men. Further, Pessar (1999) suggests that Latino immigrant women gain status and power after they migrate to the United States. Therefore, a shift in gender role once in the United States may help explain why Latino immigrant women tend to think about and respond to OSH issues differently than Latino immigrant men.

Next, hypotheses 2a and 3a predicted that both NRLIW and RLIW would obtain significantly higher flexibility and perseverance scores compared to ABW. However, only

NRLIW evidenced significantly higher flexibility and perseverance scores compared to ABW, while RLIW and ABW achieved similar flexibility and perseverance scores. Such findings imply that NRLIW may be more likely than ABW and RLIW to endure discorrespondence at work before trying to change themselves (i.e., reactiveness) or the environment (i.e., activeness). Indeed, once work adjustment behavior is initiated, NRLIW may be more likely to persist in their work adjustment behaviors. Conversely, RLIW and ABW were found to share a similar tolerance for discorrespondence at work (i.e., flexibility) and were more likely to persist (i.e., perseverance) in their work adjustment behavior. Thus, hypotheses 2a and 3a were only partially supported.

One possibility is that immigrants are by their nature more active, flexible, and persevering compared to ABW. For example, RLIW and NRLIW represent a group of individuals who took a risk and chose to start a new life in the United States (i.e., active approach). Once in the United States, RLIW and NRLIW may be more willing to adapt to new circumstances at work because they are the type of individuals who chose to move to a new country with different customs and traditions (i.e., flexibility). In order to create a better life for themselves and their families, RLIW and NRLIW may be more likely to stay in at their jobs despite obstacles (i.e., persevering). These work and life experiences may translate into workers who are more likely to adapt to their work environment (i.e., flexibility) despite discorrespondent work situations (i.e., perseverance). Supporting this perspective, the literature suggests that Latino immigrant workers willingly risk a great deal to immigrate to the United States in hopes of a better future (Eggerth & Flynn, 2012; Flynn, 2010; Loh & Richardson, 2004). NRLIW may represent RLIW who have been socialized through acculturation to be less active, more flexible, and more persevering to survive.

As previously discussed, acculturation may be critical in understanding how RLIW and NRLIW tend to think about and respond to OSH issues. Specifically, acculturation may serve as a proxy for language proficiency, human capital development, and legal status attainment. Supporting this perspective, Berry (2003) and Valdivia and Flores (2012) describe acculturation as a process that builds human capital and contributes to improved language proficiency among immigrant populations. Moderate levels of acculturation has been associated with increased social mobility (Chapman & Perreira, 2005). Unfortunately, immigrants who underestimate or overestimate their English language proficiency may fare worse in the labor market (Akresh & Frank, 2011). Among Latino immigrant workers, English language proficiency is associated with higher earnings (Valdivia et al., 2008; Valdivia & Flores, 2012), career development (Shinnar, 2007; Valdivia & Flores, 2012), and better training opportunities (O'Connor et al., 2005). However, the impact that acculturation may have on RLIW and NRLIW may be more complex than originally discussed.

Acculturation has been described as a multifaceted, multifactorial, developmental, and interactive construct (Cuéllar, Arnold, & Maldonado, 1999). In fact, Cabessa (2003) offers dozens of contextual factors (e.g., demographics before immigration, societal attitudes towards immigrations, legal and residency status, expectations for life in the new culture, time in the new culture) that have been found to influence acculturation outcomes. Moreover, Guinn, Vincent, Wang, and Villas (2011) argue that the acculturation process itself is something that is a unique experience for each individual. Therefore, it is likely that as individuals, RLIW and NRLIW experience acculturation differently. Further study may be necessary to understand how the acculturation process may differ as a function of duration of time in the United States and the impact of the work environment.

In the context of the TWA framework, various researchers have considered the importance of cultural variables in predicting TWA outcomes (Dawis, 1994; Dawis & Lofquist, 1993; Fitzgerald & Rounds, 1994; Lyons et al., 2006; Rounds & Hesketh, 1994; Tinsley, 1993). While acculturation has not have been directly studied in the TWA framework, it seem plausible that this process could be viewed as a cultural variable that might impact TWA outcomes. Indeed, cultural variables have been found to influence the extent to which individuals are correspondent within particular environments while simultaneously shaping the experiences and opportunities that are available to workers (Lyons et al., 2006). It seems plausible that over time, acculturation may socialize immigrant workers to align with the conditions of the work environment. In other words, immigrants' work environment may change how these workers tend to think about and respond to OSH issues. This point of view would support the findings that emerged in hypotheses 2a-3b in which NRLIW had significantly higher flexibility and perseverance scores compared to RLIW and ABW. Thus, acculturation as a cultural variable may both influence how RLIW and NRLIW interact with their work environments and the work environment through acculturation may influence how workers tend to think about and respond to OSH issues at work over time.

Hypothesis 2b and 3b examined whether there were meaningful differences in how RLIW and NRLIW tend to respond to OSH issues as measured by flexibility and perseverance. It was postulated that RLIW would obtain significantly higher flexibility and perseverance scores compared to NRLIW. This hypothesis was not supported. NRLIW scored significantly higher for each of these work adjustment styles. While mean score difference between RLIW and NRLIW were significant, these mean score differences were marginal. For example, the mean score difference in the flexibility scale for NRLIW and RLIW was merely 0.19. What this

finding suggests is that both RLIW and NRLIW, individuals with marginalized status, prefer work adjustment styles that maintain current working conditions. Furthermore, the key finding from this analysis is that NRLIW demonstrated significantly higher flexibility and perseverance scores compared to ABW and RLIW.

