

Technical Report 1180

**An Interactionalist Analysis of Soldier Retention
Across Career Stages and Time**

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April 2006

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**United States Army Research Institute
for the Behavioral and Social Sciences**

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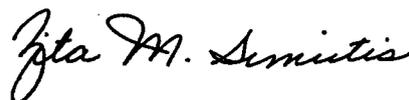
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14. ABSTRACT (Maximum 200 words): Ever since the Army became an All-Volunteer force, it has become critical to understand the factors influencing Soldiers' retention decisions. While the Army can implement short term solutions to problems resulting from turnover (e.g., increasing recruitment efforts), a long term solution requires an understanding of the dynamics driving the current levels of attrition. We propose an integrative, interactional model of retention, with links among general cognitive ability, situational variables (work characteristics and social support), job attitudes and motivation, and retention. In general, it is proposed that job attitudes and motivation mediate the impact of ability and situational variables on retention outcomes. Furthermore, the model considers the influences of career stage and changes over time in job attitudes and motivation on the retention process. Findings provided mixed support for the theoretical model of relationships. A unique contribution of our research over and above previous research is the longitudinal examination of several relationships as they unfold within Soldiers over time, and across different career stages. In particular, a key finding was that, irrespective of absolute levels of job attitudes (i.e., mean levels across time), more negative changes over time in job attitudes were associated with greater inclination to leave the U.S. Army.						
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AN INTERACTIONALIST ANALYSIS OF SOLDIER RETENTION ACROSS CAREER STAGES AND TIME

EXECUTIVE SUMMARY

Research Requirement:

This report summarizes research carried out pursuant to the United States Army Research Institute for the Behavioral and Social Science's (ARI's) Contract # W74V8H-04-K-0002, under the auspices of its Basic Research Office (now known as Research and Advanced Concepts Office, or "RACO"). In today's reality, the U.S. armed forces must be flexible and adaptable in their ability to deploy the same troops to qualitatively different types of conflicts, with vastly different purposes and in different geographical locations. Consequently, it is critical for the U.S. armed forces to attract, select, and retain sufficient human resources in order to remain competitive. Furthermore, effective retention has never been as consequential as it is today, given the high costs involved in attracting, selecting, and training Soldiers. Accordingly, the main purpose of this research was to test several propositions pertaining to the influences of individual differences, situational factors, and job attitudes on Soldiers' inclinations to remain with the Army. We also consider the extent to which processes evolving over time and differences in career stage might provide additional explanation for factors driving retention.

Procedure:

We tested our propositions using field survey data collected by Walter Reed researchers (called the OPTEMPO project) from over one thousand Soldiers at multiple times over the course of two years. The survey data were also linked to Soldiers' ability scores, which were collected during the selection process into the U.S. Army. The surveys captured multiple aspects of the work environment, including social support (i.e., perceived quality of officer and non-commissioned officer leadership, co-worker support) and work challenge (i.e., job challenge, significance of work tasks, and whether Soldiers were in deployment, in training, or in their garrison base). At each time period, Soldiers also indicated their job attitudes (i.e., job satisfaction, job involvement, and general morale) and intention to re-enlist with the Army. Finally, career stage data were also available. These rich data are unique in that they allow us to capture and explain retention processes as they unfold over time, and at different career stages.

Findings:

Results provided mixed support for our propositions. First, although cognitive ability did not predict job attitudes or turnover intentions, situational variables (social support and work challenge) were positively associated with job attitudes, which in turn negatively related to turnover intentions. Second, the data did not support our career stage propositions, in that the results did not differ for Soldiers with different levels of military tenure and rank. Finally, we found that Soldiers differed in the extent to which their job attitudes improved or got worse over time, and that those whose job attitudes improved more over time also indicated they are more interested to re-enlist with the U.S. Army for additional terms. Thus, these findings suggest that situational variables play a major role in shaping job attitudes, which in turn relate to turnover

inclinations, and, further, that turnover inclination develops (increases or decreases) over time, largely as a result of the pattern in job attitudes change over time.

Utilization and Dissemination of Findings:

As mentioned in our briefing to ARI scientists on May, 2005, this research has the potential to advance Army/military applications directed at staffing and retaining Soldiers, such as RETAIN (WP 271), Soldier Attitudes and Opinions in a Changing Army (WP 102), and SELECT21 (WP 257). First, given that U.S. armed forces' selection systems rely heavily on cognitive ability, it is important to ensure that more qualified Soldiers (i.e., those higher on ability) are those remaining in the military. Failing to find reliable relationship between cognitive ability and the retention process is, in a way, good news, as it suggests selecting Soldiers based on cognitive ability will not be likely to affect retention rates (while, at the same time, help promote the high level of performance associated with ability). Second, our results that predictors of turnover, particularly job attitudes and situational variables, do not differ at different career stages suggest that the same practices directed at retaining Soldiers can be effective at different career stages. Finally, given this study tracked Soldiers over the course of 2 years as they transition across different work assignments (i.e., training or deployment), it helped explain the decision process associated with retention better. In particular, our research showed that, over time, Soldiers' experiences and attitudes are shaped by social support and work challenge, and, as these experiences and attitudes improve or get worse over time, so does the likelihood Soldiers would leave or stay with the military. As such, our research suggests that leaders need to *continuously* support and assign challenging and interesting work tasks to their Soldiers, as doing so would likely help improve their job attitudes and thus increase the likelihood of retention. Altogether, this research will likely help the military improve various management programs directed at enhancing retention, and help align these programs with the military's staffing strategies.

AN INTERACTIONALIST ANALYSIS OF SOLDIER RETENTION ACROSS CAREER STAGES AND TIME

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Background

Ever since the late 1970s when the Army became an all-volunteer force, it has become critical to understand the factors influencing Soldiers' decisions regarding staying with or leaving the Army. A recent study has estimated that more than one-third of first-term Soldiers leave before the end of their enlistment (Tremble, Strickland, & Sipes, 2001). While some attrition can be functional, this rate of attrition can cause problems for any organization. If left unchecked, the pool of Soldiers that have critical knowledge, skills, abilities, and other personal characteristics might not be sufficient to meet the human capital demands of the organization. While short term problems can be minimized by increasing recruitment efforts, the viability of this strategy is problematic in the long run due to its expense and the uncertainty of such efforts. Clearly, some longer term solution based on an understanding of the dynamics driving the current levels of attrition is needed to help the Army manage the turnover problem.

Fortunately, turnover is one topic that has received extensive attention in the research literature and several well-established relationships have been documented over the years. For example, job attitudes such as job satisfaction, job involvement, and organizational commitment have been repeatedly found to be negatively correlated with turnover (Begley & Czajka, 1993; Cotton & Tuttle, 1986; Mobley, 1977; Rusbult & Farrell, 1983). Characteristics of the work environment also significantly affect turnover rates. For example, jobs that have been enriched in a fashion consistent with the job characteristics model (Hackman & Oldham, 1976) tend to have lower attrition rates than unenriched jobs (Griffeth et al., 2000; Price & Mueller, 1981). Even the physical attributes of the work environment can affect turnover, although employees who have control and exercise some autonomy in their job seem to be inoculated against these environment factors (Oldham & Fried, 1987). Finally, satisfaction with leadership and the quality of the leader-member interaction has important consequences for turnover (Griffeth et al., 2000). In summary, several factors have been found to be correlated with turnover intentions and actual turnover. These variables cut across all levels, from the individual (e.g., attitudes) to the job and/or group level to even the organizational level, in which such factors as the size of the organization (Bluedorn, 1982) as well as the type of pay/incentive system implemented in an organization (Bennett, Blum, Long, & Roman, 1993) have been found to affect turnover. However, what is missing from such research is an integrative framework that considers situational and personal factors that influence the retention process. Thus our proposed research adopts a "person X situation" (i.e., interactional) approach to the study of Soldier retention.

Even though Griffeth et al.'s (2000) recent meta-analysis replicated these turnover relationships, they did find some evidence of moderators to these relationships. Interestingly, they found that age and tenure moderated some of the turnover relationships. These moderators are consistent with studies by Cohen (1991) and Castro and Huffman (2001). In Castro and Huffman (2001), 289 active duty Army personnel were sampled to assess the impact of operation pace, leadership, and the presence of various work factors (e.g., recognition, job challenge, work intensity, job control, etc.) on the turnover decisions of personnel. Consistent with Cohen (1991) and Griffeth et al. (2000), Castro and Huffman found that tenure in the Army moderated the relationships between these factors and turnover decisions. Clearly, these findings strongly suggest that career stage (imperfectly measured by age and/or job tenure) is an important moderator that needs to be incorporated into a model of turnover behavior that would be useful to the Army.