Another plausible explanation for these findings is that higher levels of flexibility and perseverance could indicate improved working conditions among NRLIW. For example, workers who have higher flexibility and perseverance scores may actually be more satisfied with their jobs because they have found work adjustment strategies (i.e., change the self, change the environment) that facilitate correspondence. It is also possible that NRLIW, after living in the United States for a longer duration of time, may have developed better coping strategies to deal with the difficulties of being a Latino immigrant worker or found jobs that better fit their needs and abilities (i.e., greater correspondence). While these jobs may not be ideal or any more safe in scope, there may be other characteristics of the job that increase the job satisfaction and ultimately the flexibility and perseverance of NRLIW. Therefore, NRLIW may be more flexible and likely to persevere with their job because they like their co-workers or supervisor, work closer to where they live, and earn more money that may compensate the risk.

Another possibility is that beyond acculturation, discrimination, and legal status, job embeddedness (Mitchell, Holton, Lee, Sablinski, & Erez, 2001) may help explain why NRLIW evidenced higher flexibility and perseverance scores relative to RLIW. Job embeddedness has been defined as, "...the extent to which an individual becomes enmeshed in a web of different types of forces connecting the person to a job and organization..." (Allen, 2006, p. 239). It has been argued that the more a worker is embedded in their job and community, the less likely this person would leave his or her job (Yao, Mitchell, Burton, & Sablynski, 2004). In the context of

this study, NRLIW may be more connected to their jobs and lives in the United States compared to RLIW. In fact, findings from this study indicate that NRLIW have worked in their current jobs an average of 4.20 years. Thus, it seems plausible that during this time, NRLIW may have made friends, gotten to know their coworkers, found a place to live, and become familiar with their communities. In contrast, many RLIW immigrate to this country with the intention to return back to their country of origin (Flynn, 2010). As a result, such workers may be more willing to try to change the environment in the face of adversity. Specifically, RLIW may be less likely to be embedded to their jobs and communities in the United States.

According to Mitchell and Lee (2001), a person becomes embedded to their job from organizational and community factors. Specifically, three primary forces (i.e., links, fit, sacrifice) can keep a person embedded in their job (Mitchell et al., 2001). First, *links* are the formal or informal connections that an individual has with other individuals or groups (Holtom, Mitchell, & Lee, 2006). Links pertain to the number of individuals that an individual interacts with on a daily basis (i.e., supervisors, friends, community members). Mitchell and Lee (2001) suggest that the number of links that an individual has with their jobs and community can put pressure on the person (via normative influences) to stay on the job. Second, *fit*, is defined as an individual's compatibility (e.g., personal values, career goals, plans for the future) with their organization and community. This dimension reflects a person's attachment to their organization and wider community. Lastly, *sacrifice*, is defined as what an individual has to give up when they leave a job. Organizational sacrifice (e.g., benefits, opportunities for advancement, job training, job stability) and community sacrifice (e.g., family work-balance, access to schools, neighborhood safety) may prevent workers from leaving their jobs. Indeed, Mitchell and colleagues (2001) found that job embeddedness was negatively related to intentions to leave and

turnover. NRLIW may endure discordance at work and persevere longer even in the face of OSH issues because of job embeddedness.

To further interpret the results that emerged in hypotheses 2a-3b, the reliability of the flexibility and perseverance scales was also considered. As mentioned previously, this is the first study to empirically examine the psychometric properties of the work adjustment style scales. The final flexibility and perseverance scales were based on items that were identified during the EFA and represented the strongest factor loadings across the entire sample. While the overall reliability of the flexibility scale ($\alpha = .71$) was acceptable (Nunnally & Bernstein, 1994), the coefficient alpha levels for NRLIW ($\alpha = .66$) and RLIW ($\alpha = .69$) were not acceptable. This means that the flexibility scale may have been less reliable for RLIW and NRLIW than ABW.

A similar trend was observed for the perseverance scale. Although the overall reliability of the perseverance scale was higher for the entire sample ($\alpha = .64$) versus NRLIW ($\alpha = .58$) and RLIW ($\alpha = .60$), none of the coefficient alpha levels would be considered acceptable (Nunnally & Bernstein, 1994). This finding suggests that the perseverance scale may have been less reliable and this may have influenced the findings in hypotheses 2a-3b. Tran (2009) emphasizes how the development of cross-cultural measures typically undergoes numerous iterations in the process of internal and external validity. The flexibility and perseverance scales were no different. What seems clear is that additional items may need to be added and tested to strengthen the reliability and validity of these scales. Furthermore, the finding that NRLIW obtained significantly higher flexibility and perseverance scores compared to RLIW and ABW may need to be interpreted cautiously given the psychometric properties of these instruments. Given the success of the adjustment scale in the present study, forced-choice scales to measure flexibility and perseverance may be preferable with this population.

Hypothesis 4 predicted that the length of time in the United States would increase the likelihood that a Latino immigrant worker would be more likely to use an active approach, be less flexible, and persevere less as a function of acculturation. To better address this hypothesis, a new variable (i.e., fraction of lifetime in the United States) was created that assessed how long a Latino immigrant worker lived in the United States as a function of their age. However, hypothesis 5 was not supported in that fraction of lifetime in the United States was significantly and positively related to both flexibility and perseverance. This means that contrary to what was predicted, Latino immigrant workers demonstrated significantly higher flexibility and perseverance scores the longer these individuals lived in the United States.

This finding compliments what was found in hypotheses 2b and 3b in which NRLIW had significantly higher flexibility and perseverance scores compared to RLIW. What hypothesis 4 appears to provide is a deeper understanding into the lower and upper thresholds of Latino immigrant workers in the United States. For example, these results demonstrate that fraction of lifetime in the United States may increase the likelihood that Latino immigrant workers will tolerate greater discorrespondence at work before taking action and once work adjustment behaviors are initiated, such workers may persevere longer. As discussed previously in hypotheses 2a-3b, NRLIW may be more embedded to their jobs and may have developed more effective coping strategies to handle discorrespondence at work.

Finally, hypothesis 5 examined whether there were meaningful differences between Latino immigrant workers (recent and non-recent) who lived in old settlement areas (i.e., Santa Fe, New Mexico) versus a new settlement area (i.e., Cincinnati, Ohio). Moreover, this hypothesis examined whether Latino immigrant workers might respond differently to OSH issues because of where they lived. Results revealed that type of settlement area was unrelated

to work adjustment, flexibility, and perseverance scores among RLIW and NRLIW. Indeed, type of settlement area was not found to interact with immigrant status group to predict work adjustment style. Therefore, hypothesis 5 was not supported.

Recently, Cohen and Chavez (2013) conducted a study of Latino immigrant workers living in Columbus, Ohio. This study examined the reception and discrimination of Latino immigrant workers in this new settlement area. These researchers explored how living in a new settlement area that had anti-immigration laws impacted Latino immigrant workers regardless of legal status. Latino immigrant workers reported that their discrimination was linked with social and economic isolation. Such stressors have been reported among Latino immigrant workers across a number of studies (e.g., de Castro et al., 2006; Flores et al., 2011; Flynn, 2010; Loh & Richardson, 2004; Shinnar, 2007). Therefore, moving forward, it may be more meaningful to focus on stressors that both RLIW and NRLIW face at work rather than where such workers have settled.

Study implications

This is the first empirical study to examine whether there are meaningful and significant differences in how RLIW, NRLIW, and ABW tend to think about and respond to OSH issues using the TWA framework. Given the fact that Hispanic individuals represent the fastest growing ethnic group in the United States and Latino immigrant workers (i.e., a subset of this population) suffer greater injury and fatality rates compared to American-born workers (Acrury & Quandt, 2007; Center for Disease Control, 2008; Dong & Platner, 2004; Forst et al., 2010; Goodrum & Dai, 2005; Loh & Richardson, 2004; Richardson, 2005; Richardson et al., 2003), this study represents a crucial first step toward addressing the occupational health disparity of RLIW and NRLIW living in the United States.

The findings from this study support the application of TWA toward understanding how RLIW and NRLIW tend to think about and respond to OSH issues via work adjustment, flexibility, and perseverance. Indeed, this is one of the first studies to examine whether duration of time in the United States may influence how Latino immigrant workers choose to respond to dissatisfaction in their work environment. This variable and fraction of lifetime in the United States were found to be unrelated to work adjustment style. Therefore, immigrant status group may represent a more meaningful construct in which to understand the behavioral tendencies and perceptions of Latino immigrant workers in relation to the TWA framework.

The evidence from this study also suggests that Latino immigrant workers, especially men, may be significantly more likely to try to change themselves in the face of discordance at work rather than try to change their environments. This parallels findings in the literature that suggest that males and foreign-born individuals are at greater risk for injuries and fatalities in the United States (Menéndez & Havea, 2011). Additionally, results from this study suggest that NRLIW may be more likely than RLIW and ABW to endure dissatisfaction at work before taking any kind of action and persevere for a longer duration of time before leaving an unsafe or otherwise discordant work situation. Contrary to what was originally predicted, findings from this study indicate that NRLIW were more flexible and likely to persevere than RLIW. Clearly the empirical findings in this study provide a new understanding of the work experiences of Latino immigrant workers in the United States within the TWA framework.

Taken as whole, the present study provides a deeper understanding of how RLIW and NRLIW tend to think about and respond to OSH issues. This study examines factors beyond culture, acculturation, and legal status and discusses the importance of immigrant status group

and job embeddedness in the lives of RLIW and NRLIW. Moreover, this study demonstrates that TWA can be meaningfully and empirically applied to the work experiences of RLIW and NRLIW. More research is necessary to identify which contextual factors may promote or prohibit Latino immigrant workers from expanding their coping strategies to address OSH issues.