In addition to person and situational predictors of retention and the moderating role of career stage, more recent research suggests that time plays an important role in the processes leading to turnover. For instance, studies by Harrison, Virick, and Williams (1996) and Sturman and Trevor (2001) showed that employees' pattern of performance trajectories over time predicts turnover decisions over and above average levels of employee performance. In particular, Sturman and Trevor's (2001) findings showed that employees whose performance trajectory got substantially worse over time were more likely to leave the organization than those whose trajectories reflected more stable levels of performance. Likewise, there is growing evidence that employees whose job attitudes become more negative over time (e.g., those who become less satisfied or committed) are more likely to quit their organizations (Bentein, Vandenberghe, Vandenberg, & Stinglhamber, 2005; Boswell, Boudreau, & Tichy, in press; Kammeyer-Mueller, Wanberg, Glomb, & Ahlburg, 2005). Moreover, a recent model of retention developed by Lee, Mitchell, and their colleagues (Lee et al., 1996, 1999; Mitchell et al., 2001) suggests that turnover is an outcome of a process that unfolds over time. These findings indicate that examining changes over time in proximal predictors of turnover can account for additional variance in retention beyond the variance accounted for in static turnover models.

Accordingly, the purpose of our research is threefold. First, we examine the mediating roles job attitudes and motivation play in explaining the effects of individual differences and situational variables on retention decisions. To do so, we delineate and test an integrative, interactional model of retention that would help integrate staffing and managerial interventions directed at maximizing Soldier retention. Second, realizing that the processes affecting retention may differ across career stages, we examine the moderating impact of career stage on the processes leading to retention decisions. As such, our research may suggest different practices directed at reducing Soldier turnover at different career stages. Finally, we explore the impact of time on the processes leading to retention decision processes. In particular, we examine how processes leading to turnover unfold over time, as well as how time acts as a boundary condition for the generalizability of our proposed model of relationships.

An Interactional Model of Retention Decisions

While the turnover literature has identified a plethora of retention predictors, the best predictor of actual turnover behavior is turnover intention (Griffeth et al., 2000). Consistent with the theory of planned behavior (Ajzen, 1991), employees who indicate they intend to quit are actually more likely to eventually leave the organizations. Given the present research is focused on understanding the processes accounting for Soldiers' decision to reenlist (i.e., to remain with the organization), we consider turnover intentions (i.e., reenlistment intentions) as the key dependent variable. In essence, we view reenlistment intentions as a proximal outcome and actual reenlistment as a distal outcome of the same turnover/retention process. Indeed, in the military, Soldiers who intend to reenlist are highly likely to actually reenlist once their term is completed (Castro & Huffman, 2001). Thus, turnover, or quit, intentions are key proximal outcomes of the retention process, as those who intend to quit have been found to actually quit.

As discussed earlier, the first main contribution of this research is the delineation of an interactional (i.e., person-and-situation) model of retention decisions, of which the key dependent variable in this research is turnover intentions. The proposed model is summarized in Figure 1. In general, the model proposes that job attitudes and motivation mediate the influences of individual differences and situational variables on retention decisions. The model further

delineates direct and interactive effects of individual differences and situational variables on job attitudes and motivation. That is, the model follows the interactional psychology tradition, according to which human behavior is a function of person and situational variables (Lewin, 1951). Indeed, interactional models have been found to successfully explain job attitudes and motivation (e.g., Ganzach, 1998; Hackman & Oldham, 1976). The model presented in Figure 1 extends the nomological network delineated in such previous work in two important ways. First, we examine a number of situational variables and job attitudes yet to be examined in previous interactional research. Second, we integrate previous interactional work on job attitudes with research on turnover. Next, we discuss the specific constructs in the model, as well as the proposed relationships among them.

Job Attitudes & Motivation

As mentioned earlier, work-related attitudinal and motivational variables have been shown to be proximal predictors of turnover (Griffeth et al., 2000). In general, research suggests that satisfied and motivated employees are less likely to quit the organization than those with lower levels of satisfaction and motivation. In our proposed research, we conceptualize job attitudes and motivation using three specific constructs: job satisfaction, job involvement, and job morale.

Job Satisfaction

Job satisfaction is an attitudinal variable assessing how people feel about their job or aspects of their job (Spector, 1997). Though researchers have examined both separate facets of job satisfaction (e.g., Smith, Kendall, & Hulin, 1969) and global (or overall) job satisfaction (e.g., Quinn & Shepard, 1974), meta-analytic findings showed that overall job satisfaction predicts overall job performance better than individual job satisfaction components (Iaffaldano & Muchinsky, 1985), and that overall job satisfaction strongly (and negatively) predicts employees' intention to quit the organization (Griffeth et al., 2000). Thus, we focus on overall job satisfaction, rather on specific job satisfaction facets, such as pay, supervision, coworkers, etc.

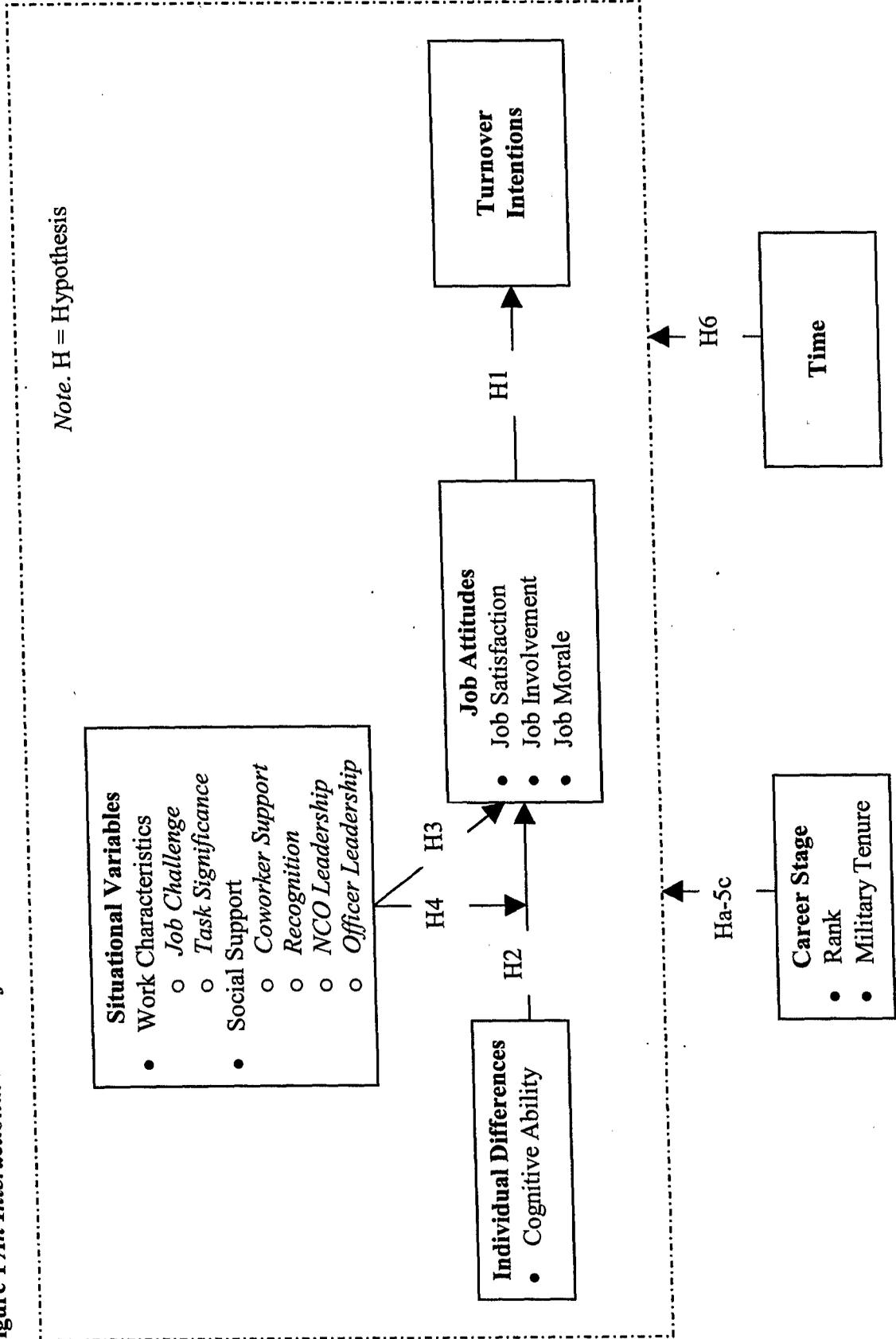
Job Involvement

Job involvement reflects a person's psychological attachment to and identification with his or her job (Brown, 1996; Kanungo, 1982). Employees who are more involved with their job consider their jobs as an important aspect of their self-concept, are more interested in their jobs, and thus, as Brown's (1996) meta-analysis showed, are less likely to quit their jobs.