Limitations

Although this study makes significant contributions toward understanding differences in how RLIW, NRLIW, and ABW tend to think about and respond to OSH issues in the context of TWA, several methodological limitations must be considered regarding this research. First, results from this study may not be generalizable to all Latino immigrant workers living in the United States because meaningful differences may exist within specific ethnicities and nativities. Moreover, the term Latino immigrant worker as defined in this study represents all individuals of Hispanic origin and descent. For example, research suggests that there may be differences in how Latino immigrants from Brazil respond to OSH issues compared to El Salvador (Pannikar et al., 2012). It is problematic to assume that all individuals who are considered as "Latino" or "Hispanic" would respond similarly to TWA work adjustment styles.

Second, the EM method used to handle the missing data in this study may have resulted in a reduced standard error estimation in the mean scores (Acock, 2005; Graham, 2008). Applying a multiple imputation approach in which each missing value is replaced with a predetermined number of plausible values while controlling for different sources of error may have been a superior approach compared to single imputation (Rubin, 1987). Therefore, in terms of reducing error in estimates, multiple imputation may have provided a more accurate estimate

of the missing values in this study. However, given the fact that a very small percentage of the data were missing (i.e., less than 2.6%), EM remains an acceptable approach.

Lastly, this is the first study to test the psychometric properties of the TWA work adjustment styles among English- and Spanish-speaking populations. Indeed, this is the first study to test work adjustment, flexibility, and perseverance among RLIW, NRLIW, and ABW. Although the overall work adjustment and flexibility scales achieved acceptable coefficient alpha levels ($\alpha \geq .70$), the perseverance scale did not reach this acceptable standard. As a result, the perseverance scale was less reliable than the work adjustment and flexibility scales. In addition, because the scales were based on the factor loadings of the entire sample, some items were stronger or weaker across the 3 immigrant status groups. One plausible explanation for these findings is that some of the items were more or less relevant among ABW, NRLIW, and RLIW. Another possible explanation is that some of the selected items may have been better understood in the English rather than the Spanish version of the TWA scales or vice versa. However, given the rigor of the cognitive testing, this explanation may be less likely.

Future directions and recommendations

Applying TWA to the work experiences of RLIW and NRLIW proved to be a productive endeavor. Findings from this study demonstrate that both RLIW and NRLIW tend to adopt more reactive work adjustment approaches compared to ABW. Moreover, compared to RLIW and ABW, NRLIW were found to be more flexible and more likely to persevere in response to OSH issues. Further research needs to examine how acculturation, English language proficiency, legal status, and job embeddedness may influence how RLIW and NRLIW tend to think about and respond to OSH issues using the TWA framework. Given the findings surrounding NRLIW, the

job embeddedness literature (Allen, 2006; Mitchell et al., 2001; Mitchell & Lee, 2001; Yao et al., 2004) may be a logical starting point for future researchers.

Given the fact that Latino immigrant workers suffer from greater injury and fatality rates compared to American-born workers and many of the trainings that have been developed to address this occupational health disparity are inadequate (Canales et al., 2009; Eggerth et al., 2012; McGlothlin et al., 2012; O'Connor et al., 2005; Ruttenberg & Lazo, 2004), it is imperative to develop effective trainings for this population. This study focused on how Latino immigrant workers tend to think about and respond to OSH issues. As a result, the findings from this study provide an innovative approach in which to address the occupational health disparity of this population using TWA.

First, trainings may be more effective if they are tailored to the specific ways in which men and women tend to respond to OSH issues. For example, Latino immigrant men suffer from greater injury and fatality rates compared to Latino immigrant women (U.S. Census Bureau, 2011). Indeed, in a study that examined the temporal patterns of work-related fatalities among foreign-born workers in the United States between 1992 and 2007, 95% of all Hispanic fatalities during this time period were male (Menéndez & Havea, 2011). However, this study did not adjust for occupation and men are more likely to be employed in more dangerous occupations such as construction, mining, and farming. Such findings demonstrate that there is a critical need to tailor interventions and trainings specific to this group. In addition, researchers may need to examine what risk factors put this type of Latino immigrant worker at greater risk. It is plausible that how these workers tend to think about and respond to OSH at work as a function of the TWA framework may provide a meaningful direction. In addition, to strengthen the

effectiveness of potential interventions and trainings, other factors like English language proficiency and job embeddedness may need to be further examined as well.

Findings from this study also suggest that Latino immigrant women are more active in how they respond to discordance at work. While active and reactive approaches may be appropriate for specific situations, it may be helpful to develop an inventory of how Latino immigrant workers address OSH issues through the lens of TWA. This type of research could identify what types of coping skills members of this group utilize at work to overcome dissatisfaction with their jobs. For example, future researchers could conduct a qualitative study that examines how Latino immigrant workers respond to OSH issues and examine what types of approaches may be most effectively address discordant work situations.

In addition, interventions and trainings that could help Latino immigrant workers understand their employment rights may help this group develop a wider range of coping skills. Such trainings could encourage and teach Latino immigrant workers different work adjustment approaches that may be more effective at addressing the occupational health disparity of this population. For instance, stress management may be an example of a reactive approach that could help Latino immigrant workers better handle OSH issues; while teaching negotiating skills may represent a more active approach that can help Latino immigrant workers advocate for better working conditions. Another promising direction that was recommended by Flynn and colleagues (2013) is to identify and partner with organizations that are already trusted by these workers and have them implement such strategies. Integrating each of these methods may result in trainings and interventions that may be more effective at addressing the occupational health disparity of this group.