Job Morale

A major component of work motivation is the intensity of effort employees allocate when engaging in work tasks (Kanfer, 1992). More motivated employees are characterized as having higher levels of job morale, or as having higher levels of energy and drive. Clearly, employees with higher levels of morale are happier at work, and thus less likely to leave their organization (Griffeth et al., 2000).

Figure 1 An Interactional Model of Soldier Retention Decisions



In sum, job attitudes and motivation are conceptualized in terms of job satisfaction, job involvement, and job morale. Consistent with previous research and theory, we expect that Soldiers with more positive job attitudes and higher levels of work motivation would be more inclined to stay with the organization (i.e., reenlist with the U.S. Army) than those with lower levels of job attitudes and motivation, and therefore have lower intentions to quit.

Hypothesis 1: Job attitudes (satisfaction, involvement, and morale) uniquely and negatively predict turnover intentions.

Individual Differences Predictors

Situational theories of job attitudes and motivation have dominated the literature until the 1980's. However, a provocative line of research by Arvey et al. (1989) and Staw et al. (Staw & Ross, 1985; Staw, Bell, & Clausen, 1986) has suggested that certain stable individual differences tend to pre-dispose employees to feel satisfied and motivated at work. For instance, research suggests that personality traits, such as need for achievement and positive self-concept, positively predict work motivation and job attitudes (for reviews, see Kanfer, 1992, and Judge et al., 1997). Additionally, there is evidence to suggest that general cognitive ability (i.e., intelligence) negatively predicts job attitudes, although only in certain situations (Ganzach, 1998). Such findings are promising, because they suggest that organizations can strategically staff employees who would not only perform well, but would also be less likely to quit the organization.

The present research focuses on general cognitive ability, and not other individual differences, for three main reasons. First, cognitive ability has been the main predictor based on which Soldiers are being selected to and classified in the U.S. Army (Rumsey, Walker, & Harris, 1994). While the U.S. Army has recently begun to use alternative selection predictors, cognitive ability still remains the most widely used predictor for selection into the Armed Forces, and will likely remain so in light of the increased complexity of U.S. Army jobs. Therefore, for practical reasons, it is worthwhile to assess the extent to which cognitive ability predicts job attitudes and retention, as well as certain situations that may moderate such relationships. Second, as uncovered by Ganzach (1998), situational variables are more likely to moderate (i.e., interact with) the influence of cognitive ability on job attitudes. This is important, because detecting such interactions could help uncover ways in which the U.S. Army could retain its best Soldiers (which are selected based on cognitive ability scores). Specifically, the U.S. Army not only needs to select high ability Soldiers, but it also needs to identify ways to retain such high-potential Soldiers. Finally, there has been very limited research on the ability-job attitudes relationships, particularly in the domain of employee retention research. Moreover, the findings that do exist are based on outdated studies (e.g., Ganzach's 1998 study used data dating back to the early 1980's). Thus, studying the ability-job attitudes relationships can redress the paucity of research in this important domain.

Note that previous research has failed to detect the direct relationship between cognitive ability and turnover (Griffeth et al., 2000). However, it is possible that this relationship is more complex, and is best explained when considering mediators (such as job attitudes) and moderators (such as social support and work complexity). Thus, consistent with Ganzach's

research, we expect that cognitive ability would negatively predict job attitudes and motivation. This is because employees with higher levels of ability are more attracted to complex and challenging jobs (Wilk et al., 1995), but, since there are fewer highly complex jobs than simpler jobs, highly intelligent employees are less likely to find that their jobs are motivating and challenging. However, as we discuss in a later section, situational variables are likely to moderate the impact of cognitive ability on job attitudes and motivation.

Hypothesis 2: Cognitive ability negatively predicts job attitudes.

Situational Predictors

Researchers have studied the impact of situational influences on psychological reactions, such as attitudes and motivation, ever since the early Hawthorne studies (Roethlisberger & Dickson, 1939). Situational models of job attitudes and motivation focus on the extent to which the contextual factors affect employees' psychological reactions. Such models have identified 2 general classes of predictors: (1) the characteristics or design of work, and (2) the extent to which social/interpersonal support is available to employees at work (e.g., Mitchell, 1997; Spector, 1997). One of the strengths of the proposed research is the examination of whether multiple indices of work characteristics and social support affect job attitudes and motivation, as we describe next.

Work Characteristics

Perhaps the most well-known and widely studied model of work design and motivation is Hackman and Oldham's (1976) Job Characteristics Model. According to this model, certain characteristics of a job have the potential to motivate employees. The core job dimensions, or characteristics, identified by Hackman and Oldham include (a) skill variety (extent to which a job requires a broad repertoire of skills), (b) task identity (degree to which a job requires completion of full and identifiable products), (c) task significance (extent to which a job has substantial impact on others), (d) autonomy (amount of freedom, independence, and discretion on a job), and (e) feedback (extent to which clear information is available regarding how well a job is being carried out). According to Hackman and Oldham, a job will have a high "motivating potential" when it has work assignments characterized as high on skill variety, task identity, task significance, autonomy, and feedback. The job characteristics model has received moderate to good support in many studies across numerous settings (see Fried & Ferris, 1987 for a meta-analytic review).

A study by Ganzach (1998) focused on both subjective perceptions and objective ratings of job complexity. Subjective perceptions of job complexity involved perceived **job challenge** (i.e., extent to which the job requires high level of autonomy, skill variety, and task identity), and **task significance** (i.e., extent to which the job involves non-trivial tasks that can have real impact on others). Objective job complexity was captured based on the job's description in the Dictionary of Occupational Titles (DOT). The present research uses similar perceptual measures of job complexity (i.e., job challenge and task significance). Consistent with previous research, we expect that Soldiers' job attitudes and motivation would be higher when their job assignments are more complex.

Social Support

Interpersonal theories of leadership, such as leader-member exchange (LMX), have shown that employees tend to have more positive attitudes and higher levels of motivation when they are supported by their leader/manager (e.g., Gerstner & Day, 1997). Likewise, when employees receive social support (e.g., in the form of relevant work information, encouragement, and recognition) from coworkers and their organization they tend to be more motivated and have more positive job attitudes, and thus more likely to remain with the organization (e.g., Eisenberger et al., 2002; Seers, 1989). Therefore, this proposed research will examine 4 indicators of social support: **coworker support** (i.e., extent to which Soldiers trust and receive cooperation from coworkers in their unit), **job recognition** (i.e., extent to which Soldiers feel their effort is appreciated at work), **NCO leadership** (i.e., extent to which Soldiers receive clear task guidance and interpersonal support from their NCOs), and **officer leadership** (i.e., extent to which Soldiers receive clear task guidance and interpersonal support from their officers). Consistent with previous research, we expect that Soldiers who receive better social support would have more positive job attitudes and higher levels of motivation.

Note that research has shown that work characteristics and social support uniquely and positively predict job attitudes and motivation (e.g., Chen & Bliese, 2002; Chen & Klimoski, 2003). Also, the impact of work characteristics and social support on job attitudes and motivation has been found to be direct and strong, but the impact of these factors on turnover is somewhat weaker or less direct (cf. Griffeth et al., 2000). Thus, we expect that job attitudes and motivation would mediate the effects of work characteristics and social support on retention.

Hypothesis 3: Work characteristics (i.e., job challenge and task significance) and social support uniquely and positively predict job attitudes.

Person X Situation Interactions

In addition to their main (direct) effects, individual differences in ability and situational variables may interact to affect on job attitudes and motivation. Work characteristics in particular have been found to moderate the negative relationship between cognitive ability and job attitudes (Ganzach, 1998). Specifically, employees with higher levels of cognitive ability are more attracted to challenging jobs, and thus are only likely to be motivated and have positive attitudes in highly challenging jobs (Ganzach, 1998). Thus, the impact of cognitive ability on job attitudes and motivation may become less negative as work characteristics (i.e., in terms of complexity and significance) increases.