Second, the training and intervention needs of Latino immigrant workers may vary as a function of being RLIW or NRLIW. Findings from this study indicate that NRLIW are more flexible and likely to persevere compared to RLIW. It would be interesting to examine how duration of time in the United States, work adjustment, flexibility, and perseverance may relate to injury and fatality rates. It is possible that duration of time at job may serve as a protective factor for NRLIW who tend to be employed in their jobs for a longer duration of time. Another possibility is that future research may find that the longer a worker is employed in their job, the more likely this individual will utilize an active approach. It would also be interesting to measure job embeddedness among NRLIW and RLIW to examine whether this construct differs between groups. It seems plausible that NRLIW would obtain higher job embeddedness scores as a function of duration of time in the United States. However, to answer such research questions, future studies would need to further examine and test the relationships between these proposed variables.

Third, any trainings and interventions that are designed for Latino immigrant workers need to account for potential barriers (e.g., legal status, language proficiency, discrimination, lack of resources) that may limit or interfere with the success and adherence of potential services. For example, researchers (Brunette, 2005; de Castro et al., 2006; Flynn, 2010) have found that Latino immigrant workers are less likely to complain about issues at work for fear of retaliation from their supervisors (e.g., withheld wages, unsafe working conditions, being fired). Latino immigrant workers may not know how to advocate for their rights at work and because of cultural nuances (e.g., Machismo, previous work experience) may be less likely to take action when faced with OSH issues. Therefore, Latino immigrant workers may benefit from trainings and interventions that account for and address potential barriers.

Fourth, implementing promotora⁴ programs in Latino immigrant worker settlement areas may help address the occupational health disparity of Latino immigrant workers while providing a strategy to address potential barriers (Flynn et al., 2013). A promotora program utilizes community health workers to empower and educate underserved or hard to reach populations. Typically, individuals from the Latino immigrant community are selected and trained to educate and assist members of their own community regarding a specific topic such as health promotion.

Promotoras tend to be more trusted because they are recruited within their respective communities and understand the cultural nuances of their group. Empirically, the promotora approach has been successful among Latino immigrant workers in promoting health behaviors such as: (1) pesticide safety behavior (Grzywacz et al., 2013), (2) diabetes care and management (Lujan, Ostwald, & Ortiz, 2007), and (3) chronic disease screening (Reinschmidt et al., 2006). Although the promotora approach has been recently applied in the context of OSH (see Flynn et al., 2013), the effectiveness of this approach is currently unknown.

In the context of TWA, the promotora approach may be an effective strategy because it would provide peer-to-peer support in a cost-effective and culturally-sensitive manner. Specifically, this approach could meet Latino immigrant workers where they may be most comfortable - changing themselves in the face of OSH issues, being more flexible and likely to persevere. The promotora could also help Latino immigrant workers by providing the following services: (1) connecting employees to OSH training and intervention materials that could be provided at no or low cost, (2) partnering with non-profit organizations that could supply personal protective equipment at no or low cost, (3) offering English language classes so that workers can communicate better with their employers regarding OSH issues, and (4) helping Latino immigrant workers navigate the many barriers (e.g., transportation issues, health care

⁴ The Spanish word "promotora" translates into promoter in English.

utilization) that these workers encounter on a daily basis. The key to the promotora approach, is that these individuals would help address issues of education, lack of training, and resources that may contribute to the injury and fatality rate of Latino immigrant workers. However, Wasserman, Bender, and Lee (2007) note that the utility of the promotora approach may vary as a function of the amount of monitoring and support that promotoras receive. Therefore, it would be important to develop interventions or trainings that would address this occupational health disparity and also be sustainable.

Next, further validation and modification of the TWA scales created for this study may improve the reliability and validity of future results. While the work adjustment scale was acceptable, the perseverance and flexibility scales were less reliable. Although scale development and validation may take a number of years to successfully achieve, the items that were used in this study were relatively strong given the fact that this is the first empirical application of these scales among English-speaking and Spanish-speaking populations. Thus, future researchers should test and refine these TWA scales among a new sample of recent and non-recent Latino immigrant workers. One potential solution is to design flexibility and perseverance scales that utilize a forced-choice approach with this population. It may also be interesting to examine how these scales perform among other ethnic groups and individuals who work in different types of occupations.

Another direction for future research could be to relate the TWA variables to risk perception and acceptance. Risk perception represents the extent to which workers are aware of risks at work; whereas, risk acceptance refers to workers' willingness to accept a given risk, independent of the perceived magnitude of that risk (Roelofs et al., 2011; Slovic & Peters, 2006). As Eggerth and Flynn (2012) suggested, Latino immigrant workers may underestimate the risks

associated with their jobs because of the various risks (e.g., illegal border crossing, exploitation by human smugglers) these workers encountered in an effort to immigrate to the United States. For example, in a qualitative study conducted by Roelofs and colleagues (2011), Hispanic workers were found to recognize increased hazard exposure and risk levels at work but felt powerless to make changes (i.e., reactive work adjustment approach). In this study, workers discussed how they were not provided proper PPE and/or equipment to do the job, felt pressured to work faster and take risks, were unable to question supervisor authority, received ineffective and irrelevant safety training, and were forced to accept the responsibility for safety without a full understanding of controls, available resources or authority to take action. Hispanic workers also reported that they felt intimidated and were fearful of retaliation by employers (Roelofs et al., 2011). Thus, it seems plausible that how workers tend think about and respond to OSH issues (i.e., TWA framework) may be associated with how such workers perceive and accept risk at work.