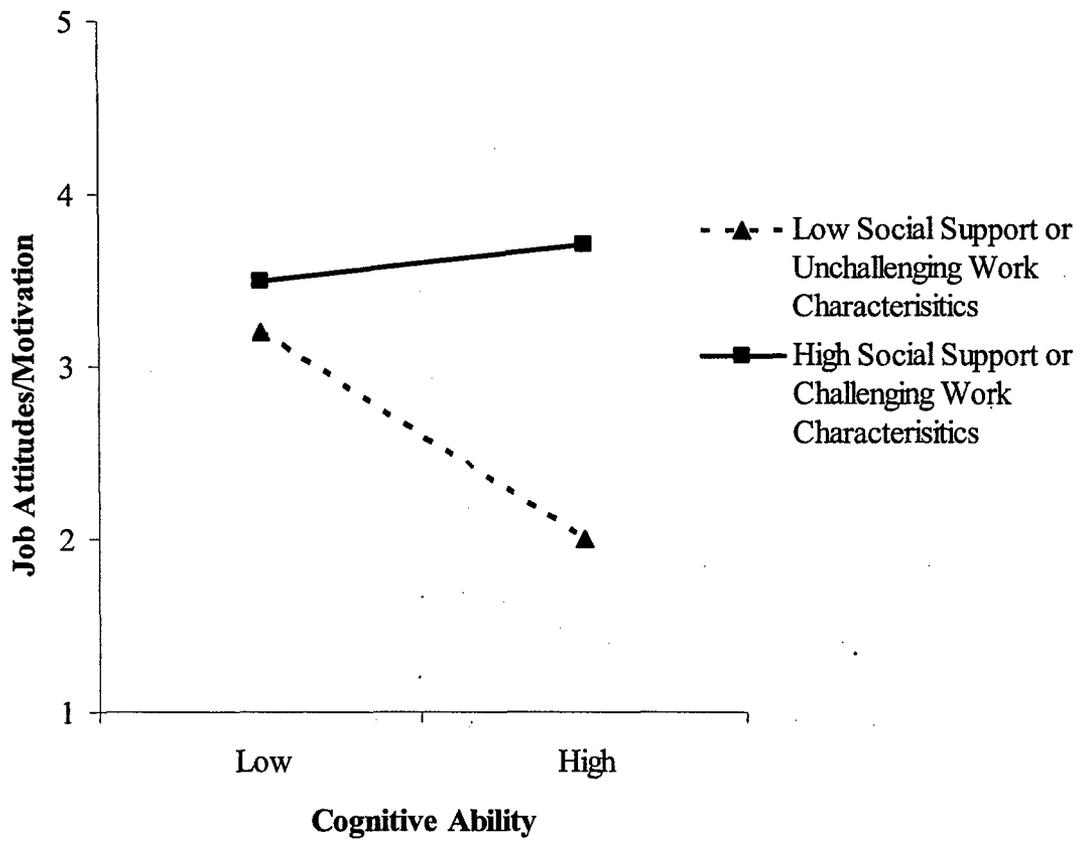
While person-situation fit may explain why work characteristics are likely to moderate the impact of cognitive ability on job attitudes and motivation, social support may moderate the ability-attitudes and ability-motivation relationships for a different reason. In particular, social support helps buffer against the negative impact of de-motivating work factors (Bliese & Jex, 2002). That is, even though Soldiers with higher levels of cognitive ability are more likely to have less positive job attitudes and motivation, the impact of ability on these outcomes may become less negative as Soldiers receive more social support. Thus, the moderating impact of work characteristics and social support on the ability-attitudes and ability-motivation

relationships may be functionally the same, albeit for different theoretical reasons. Figure 2 illustrates the expected pattern of these interactions.

Hypothesis 4: Work characteristics (i.e., job challenge and task significance) and social support moderate the influence of cognitive ability on job attitudes and motivation, such that cognitive ability predicts job attitudes and motivation less negatively in situations where social support is high and/or work is challenging.

To summarize, the first contribution of this proposed research involves the delineation of an interactionalist model of job attitudes and motivation, along with the integration of this model with research on employee retention. Examining these person-by-situation interactions is important, because it can help shed more light on the psychological processes that eventually impact Soldiers' decision to stay or leave the Army. Moreover, from a practical standpoint, detecting such interactions can help improve the strategic alignment among staffing, management, and work design interventions, and leverage such interventions as means of improving Soldier retention. Finally, the interactionalist model delineated above provides a basis for examining more complex relationships involving interactions with career stage and trends of relationships over time, as we discuss in the next 2 sections.

Figure 2 Predicted Person X Situation Interaction



The Moderating Role of Career Stage

Feldman (2002) recently suggested that different motives are primed at different stages of employees' work careers. For instance, while new entrants into the workforce may be concerned about receiving the support needed for them to adjust and get acclimated into their new careers, employees may become more concerned about advancement and making a difference in their field later on in their careers. Likewise, Kanfer and Ackerman (in press) have argued that employees' motives and needs may vary across their lifespan, and developmental theories of leadership allude to the notion that leaders can handle better and expect more challenging work as they progress along their careers (Jacobs & Jacques, 1987; Jacobs & McGee, 2002). These theoretical perspectives, although addressing different research paradigms, all suggest that, while job attitudes and motivation affect retention similarly at different career stages, employees may base their job attitudes and motivation on somewhat different factors at different career stages.

Thus, as Castro and Huffman's research (2001) has begun to uncover, the processes accounting for retentions of first-term Soldiers (i.e., Soldiers in their first tour of duty, or generally in their first 3 years in the Army) may not necessarily be the same as those processes accounting for retention of second-term Soldiers (i.e., Soldiers in their second tour of duty, beyond their first 3 years in the Army). The main reason for the difference between processes leading to retention of 1st-term versus retention of 2nd-term Soldiers has to do with the differences in underlying motives of Soldiers at different career stages. Specifically, 1st-term Soldiers are focused on the adjustment and integration to the military system. As newcomers, these Soldiers have to learn the military system, as well as their jobs within the system. As such, like new employees and new career entrants in other organizations (cf. Bauer et al., 1998) the adjustment of new Soldiers (reflected by their job attitudes) may be highly dependent on the amount of social support they receive from their coworkers, supervisors, and organization. In contrast, Soldiers in later career stages have already committed, at least to some extent, to starting a real military career. As such, Soldiers in later career stages may be more concerned about their ability to contribute to the military, develop their knowledge and skills, and have the opportunity to rise up through the military ranks. Therefore, work characteristics, characterized by the amount of empowerment and challenging assignments Soldiers get at work, may be more important determinants of job attitudes of Soldiers in earlier career stage than would social support factors. Thus, we expect that the relative impact of different situational factors (work characteristics versus social support) on Soldiers' job attitudes and motivation would differ at different career stages.

Following the arguments above, it is also reasonable to expect that the negative ability-attitudes relationships would be more pronounced in later career stages than earlier career stages. Specifically, most Soldiers might find their jobs more challenging early on in their military career, when they have to not only learn their military jobs, but also learn the military system and norms. Thus, even high ability Soldiers, who are more attracted to complex jobs, may find their jobs satisfying and motivating early on in their military career. Thus, differences in attitudes and motivation between low and high ability Soldiers may be stronger during later than earlier career stages.

Note that in our study, unlike Castro and Huffman's study (2001), we examine career stage using two related continuous variables: military tenure and rank. Doing so can help

capture additional career stage variance that might be lost due to dichotomization of Soldiers into 1st versus 2nd term.

Hypothesis 5a: Career stage moderates the influence of cognitive ability on job attitudes and motivation, such that the negative impact of cognitive ability is stronger at later career stages than earlier career stages.

Hypothesis 5b: Career stage moderates the influences of work characteristics on job attitudes and motivation, such that the positive impacts of work characteristics are stronger at later career stages than earlier career stages.

Hypothesis 5c: Career stage moderates the influence of social support on job attitudes and motivation, such that the positive impact of social support is stronger at earlier career stages than later career stages.

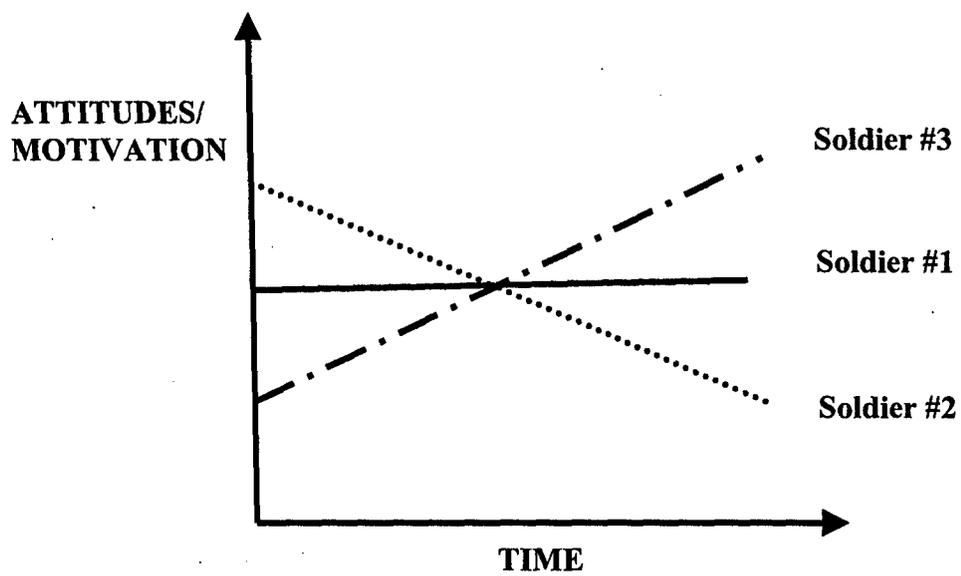
In sum, we propose that career stage would moderate the influences of ability and situational variables on job attitudes and motivation. Testing such complex relationships would help advance our knowledge of the processes leading to retention at different career stages (cf. Feldman, 2002). Additionally, detecting such interactions would enable the military to develop different interventions to manage retention at different career stages.

Time and Retention Processes

Sturman and Trevor (2001) have recently called for incorporating a more dynamic perspective into the turnover research literature. Answering their call, the third main contribution of this proposed research is to examine the extent to which time affects the proposed relationships delineated in Figure 1. The data we will use to analyze our proposed model of relationships (see detailed description in the next section) are unique, in that they were collected from Soldiers at 8 points in time over the course of 2 years. Specifically, Soldiers completed measures of the situational variables and job attitudes and motivation 8 different times, and, at each time period, retention outcome measures were also available.

As such, we will be able to test the proposed relationships of interest both within and between Soldiers. In particular, it is possible that job attitudes change over time in some systematic way. While the attitude of some Soldiers systematically improves over time, the attitude of other Soldiers may systematically get worse or remain stable over time. Such within-person patterns of attitudes and motivation can lead to better understanding of the processes affecting retention decisions. For instance, consider the illustrative data from 3 different Soldiers presented in Figure 3. If we ignore the pattern of change in attitudes and motivation over time (i.e., examine only average attitudes/motivation over time), there would be no discernable differences between the 3 Soldiers. However, clearly there are some meaningful differences in the psychological experiences of these 3 Soldiers. The first Soldier has stable levels of attitudes and motivation over time, the attitudes/motivation of the 2nd Soldier get systematically worse over time, and the attitudes/motivation of the 3rd Soldier get systematically better over time.

Figure 3 Hypothetical Differences in Changes in Attitudes/Motivation Over Time



Thus, it is reasonable to expect that the 3rd Soldier would be more likely to stay with the Army than the 2nd Soldier, even though the 2 Soldiers had the same average level of motivation and attitudes during the period under examination. Stated another way, when considering time as an added factor, it is possible to detect intra-individual processes that account for additional variance in retention over and above the inter-individual processes delineated in Figure 1. In particular, we expect that there would be a positive relationship between retention and the extent to which job attitudes and motivation improve (or at least do not get worse) over time.

Research on judgment and decision making provides support for our expectations. In particular, there is a large research which shows that individuals are more likely to re-engage in experiences or remain in situations after experiencing an improvement in pleasure or decline in pain inherent in such situations over time (for review, see Kahneman, 1999). Applying these findings to work settings, we expect that employees whose experience at work, as indicated by their job attitudes, becomes more positive over time would expect that trend to continue, and therefore would be more inclined to stay in their jobs. Importantly, capturing such individual differences in intra-individual attitude change patterns may account for variance in retention decisions over and above average levels of job attitudes during the same period of time (cf. Kahneman, 1999). Since the vast majority of prior research has focused on job attitudes in one point in time or average job attitudes across time, finding such unique effects for job attitude change would be a novel contribution to the literature on job attitudes and retention.

Hypothesis 6: Changes over time in job attitudes positively predict turnover intentions over and above average levels of job attitudes during the same time period.

Method

Sample: OPTEMPO Database

We tested the longitudinal and interactionist model of Soldier retention using a large dataset collected by the Walter Reed Army Institute of Research (WRAIR) (Castro, Adler, Bienvenu, Huffman, Dolan and Thomas, 1998). These data provide a unique opportunity to examine the integrative framework presented above. The purpose of this large-scale data collection effort was to provide information on the impact of operational tempo (OPTEMPO) on Soldier and unit readiness in the U.S. Army. Data were collected from over 1000 Soldiers in 10 U.S. Army companies between June, 1999 and June, 2001. The same 10 companies were assessed over a two-year period while in garrison, during training, and during deployment. Researchers attended training meetings and collected data in field environments. The OPTEMPO study included data that are of particular interest to the present research. The full list of measures we will use in this research is provided in the Appendix. Due to our interest in modeling relationships over time, we retain a final sample of 586 Soldiers who provided complete data in at least 4 of the 8 data collection periods (average age = 25.5 years; 85% male). We were also able to link the cognitive ability scores (GT scores) of 311 Soldiers of these 586 Soldiers. Thus, the final sample sizes used for analyses were either 586 (in tests excluding ability) or 311 (in tests including ability).

Psychometric Properties of Measures

Given the psychometric properties (e.g., reliability indices) of OPTEMPO measures were reported in Castro et al. (1998), we only report unique psychometric information, such as measurement equivalence time, in this report.

We first tested the factor structure of the measures at each time period, using confirmatory factor analyses in LISREL. The results of these tests are reported in Table 1. As shown in this table, the fit of the measurement models were adequate at each of the eight time periods. Moreover, at each time period, the fit of the hypothesized model, which included 9 factors (job challenge, task significance, co-worker support, job recognition, NCO leadership, officer leadership, job satisfaction, job involvement, and job morale) fit better than the fit of 3 alternative measurement models. This indicates good support for the hypothesized factor structure. Moreover, the factor loadings were remarkably consistent across the 8 time periods, which support the measurement equivalence of the factors across time (see Vanderberg, & Lance, 2000). That is, the measures captured the same factors across time.

However, the correlations among the work characteristics factors (job challenge and task significance) and among the social support factors (co-worker support, job recognition, NCO leadership and officer leadership) were consistently high, suggesting that two higher order factors (work characteristics and social support) could represent these specific factors well. Indeed, as shown in Table 2, second-order confirmatory factor analyses yielded adequate fit for the data. Based on these results, we aggregated job challenge and task significance into a single work characteristics score, and co-worker support, job recognition, NCO leadership and officer leadership into a single social support score. Two additional advantages of this aggregation approach include increased parsimony and lower multicollinearity among predictors.

Table 1*Goodness-of-Fit Summary for 1st-Order, Times 1-8 Measurement Models*

Measurement Model	χ^2	df	$\Delta\chi^2$	RMSEA	CFI
Time 1 Data (N=723)					
1. Hypothesized	1421.76	491	---	.05	.98
2. Work characteristics factors correlate 1.0	1625.63	492	203.87*	.06	.98
3. Social support factors correlate 1.0	4439.50	497	3017.74*	.10	.95
4. Job attitudes factors correlate 1.0	3802.49	494	2380.73*	.10	.95
Time 2 Data (N=677)					
1. Hypothesized	1286.87	491	---	.05	.99
2. Work characteristics factors correlate 1.0	1506.50	492	219.63*	.05	.98
3. Social support factors correlate 1.0	4449.55	497	3162.68*	.11	.95
4. Job attitudes factors correlate 1.0	3958.51	494	2671.64*	.10	.95
Time 3 Data (N=635)					
1. Hypothesized	1233.92	491	---	.05	.99
2. Work characteristics factors correlate 1.0	1410.13	492	176.21*	.05	.98
3. Social support factors correlate 1.0	4262.55	497	3028.63*	.11	.95
4. Job attitudes factors correlate 1.0	4205.22	494	2971.30*	.11	.95
Time 4 Data (N=612)					
1. Hypothesized	1266.64	491	---	.05	.99
2. Work characteristics factors correlate 1.0	1433.34	492	166.70*	.06	.98
3. Social support factors correlate 1.0	4849.62	497	3582.98*	.12	.95
4. Job attitudes factors correlate 1.0	4624.16	494	3357.52*	.12	.95
Time 5 Data (N=594)					
1. Hypothesized	1241.77	491	---	.05	.99
2. Work characteristics factors correlate 1.0	1417.01	492	175.24*	.06	.98
3. Social support factors correlate 1.0	4417.96	497	3176.19*	.11	.95
4. Job attitudes factors correlate 1.0	3873.30	494	2631.53*	.11	.95
Time 6 Data (N=551)					
1. Hypothesized	1358.26	491	---	.06	.99
2. Work characteristics factors correlate 1.0	1535.70	492	177.44*	.06	.98
3. Social support factors correlate 1.0	5124.00	497	3765.74*	.13	.94
4. Job attitudes factors correlate 1.0	3892.47	494	2534.21*	.11	.95

Table 1 (Cont'd)

Goodness-of-Fit Summary for 1st-Order, Times 1-8 Measurement Models

Measurement Model	χ^2	df	$\Delta\chi^2$	RMSEA	CFI
Time 7 Data (N=641)					
1. Hypothesized	1398.85	491	---	.05	.99
2. Work characteristics factors correlate 1.0	1535.83	492	136.98*	.06	.98
3. Social support factors correlate 1.0	5590.77	497	4191.92*	.13	.94
4. Job attitudes factors correlate 1.0	4627.49	494	3228.64*	.11	.94
Time 8 Data (N=557)					
1. Hypothesized	1151.97	491	---	.05	.99
2. Work characteristics factors correlate 1.0	1306.23	492	154.26*	.05	.98
3. Social support factors correlate 1.0	4849.16	497	3697.19*	.12	.95
4. Job attitudes factors correlate 1.0	4235.04	494	3083.07*	.12	.95

Note. * $p < .05$; Work characteristics factors include job challenge and task significance; Social support factors include co-worker support, job recognition, NCO leadership, and officer leadership; Job attitudes factors include job satisfaction, job involvement, and job morale; $\Delta\chi^2$ indicates chi-square difference between the hypothesized model and the respective alternative measurement model; RMSEA = Root Mean Square Error of Approximation; CFI = Comparative Fit Index.