Another direction that future researchers could pursue in the context of TWA scale development and validation is examining whether items that focus on the self, other, or the environment (Eggerth & Flynn, 2012; Hesketh & Griffin, 2005; Shubsachs et al., 1978) may better represent the work experiences of Latino immigrant workers. Findings from Eggerth and Flynn (2012) indicate that Latino immigrant workers may be more responsive to external reinforcers (e.g., compensation, security). In considering how best to help and serve this vulnerable population, it may be important to prioritize the value of comfort over values such as achievement, autonomy, status, altruism, and safety. Safety messages that emphasize OSH through the lens of comfort may be more effective than messages that emphasizes creativity or altruism. Therefore, creating and examining TWA scales that consider the role of self, other, and

the environment may more accurately capture the work experiences of Latino immigrant workers in future studies. In addition, strengthening the psychometric properties of the TWA scales may further contribute to understanding the work experiences of Latino immigrant workers.

CONCLUSION

The findings from this study add to the growing body of literature that has begun to focus on the unique work experiences of Latino immigrant workers. This study demonstrates that there are meaningful differences in how RLIW and NRLIW workers tend to think about and respond to OSH issues. In fact, the results of this study help clarify the role of volition or how workers tend to think about and respond to OSH issues through the lens of the TWA framework. This study also investigates the reliability and validity of new work adjustment scales (i.e., work adjustment, flexibility, perseverance) that were developed for these specific immigrant status groups. Indeed, this study also highlights how specific subgroups of Latino immigrant workers (e.g., NRLIW/RLIW, male/female) may respond differently to OSH issues. Moreover, this study represents an important step toward understanding the work experiences of RLIW and NRLIW, subgroups that have not previously been explored.

This study also highlights the importance of considering how NRLIW and RLIW tend to think about and respond to OSH issues in the workplace. Often times, researchers have focused on cultural aspects of being Latino (e.g., machismo) as it relates to increased risk for injuries and fatalities at work. However, findings from this study suggest that it is likely that being a *foreign-born* Latino immigrant worker and the factors associated with this classification (e.g., lack of training, limited English proficiency) may better explain the occupational health disparity of this group. For example, NRLIW and RLIW were much more likely to utilize a reactive work adjustment approach compared to ABW and this may have limited how these workers could respond to OSH issue.

The findings in this study offer a new perspective in which to develop and tailor effective OSH trainings and interventions for Latino immigrant workers. Ultimately, trainings and

intervention that align with how Latino immigrant workers tend to think about and respond to OSH issues may better address the occupational health disparity of this vulnerable population. Applying a promotora approach may provide an effective strategy to reach and serve Latino immigrant workers. Creating trainings and interventions that are tailored to specific subgroups of Latino immigrant workers may also prove to be effective. Furthermore, pursuing future research that examines the role of job embeddedness in relation to the TWA framework may also provide a promising direction.

In conclusion, this study through the application of TWA, provides researchers, practitioners, and policymakers with guidance in selecting strategies may be more successful for addressing the occupational health disparity of Latino immigrant workers living in the United States. Integrating the findings from this study into interventions and trainings targeted at Latino immigrant workers may reduce the injury and fatality rate of this group. It seems plausible that if the injury and fatality rates for other groups of workers have decreased over the last few decades, so too can the injury and fatality rates of Latino immigrant workers. Injuries and fatalities can be prevented. Addressing this occupational health disparity may simply be a matter of taking a more active, rather than a reactive approach.

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APPENDIX A

Initial Active and Reactive Work Adjustment Scale

Questionnaire – English version

Participant number:

Date:

Location:

General Instructions: The following questions are about situations and problems you may encounter at work. There are no wrong answers to any of these questions. The only right answer is the way you truly think about the question. Please read each item carefully and chose the response that best reflects how you feel or believe.

Instructions:

The following questions are about situations that might happen on your job

1. What would you do if you were unhappy with your opportunities to use your skills at work?
 - a. I would teach myself to do things that use more of my skills.
 - b. I would talk to my boss about changing to a job that will make use of my skills.
2. What would you do if you were unhappy because you couldn't take pride in the work that you do?
 - a. I would talk with my boss about doing things that would give me a greater sense of pride about my work.
 - b. I would lower my expectations of the job.
3. What would you do if you were unhappy about not having enough to do at work?
 - a. I would ask my boss for more to do.
 - b. I would adjust to the slow pace.
4. What would you do if you were unhappy with your opportunities for advancement at work?
 - a. I would tell myself that at least I had a job.
 - b. I would talk to my boss about a promotion.
5. What would you do if you were unhappy because your job did not provide an opportunity to supervise others?
 - a. I would try to lead by example.
 - b. I would talk to my boss about changing to a position that has more authority over others.
6. What would you do if you were unhappy that your company did not enforce its rules fairly?
 - a. I would try to organize my coworkers so we could complain as a group.
 - b. I would keep my opinions to myself.
7. What would you do if you were unhappy with your pay for the amount of work that you put in?
 - a. I would do less work.
 - b. I would ask for a raise.
8. What would you do if you were unhappy that your coworkers didn't help each other out?
 - a. I would ask to be transferred to a different work group.
 - b. I would remind myself that work is not a place to socialize.
9. What would you do if you were unhappy with your opportunities to try some of your own ideas about how to do your job?