Table 2*Goodness-of-Fit Summary for 2nd-Order, Times 1-8 Measurement Models*

Measurement Model	χ^2	df	$\Delta\chi^2$	RMSEA	CFI
Time 1 Data (N=723)					
1. Hypothesized	849.92	223	---	.06	.98
2. Work & social factors correlate 1.0	972.18	224	122.26*	.07	.98
Time 2 Data (N=677)					
1. Hypothesized	839.11	223	---	.06	.98
2. Work & social factors correlate 1.0	931.20	224	92.09*	.07	.98
Time 3 Data (N=635)					
1. Hypothesized	791.26	223	---	.06	.98
2. Work & social factors correlate 1.0	849.64	224	58.38*	.07	.98
Time 4 Data (N=612)					
1. Hypothesized	731.19	223	---	.06	.99
2. Work & social factors correlate 1.0	850.38	224	119.19*	.07	.98
Time 5 Data (N=594)					
1. Hypothesized	748.85	223	---	.06	.98
2. Work & social factors correlate 1.0	869.54	224	120.69*	.07	.98
Time 6 Data (N=551)					
1. Hypothesized	790.05	223	---	.07	.98
2. Work & social factors correlate 1.0	872.19	224	82.14*	.07	.98
Time 7 Data (N=641)					
1. Hypothesized	809.67	223	---	.06	.98
2. Work & social factors correlate 1.0	875.86	224	60.19*	.07	.98
Time 8 Data (N=557)					
1. Hypothesized	720.84	223	---	.06	.98
2. Work & social factors correlate 1.0	785.46	224	64.62*	.07	.98

Note. * $p < .05$; Hypothesized model includes two correlated 2nd-order factors: (1) Work characteristics (including job challenge and task significance 1st-order factors) and (2) Social support (including co-worker support, job recognition, NCO leadership, and officer leadership 1st-order factors); $\Delta\chi^2$ indicates chi-square difference between the hypothesized model and the alternative measurement model (in which the 2 2nd-order factors correlate at 1.0); RMSEA = Root Mean Square Error of Approximation; CFI = Comparative Fit Index.

Changes over Time

Following Bliese and Ployhart (2002; see also Ployhart, Holtz, & Bliese, 2002), we used random coefficient modeling (RCM) analyses to test whether variables changed significantly over time, and, moreover, whether there were significant individual differences in change among Soldiers. For all variables, we detected a significant linear trend over time. These linear trends indicate the relationship between time and scores on the focal variable, where a positive trend estimate indicates an increased level on the variable over time, and a negative estimate indicates decline in variable scores over time. For turnover intentions, we detected a significant positive trend (estimate = .02, $p < .05$), suggesting that, on average, Soldiers indicated they are more likely to quit over time. While an increase of .02 points on a 5-pt scale may not seem large, it was statistically significant. More important, tests contrasting the fixed level of turnover intention increase over time relative to random (or varying) levels of turnover intentions over time (cf. Bliese & Ployhart, 2002) indicated that there were significant individual differences across Soldiers in the extent to which they indicated an increased or decreased inclination to quit over time. In contrast, all other variables decreased significantly over time, meaning that, on average, Soldiers' scores on job attitudes, social support, and work characteristics dropped over time. Like with turnover intentions, there were significant individual differences in these changes over time for all variables.

These results provided strong support for the notion that turnover intentions and predictors of turnover intentions change over time, and do so differently across Soldiers. To model these within-person differences, we created, for each variable, both an average score (reflecting individuals' mean score across the time periods) score and a change score (reflecting individuals' change of scores across time periods, or the individualized relationship between time and scores on the focal variable). For instance, a change score of .10 means that, for a particular Soldier, the regression weight associated with time (reflecting the time – repeated variable score) was .10. Table 3 summarizes the descriptive statistics and correlations among all the variables.

Table 3

Descriptive Statistics and Correlations

Variable	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Tenure in military (years)	5.22	4.30	---													
2. Rank in military	14.93	3.01	.49*	---												
3. Cognitive ability (GT score)	107.57	11.89	.21*	.22*	---											
4. Work characteristics - average	3.22	0.60	.30*	.32*	-.12*	---										
5. Social support - average	3.12	0.56	.16*	.24*	.04	.55*	---									
6. Job satisfaction - average	3.08	0.82	.24*	.20*	-.12*	.60*	.56*	---								
7. Job involvement - average	3.81	0.59	.30*	.27*	.16*	.58*	.44*	.55*	---							
8. Job morale - average	3.19	0.75	.08*	.11*	.00	.43*	.62*	.58*	.50*	---						
9. Turnover intentions - average	3.92	1.53	-.61*	-.36*	-.07	-.39*	-.36*	-.51*	-.44*	-.41*	---					
10. Work characteristics - change	-0.02	0.04	-.07	.01	.18*	-.27*	-.12*	-.19*	-.12*	-.08*	.06	---				
11. Social support - change	-0.02	0.04	.07	.08*	.05	.07	.11*	.09*	.09*	.12*	-.06	.27*	---			
12. Job satisfaction - change	-0.02	0.04	-.05	-.04	.10*	-.25*	-.16*	-.39*	-.15*	-.17*	.16*	.44*	.30*	---		
13. Job involvement - change	-0.06	0.02	-.02	.06	.02	.13*	.05	.13*	.15*	.14*	-.11*	.30*	.27*	.32*	---	
14. Job morale - change	-0.05	0.03	.08*	.02	-.05	.12*	.17*	.24*	.13*	.32*	-.13*	.13*	.48*	.22*	.24*	---
15. Turnover intentions - change	0.02	0.10	-.16*	-.09*	-.12*	-.04	-.10*	-.06	-.07	-.05	.22*	-.12*	-.24*	-.25*	-.21*	-.25*

Note. $N = 586$, except for relationships involving cognitive ability, where $N = 311$; * $p < .05$

Results

Predictors of Average Job Attitudes

The first set of analyses regressed each of the average job attitude variables on unit differences (captured by dummy variables) at a first step, followed by military rank, tenure, cognitive ability, average work characteristics, and average social support at a second step. Table 4 summarizes the results from these analyses, which test hypotheses 2-5. Hypothesis 2 did not receive support, as cognitive ability did not predict job satisfaction or morale, and positively predicted job involvement. Hypothesis 3 received support, in that work characteristics positively predicted both job satisfaction and job involvement, and social support predicted both job satisfaction and job morale. It is also worth noting that, with the exception of a significant effect of military rank on job involvement, the two career variables (rank and tenure) did not uniquely predict the job attitudes. These results suggest that job attitudes were more influenced by work characteristics and social support than cognitive ability or career variables.

Additional analyses (not shown in Table 4) included the various interaction terms in a third step, to test hypothesis 4 (interactions between work characteristics and social support) and hypotheses 5a-5c (interactions involving career variables). However, with one exception, none of the interaction terms contributed uniquely to the prediction of job attitudes beyond the main/linear effects. The one exception was the interaction between military tenure and social support, which significantly and uniquely predicted job involvement ($\beta = -.583, p < .05$). This interaction was expected, such that the impact of social support on job involvement became less positive as Soldiers' tenure in the military increased. This suggests that social support was more important for the involvement of less tenured Soldiers. However, by and large, hypotheses 4 and 5a-5c did not receive support from these data.

Predictors of Average Turnover Intentions

To test hypothesis 1, we conducted mediated regression analyses of average turnover intentions, with cognitive ability (Table 5) and without cognitive ability (Table 6). As shown in Table 5, both military rank and tenure negatively predicted turnover intentions, suggesting that Soldiers were more inclined to quit at earlier career stages. In addition, cognitive ability did not predict turnover intention, which, together with the finding it generally did not predict job attitudes, precluded potential mediated effects of ability on turnover intentions. However, as shown in Table 6, when not including cognitive ability, both work characteristics and social support negatively predicted turnover intentions, suggesting that Soldiers were less inclined to quit when their work was challenging and when they received high social support. Moreover, the effects of work characteristics and social support disappeared after entering job attitudes in a second step, albeit their effects were mediated only by job satisfaction and morale, and not job involvement. As predicted by hypothesis 1, higher levels of job satisfaction and morale were associated with lower levels of turnover intentions. In sum, these results support our expectation that job attitudes would more strongly predict turnover intentions than would ability, work characteristics and social support.

Table 4*Regression Analyses of Average Job Attitudes*

Step/Variable	β	R^2	ΔR^2
<i>DV = Average Job Satisfaction</i>			
1. Unit differences ^a	---	.096*	.096*
2. Military rank	.058		
Military tenure	.047		
Cognitive ability	-.078		
Average work characteristics	.368*		
Average social support	.326*	.479*	.383*
<i>DV = Average Job Involvement</i>			
1. Unit differences ^a	---	.061*	.061*
2. Military rank	.151*		
Military tenure	-.004		
Cognitive ability	.131*		
Average work characteristics	.427*		
Average social support	.109	.370*	.309*
<i>DV = Average Job Morale</i>			
1. Unit differences ^a	---	.094*	.094*
2. Military rank	.013		
Military tenure	-.021		
Cognitive ability	.010		
Average work characteristics	.048		
Average social support	.580*	.393*	.299*

Note. $N = 311$; * $p < .05$; ^a Unit differences were captured by 8 dummy variables representing the 9 units for which cognitive ability scores were available.

Table 5*Mediated Regression Analyses of Average Turnover Intentions (with cognitive ability)*

Step/Variable	β	R^2	ΔR^2
<i>DV = Average Turnover Intentions</i>			
1. Unit differences ^a	---		
Military rank	-.189*		
Military tenure	-.397*		
Average work characteristics	-.057		
Average social support	-.175*		
Cognitive ability	.048	.441*	---
2. Unit differences ^a	---		
Military rank	-.161*		
Military tenure	-.387*		
Average work characteristics	.086		
Average social support	.042		
Cognitive ability	.033		
Average job satisfaction	-.306*		
Average job involvement	-.049		
Average job morale	-.192*	.544*	.103*

Note. $N = 311$; * $p < .05$; ^a Unit differences were captured by 8 dummy variables representing the 9 units for which cognitive ability scores were available.

Table 6*Mediated Regression Analyses of Average Turnover Intentions (without cognitive ability)*

Step/Variable	β	R^2	ΔR^2
<i>DV = Average Turnover Intentions</i>			
1. Unit differences ^a	---		
Military rank	-.095*		
Military tenure	-.521*		
Average work characteristics	-.084*		
Average social support	-.198*	.479*	---
2. Unit differences ^a	---		
Military rank	-.125*		
Military tenure	-.498*		
Average work characteristics	.081		
Average social support	.016		
Average job satisfaction	-.265*		
Average job involvement	-.065		
Average job morale	-.196*	.570*	.091*

Note. $N = 586$; * $p < .05$; ^a Unit differences were captured by 9 dummy variables representing the 10 units.

Predictors of Changes in Turnover Intentions

Thus far, we reported results from models which included only average scores of the various variables. However, recall that the situational variables (work characteristics and social support), job attitudes, and turnover intentions all changed significantly over time and individual differences in these changes existed. These changes supported an important pre-condition for hypothesis 6, according to which changes in job attitudes would predict changes in turnover intentions. We tested this hypothesis using two approaches. First, we regressed the turnover intentions change variable on the various predictors (see upper portion of Table 7). Second, we regressed the final turnover intentions score for each Soldier on the various predictors, after partialling out the initial turnover intentions score for each Soldier in an earlier step of the analysis (see lower portion of Table 7). In each of these analyses, we also examined the effects of average levels of situational variables and job attitudes and whether changes in these variables predicted changes in turnover intentions over and above their average scores. Finally, we also tested whether changes in job attitudes would mediate the effects of changes in situational variables on changes in turnover intentions, as implied by hypothesis 6. Note that we controlled for career stage (rank and tenure) and unit differences in these analyses as well.

As shown in Table 7, results were highly consistent, irrespective of how we operationalized changes in turnover intentions (see lower versus upper portions of Table 7). In particular, average levels of situational variables and job attitudes had weak or inconsistent effects on changes in turnover intentions. In addition, in the second step, changes in social support negatively predicted changes in turnover intentions, and work characteristics had only a weak effect. In the final step of the analyses, changes in all three job attitudes (satisfaction, involvement, and morale) uniquely and negatively predicted changes in turnover intentions, and also the effect of social support change dropped from significant to non-significant. These results strongly support hypothesis 6, in that, irrespective of average levels of job attitudes over time, more positive changes in job attitudes during the same period were associated with a lower inclination to quit among Soldiers.

Summary of Results

In sum, results provided mixed support for the hypotheses. First, hypotheses 1 and 6 were strongly supported, in that average levels of and changes in job attitudes negatively predicted average levels of and changes in turnover intentions. Second, hypothesis 2 was also supported, as the two global situational variables (work characteristics and social support) both accounted for at least two of the three job attitudes. However, hypothesis 2 was not supported, as cognitive ability generally did not uniquely predict job attitude. Likewise, hypothesis 4 was not supported, in that situational variables did not interact with ability to predict job attitudes. Finally, hypotheses 5a-5c were also not supported, given career stage did not interact with ability or situational variables to predict job attitudes.

Table 7*Mediated Regression Analyses of Changes in Turnover Intentions*

Step/Variable	β		R ²	ΔR^2
<i>DV = Changes in Turnover Intentions</i>				
1. Unit differences ^a	---	---		
Military rank	.021	(.022)		
Military tenure	-.153*	(-.144*)		
Average work characteristics	.102	(.078)		
Average social support	-.120+	(-.089)		
Average job satisfaction	.015	(-.061)		
Average job involvement	-.026	(.004)		
Average job morale	.016	(.085)	.066*	---
2. Changes in work characteristics	-.079+	(.040)		
Changes in social support	-.197*	(-.067)	.114*	.049*
3. Changes in job satisfaction	-.211*	(-.211*)		
Changes in job involvement	-.117*	(-.117*)		
Changes in job morale	-.145*	(-.145*)	.187*	.073*
<i>DV = Final Turnover Intentions</i>				
1. Unit differences ^a	---	---		
Military rank	-.049	(-.041)		
Military tenure	-.281*	(-.265*)		
Average work characteristics	.091*	(.085*)		
Average social support	-.050	(-.041)		
Average job satisfaction	-.106*	(-.132*)		
Average job involvement	-.045	(-.021)		
Average job morale	-.052	(-.011)		
Initial turnover intentions	.419*	(.461*)	.547*	---
2. Changes in work characteristics	-.040	(.039)		
Changes in social support	-.092*	(-.027)	.558*	.011*
3. Changes in job satisfaction	-.108*	(-.108*)		
Changes in job involvement	-.109*	(-.109*)		
Changes in job morale	-.061+	(-.061+)	.584*	.026*

Note. $N = 586$; + $p < .10$; * $p < .05$; ^a Unit differences were captured by 9 dummy variables representing the 10 units; values inside parentheses are from third and final step of the model.

Discussion

Despite the mixed support for the hypotheses, this research suggests several important implications for theory and practice, as well as highlights interesting avenues for future research. In the remainder of this report, we consider these implications, as well as limitations of this research.

Theoretical Implications

Perhaps the most novel contribution of this research is the finding that job attitudes are not only dynamic, but also that changes in job attitudes help explain the processes by which employees make turnover decisions. In particular, we found that, irrespective of average or absolute levels of job attitudes, more negative changes in job attitudes over time help explain employees' inclination to turnover (i.e., their turnover intentions). In particular, employees become increasingly more inclined to quit as their job attitudes become more negative over time. Moreover, the finding that changes in the three job attitudes (satisfaction, involvement, and morale) uniquely predicted changes in turnover intentions suggest that it is important to consider multiple job attitudes when trying to better understand turnover intentions.

The finding pertaining to changes in job attitudes are highly consistent with basic theory and research on judgment and decision making (Kahneman, 1999). In particular, similar to findings in various laboratory, social and medical settings, our research shows that employees become increasingly less inclined to remain in jobs that become increasingly less pleasant (as indicated by decline in job attitude levels). Our research also helps account for such changes in job attitudes, by showing that as employees perceive less challenging work environment and less social support from supervisors and co-workers, they become increasingly less satisfied and psychologically involved with their jobs over time. The findings that job attitudes became worse over time, and Soldiers became increasingly more inclined to quit over time, are also consistent with the notion of the "hangover effect" (Boswell et al., 2005), according to which employees become increasingly less satisfied with their jobs over time.

Another contribution of this research is the simultaneous examination of the relative and unique influences of individual differences, situational variables, and job attitudes on turnover intentions. In that regard, the results suggest that job attitudes and situational variables (both work characteristics and social support variables) are particularly important predictors of turnover intentions, but that job attitudes fully mediate the relationships of situational variables and turnover intentions. Although it is tempting to conclude these findings suggest that job attitudes and retention decisions are based more on situational variables than individual differences, it is important to keep in mind that we only examined cognitive ability, and not personality traits, which have been shown to be more predictive of job attitudes and retention. Nonetheless, the finding that changes in situational variables were associated with changes in job attitudes is novel, and it confirms the idea that job attitudes are highly sensitive to changes in the work environment.