- a. I would tell myself that this is the employer's loss.
 - b. I would show my boss how well my ideas worked so that I could use them.
10. What would you do if you were unhappy that your job did not allow you to work independently?
- a. I would volunteer to do things that let me work alone
 - b. I would ask my coworkers to leave me alone as much as possible.
11. What would you do if you were unhappy that your job asked you to do things that went against your sense of right and wrong?
- a. I would tell my supervisor that I'm not willing to do things that go against my sense of right and wrong.
 - b. I would do it because I need the job.
12. What would you do if you were unhappy for not getting praise for being a good worker?
- a. I would tell my supervisor that I deserved more recognition.
 - b. I would complain to my friends and family.
13. What would you do if you were unhappy that your job didn't allow you to make your own decisions?
- a. I would try to find ways to make my own decisions whenever I could.
 - b. I would make a case to my boss for having more freedom in making my own decisions.
14. What would you do if you were unhappy that your job didn't provide steady employment?
- a. I would work really hard to improve my chance of keeping the job.
 - b. I would talk to my boss about being moved to a position that had more job security.
15. What would you do if you were unhappy that your job didn't provide you an opportunity to help others in the community?
- a. I would try to find ways to help people anyhow.
 - b. I would ask my employer to sponsor a charity.
16. What would you do if you were unhappy that you didn't get respect from the community for the type of work you do?
- a. I would ask my boss for training so I could get a higher level position.
 - b. I would just live with it because at least I have a job.
17. What would you do if you were unhappy with how your boss treats his employees?
- a. I would try to seek out a different position so I wouldn't have to deal with this boss.
 - b. I would complain to upper management about my boss's behavior.
18. What would you do if you were unhappy with your boss's lack of knowledge about the

work you do?

- a. I would just ignore my boss and do the best I can.
- b. I would talk with my boss about my concerns.

19. What would you do if you were unhappy because you had to do the same thing every day at work?

- a. I would ask my boss for more variety in my assignments.
- b. I would volunteer for different assignments that allowed me to do different work.

20. What would you do if you were unhappy with the working conditions at your job?

- a. I would demand management makes changes to improve the working conditions.
- b. I would just accept the conditions since there isn't anything I can do.

APPENDIX B

Final Work Adjustment Scale

Instructions:

The following questions are about situations that might happen on your job

1. What would you do if you were unhappy because you couldn't take pride in the work that you do?
 - a. I would talk with my boss about doing things that would give me a greater sense of pride about my work.
 - b. I would lower my expectations of the job.
2. What would you do if you were unhappy about not having enough to do at work?
 - a. I would ask my boss for more to do.
 - b. I would adjust to the slow pace.
3. What would you do if you were unhappy that your company did not enforce its rules fairly?
 - a. I would try to organize my coworkers so we could complain as a group.
 - b. I would keep my opinions to myself.
4. What would you do if you were unhappy that your coworkers didn't help each other out?
 - a. I would ask to be transferred to a different work group.
 - b. I would remind myself that work is not a place to socialize.
5. What would you do if you were unhappy that your job asked you to do things that went against your sense of right and wrong?
 - a. I would tell my supervisor that I'm not willing to do things that go against my sense of right and wrong.
 - b. I would do it because I need the job.
6. What would you do if you were unhappy for not getting praise for being a good worker?
 - a. I would tell my supervisor that I deserved more recognition.
 - b. I would complain to my friends and family.
7. What would you do if you were unhappy that you didn't get respect from the community for the type of work you do?
 - a. I would ask my boss for training so I could get a higher level position.
 - b. I would just live with it because at least I have a job.
8. What would you do if you were unhappy with the working conditions at your job?
 - a. I would demand management makes changes to improve the working conditions.
 - b. I would just accept the conditions since there isn't anything I can do.

APPENDIX C

Initial Flexibility Scale

Instructions: The following questions are about how you think about problems at work.