Finally, findings pertaining to career stage variables (tenure and rank) did not confirm our theoretical expectations. In particular, career stage did not moderate the relationships among situational variables, cognitive ability, and job attitudes. However, it is interesting to note that

both career stage variables did predict average levels of turnover intentions directly, such that employees were more inclined to leave at earlier, as opposed to later, career stages (see Tables 5a and 5b). Moreover, tenure also moderated changes in turnover intentions, such that turnover intentions were less likely to change at later career stages (see Table 7). These findings are important, as they suggest career stage plays a direct and important role in employees' turnover decisions.

Practical Implications

From a practical standpoint, the finding that cognitive ability did not relate directly or indirectly to turnover decisions is good news. In particular, given the Army has been, and will continue to, select Soldiers based largely on cognitive ability (along with additional information, such as education experience and personality), it is good to know that doing so will not come at a higher risk of losing Soldiers. However, efforts should be made to examine whether other individual differences, such as personality, do a better job at predicting turnover than cognitive ability (cf. Barrick & Zimmerman, 2005).

The results confirmed previous research suggesting that social support and work characteristics factors play a role in shaping employees' attitudes and turnover decisions (e.g., Griffeth et al., 2000). However, in line with the unfolding model of turnover (Lee et al., 1996, 1999; Mitchell et al., 2001), our study suggests further that the extent to which Soldiers are provided with increased or decreased levels of social support and challenging work over time make a difference. The key implication here is that managers, or NCOs and officers, should pay attention to when, not just whether, they provide Soldiers with more social support and challenging work. For instance, it seems that improving social support and assignment of more challenging work would be especially important as Soldiers' re-enlistment window approaches. In particular, officers and NCOs should make sure that Soldiers feel increasingly more supported and challenged in the period leading to their re-enlistment decision, as such a positive trend in social support and work challenge could lead Soldiers to have more positive attitudes and greater inclination to remain with the Army.

The findings pertaining to career stages suggest two important practical implications. First, in light of no detected interactions involving career stages, it seems that the same approaches (e.g., providing social support and assigning challenging work) might help reduce turnover irrespective of career stages. Second, the direct relationships detected between career-stage variables and turnover intentions suggest that turnover is more of a problem earlier on in Soldiers' careers. Thus, while the same practices could be used to alleviate turnover problems across career stages, the utility of such practices seems to be higher at earlier career stages, when turnover intentions are higher.

Limitations and Future Research

The first limitation of this study is that we did not capture actual turnover. Although there is plenty of research in support of the turnover intention – turnover linkage, this is still a limitation. It would be particularly important to examine whether changes in job attitudes and turnover intentions predict actual turnover behavior over and above average levels of attitudes

and intentions. Such findings would help extend the present set of findings, and highlight their practical importance further.

A second limitation is that our sample consisted primarily of first-term and second-term Soldiers. As such, it is unclear whether the findings would generalize to later career stages, or whether different or stronger effects would have been found had we studied Soldiers in a wider range of career stages.

A third limitation is that we did not model the earliest stages of organizational entry (e.g., basic training and advanced infantry training). It is likely that many of the job attitudes are formed during this stage, as are the trajectories of turnover intentions. In fact, this early stage may see the steepest change in job attitudes and turnover intentions. Still, we were able to capture such changes following early stages of employment, suggesting the prevalence of these phenomena across stages of employment and career.

Another limitation is the limited operationalization of the various constructs in this study, and particularly social support, work characteristics, job attitudes, and turnover intentions. For instance, one could argue that more direct measures of perceived organizational and supervisor support would have captured the notion of social support better than the measures we have used. Also, the reliance on a single-item measure to capture turnover intention may be questionable (although this has not been uncommon in the turnover literature; cf. Griffeth et al., 2000). In part, our reliance on archival data perhaps did not capture the full scope of some of these constructs. As such we encourage researchers to more use alternative, and perhaps more comprehensive, indicators of these constructs in future research.

Future research must address these limitations and also consider a broader array of individual and situational factors. At the individual level, personality traits have been shown to predict turnover (Barrick & Zimmerman, 2005). Personality is also related to job satisfaction (Judge, Heller, & Mount, 2002) and commitment, which are related to turnover. Specifically, the traits of emotional stability, agreeableness, conscientiousness, and extraversion should be the ones that most reduce turnover. A further benefit of selecting on such traits would be that they are also positively related to job performance. At the group level, it is clear cohesion, morale, and norms may influence individuals' turnover decisions (e.g., see Harter, Schmidt, & Hayes, 2002). Such unit level characteristics likewise influence individual satisfaction, thereby indirectly influencing turnover. Such unit-level factors should be considered at the squad, platoon, and even higher levels, because each level may exert a unique effect. For example, a squad may be a tight group of Soldiers, but feel frustrated with the rest of the platoon or command structure at the company level.

Future research should also be cognizant about the broader environment. For example, the influence of the Soldier's home and family is likely to be critical to retention decisions. Research in private organizations suggests that such opinions are critical to the formation of organizational attractiveness perceptions (Ryan, Sacco, McFarland, & Kriska, 2000), which factor heavily into turnover decisions. At an even broader level, research must consider the economic and political context. For example, the factors that contribute to retention and turnover may be different in times of war than in times of relative peace. Soldiers who join the Army

during war or peace may not leave for the same reasons, because they may have joined the Army for different reasons. Retention may be more difficult when the economy is strong than when it is weak.

It is important for future research to examine the relative magnitudes of individual and unit level factors on turnover. This will help determine what types of interventions, and what levels of interventions, will be most effective in enhancing retention. Although researchers have historically thought of turnover as an individual level phenomenon, it may be found that the primary influence on retention is unit level cohesion and attitudes. If so, then the most effective and efficient intervention may be one that influences unit cohesion.

All of this suggests that future research must take a multilevel orientation (cf. Chen, Mathieu, & Bliese, 2004). Neglecting such an orientation may over- or under-estimate the magnitudes of predictors and hence cloud our ability to truly understand the determinants of turnover. We also emphasize that this research must be longitudinal in nature. As we have shown, changes in job attitudes predict changes in turnover intentions. Yet we do not know whether or how such intentions change over longer periods of time. It is therefore critical that future research be as dynamic as those processes we wish to understand.

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Measures

Career Stage

1. Rank (higher scores indicate higher rank)
2. Military tenure (in years)

Cognitive Ability

- ASVAB Scores

Job Challenge (Brown & Leigh, 1996)

1. My job is very challenging
2. It takes all my resources to achieve my work objectives

Task Significance (Bliese, 1999)

1. I feel that what I am doing is important for accomplishing my unit's mission
2. I am making a real contribution to accomplishing my unit's mission
3. What I do helps accomplish my unit's mission

Coworker Support (Adapted from Podsakoff & MacKenzie, 1994)

1. The members of my unit are cooperative with each other
2. The members of my unit know that they can depend on each other
3. The members of my unit stand up for each other

Job Recognition (Brown & Leigh, 1996)

1. I rarely feel my work is taken for granted
2. My superiors generally appreciate the way I do my job
3. The organization recognizes the significance of the contributions I make

NCO Leadership (Bliese & Halverson, 1996)

1. The NCOs in my unit establish clear work objectives
2. The NCOs in my unit are interested in my personal welfare
3. The NCOs in my unit delegate work effectively
4. The NCOs in my unit let Soldiers know when they have done a good job
5. The NCOs in my unit avoid micromanaging Soldier's work
6. The NCOs in my unit are interested in what I think and how I feel about things

Officer Leadership (Bliese & Halverson, 1996)

1. The officers in my unit establish clear work objectives

2. The officers in my unit are interested in my personal welfare
3. The officers in my unit delegate work effectively
4. The officers in my unit let Soldiers know when they have done a good job
5. The officers in my unit avoid micromanaging Soldier's work
6. The officers in my unit are interested in what I think and how I feel about things

Job Satisfaction (Campbell, Bliese, & Eline, 1998)

1. I am very satisfied with my job in the Army
2. I like my job in the Army
3. I am satisfied with the kind of work I do on my job

Job Involvement (Campbell, Bliese, & Eline, 1998)

1. I feel responsible for my job performance
2. I am committed to my job
3. How well I do in my job matters a great deal to me
4. How I do in my job influences how I feel

Job Morale (Bliese, 1999)

1. Your personal morale
2. Your level of motivation
3. Your level of energy
4. Your level of drive

Reenlistment Intentions (USAMRU-E)

Which best describes your current active-duty Army career intentions?

1. Definitely stay in until retirement (or longer)
2. Probably stay in until retirement
3. Definitely stay in beyond my present obligation, but not necessarily until retirement
4. Undecided about whether to stay after completion of my current obligation
5. Probably leave upon completion of my current obligation