21. There are usually several ways to solve any given problem at work
 - a. Strongly agree
 - b. Somewhat agree
 - c. Somewhat disagree
 - d. Strongly disagree

22. I believe things at work will always get better if you give it time.
 - a. Strongly agree
 - b. Somewhat agree
 - c. Somewhat disagree
 - d. Strongly disagree

23. There are few things at work that I can't accept.
 - a. Strongly agree
 - b. Somewhat agree
 - c. Somewhat disagree
 - d. Strongly disagree

24. I expect a lot from where I work.
 - a. Strongly agree
 - b. Somewhat agree
 - c. Somewhat disagree
 - d. Strongly disagree

25. People think of me as being a "flexible" person at work
 - a. Strongly agree
 - b. Somewhat agree
 - c. Somewhat disagree
 - d. Strongly disagree

26. If I get upset at work, I can usually get over it quickly
 - a. Strongly agree
 - b. Somewhat agree
 - c. Somewhat disagree
 - d. Strongly disagree

27. The situation has to be pretty bad for me to get angry at work.
 - a. Strongly agree
 - b. Somewhat agree

- c. Somewhat disagree
 - d. Strongly disagree
28. I can easily adapt to changing conditions at work
- a. Strongly agree
 - b. Somewhat agree
 - c. Somewhat disagree
 - d. Strongly disagree
29. I am fairly easy to please at work
- a. Strongly agree
 - b. Somewhat agree
 - c. Somewhat disagree
 - d. Strongly disagree
30. I find satisfaction in everything I do at work
- a. Strongly agree
 - b. Somewhat agree
 - c. Somewhat disagree
 - d. Strongly disagree
31. I become stressed at work when things are not consistent
- a. Strongly agree
 - b. Somewhat agree
 - c. Somewhat disagree
 - d. Strongly disagree

APPENDIX D

Final Flexibility Scale

Instructions: The following questions are about how you think about problems at work.

1. There are usually several ways to solve any given problem at work
 - a. Strongly agree
 - b. Somewhat agree
 - c. Somewhat disagree
 - d. Strongly disagree

2. I expect a lot from where I work.
 - a. Strongly agree
 - b. Somewhat agree
 - c. Somewhat disagree
 - d. Strongly disagree

3. People think of me as being a “flexible” person at work
 - a. Strongly agree
 - b. Somewhat agree
 - c. Somewhat disagree
 - d. Strongly disagree

4. If I get upset at work, I can usually get over it quickly
 - a. Strongly agree
 - b. Somewhat agree
 - c. Somewhat disagree
 - d. Strongly disagree

5. The situation has to be pretty bad for me to get angry at work.
 - a. Strongly agree
 - b. Somewhat agree
 - c. Somewhat disagree
 - d. Strongly disagree

6. I can easily adapt to changing conditions at work
 - a. Strongly agree
 - b. Somewhat agree
 - c. Somewhat disagree
 - d. Strongly disagree

7. I am fairly easy to please at work
 - a. Strongly agree
 - b. Somewhat agree

- c. Somewhat disagree
- d. Strongly disagree

8. I find satisfaction in everything I do at work
- a. Strongly agree
 - b. Somewhat agree
 - c. Somewhat disagree
 - d. Strongly disagree

APPENDIX E

Initial Perseverance Scale

Instructions: The following questions are about how you think about problems at work.

32. I am not a quitter when things get tough at work
 - a. Strongly agree
 - b. Somewhat agree
 - c. Somewhat disagree
 - d. Strongly disagree

33. If I'm not happy at work I tend to quit
 - a. Strongly agree
 - b. Somewhat agree
 - c. Somewhat disagree
 - d. Strongly disagree

34. I don't get bothered by problems at work
 - a. Strongly agree
 - b. Somewhat agree
 - c. Somewhat disagree
 - d. Strongly disagree

35. When there is trouble at work, I am good at finding solutions
 - a. Strongly agree
 - b. Somewhat agree
 - c. Somewhat disagree
 - d. Strongly disagree

36. If I try and fail, I try another approach at work
 - a. Strongly agree
 - b. Somewhat agree
 - c. Somewhat disagree
 - d. Strongly disagree

37. Even when things get hard at work, I don't give up.
 - a. Strongly agree
 - b. Somewhat agree
 - c. Somewhat disagree
 - d. Strongly disagree

38. If I give something my best effort and fail, I usually give up.
 - a. Strongly agree
 - b. Somewhat agree

- c. Somewhat disagree
- d. Strongly disagree

39. If a problem at work isn't resolved fairly quickly, it is time to look for a new job.

- a. Strongly agree
- b. Somewhat agree
- c. Somewhat disagree
- d. Strongly disagree

40. I will not give up when things at work become difficult.

- a. Strongly agree
- b. Somewhat agree
- c. Somewhat disagree
- d. Strongly disagree

APPENDIX F

Final Perseverance Scale

Instructions: The following questions are about how you think about problems at work.

1. I am not a quitter when things get tough at work
 - a. Strongly agree
 - b. Somewhat agree
 - c. Somewhat disagree
 - d. Strongly disagree

2. I don't get bothered by problems at work
 - a. Strongly agree
 - b. Somewhat agree
 - c. Somewhat disagree
 - d. Strongly disagree

3. When there is trouble at work, I am good at finding solutions
 - a. Strongly agree
 - b. Somewhat agree
 - c. Somewhat disagree
 - d. Strongly disagree

4. If I try and fail, I try another approach at work
 - a. Strongly agree
 - b. Somewhat agree
 - c. Somewhat disagree
 - d. Strongly disagree

5. Even when things get hard at work, I don't give up.
 - a. Strongly agree
 - b. Somewhat agree
 - c. Somewhat disagree
 - d. Strongly disagree

6. I will not give up when things at work become difficult.
 - a. Strongly agree
 - b. Somewhat agree
 - c. Somewhat disagree
 - d. Strongly disagree