

The Role of Change in the Relationship Between Commitment and Turnover: A Latent Growth Modeling Approach

Kathleen Bentein
University of Quebec at Montreal

Robert Vandenberg
University of Georgia

Christian Vandenberghe
École des Hautes Études Commerciales Montreal

Florence Stinglhamber
École des Hautes Études Commerciales Liege

Through the use of affective, normative, and continuance commitment in a multivariate 2nd-order factor latent growth modeling approach, the authors observed linear negative trajectories that characterized the changes in individuals across time in both affective and normative commitment. In turn, an individual's intention to quit the organization was characterized by a positive trajectory. A significant association was also found between the change trajectories such that the steeper the decline in an individual's affective and normative commitments across time, the greater the rate of increase in that individual's intention to quit, and, further, the greater the likelihood that the person actually left the organization over the next 9 months. Findings regarding continuance commitment and its components were mixed.

Employee turnover has been a focus of concentrated investigation for more than 2 decades, and researchers have proposed and tested a variety of models of the turnover process (Griffeth, Hom, & Gaertner, 2000; Hom & Griffeth, 1995; Maertz & Campion, 1998). The reason for so much attention is that even if some forms of turnover are desirable (e.g., losing poorly performing employees), voluntary turnover is generally considered a negative index of organizational effectiveness (Alexander, Bloom, & Nuchols, 1994; Cascio, 1991; Dalton, Todor, & Krackhardt, 1982; Griffeth & Hom, 2001; Staw, 1980). Understanding the process leading employees to leave voluntarily is thus critical for building an effective retention policy and increasing organizational effectiveness (Griffeth & Hom, 2001).

Generally, turnover models include two major categories of predictor variables: job attitudes and job alternatives (Griffeth et al., 2000; Mitchell, Holtom, Lee, Sablinski, & Erez, 2001). Among job attitudes, organizational commitment has widely attracted the attention of researchers because it has been found consistently to possess negative associations with the cognitive (i.e., turnover intention [TI]) and behavioral components of turnover (Griffeth et al., 2000; Mathieu & Zajac, 1990; Tett & Meyer, 1993). It has been proposed that commitment is a particularly

powerful predictor in the turnover process because of its presumed sensitivity to the characteristics of the work environment (Brockner, Tyler, & Cooper-Schneider, 1992; Meyer & Allen, 1991; Mowday, Porter, & Steers, 1982). That is, the ties between the employee and the organization, of which organizational commitment is an indicator, develop through exchange processes with the organization (Meyer & Allen, 1991). Further, those ties may be strengthened or weakened (i.e., change) depending on the perceived benefits or losses accrued during the exchanges. This thinking underlies much previous research regarding, for example, when employees perceive their expectations as being met by their organization (Wanous, 1992; Wanous, Poland, Premack, & Davis, 1992) or simply see a benefit from the general experience of work within a given organization (Irving & Meyer, 1994; Meyer, Irving, & Allen, 1998). The latter example suggests that when the ties psychologically linking the employee to the organization strengthen, the probability of engaging in the turnover process decreases. In short, the assumption is that employees adjust their level of organizational commitment as a function of the way they interpret and make sense of their work context (Vandenberg & Self, 1993). The "evolution" of commitment over time is thus a critical index of the way the relationship between a given employee and his or her organization evolves over time.

Emphasis on "evolution" in the last sentence denotes, however, a serious shortcoming in the commitment literature. Namely, with rare exception (Lance, Vandenberg, & Self, 2000b), and even in the case of the most carefully conducted longitudinal studies, commitment as a determinant has been treated as a static variable (i.e., one point in time) in the vast majority of studies. While this research has unquestionably yielded a wealth of knowledge regarding the commitment construct and its attendant antecedents and consequences, the fact remains that a basic, yet fundamental premise underlying this cumulative knowledge has remained relatively unexamined. Specifically, does an individual experience meaningful (as opposed to random) changes in his or her level of

Kathleen Bentein, University of Quebec at Montreal, Montreal, Quebec, Canada; Robert Vandenberg, Department of Psychology, University of Georgia; Christian Vandenberghe, École des Hautes Études Commerciales Montreal, Montreal, Quebec, Canada; Florence Stinglhamber, École des Hautes Études Commerciales Liege, Liege, Belgium.

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Correspondence concerning this article should be addressed to Kathleen Bentein, School of Business Administration (ESG), University of Quebec at Montreal (UQAM), C. P. 6192, Succursale Centre-Ville, Montreal, Quebec, Canada H3C 4R2. E-mail: bentein.kathleen@uqam.ca

psychological attachment to the organization over time, and if so, is the change truly a critical index in that the individual alters his or her actions within or toward the organization as a direct function of that change? The issue underlying this question is not trivial. Practitioners, for one, have long been concerned with employees' attachment to the organization in light of economic events such as mergers, acquisitions, or layoffs, all of which change the nature of the relationship between employees and the organization (Brockner, Grover, Reed, DeWitt, & O'Malley, 1987; Brockner et al., 1992; Brockner, Wiesenfeld, Reed, Grover, & Martin, 1993; Luthans & Sommer, 1999; Mottola, Bachman, Gaertner, & Dovidio, 1997). The practical implication is that perhaps some intervention may be implemented to soften the negative change in attachment or to make it positive when negative change is expected. As most recently reiterated by Lance et al. (2000b; see also Vandenberg & Self, 1993), however, the issue is not trivial because the notion of individual change in attachment is also fundamental to many prominent theories such as those governing socialization (e.g., Feldman, 1976), workplace adjustment (e.g., Dawis & Lofquist, 1984), or realistic job previews (e.g., Wanous, 1992) to name a few. The implication is that change in attachment is relevant for all models of long term individual productivity.

The purpose of this study, therefore, is to directly examine change in commitment. The focus of this study is the trajectory of change across time in an individual's level of organizational commitment and its relationship with turnover-relevant outcomes. To develop this purpose, we turn next to a brief overview of the commitment framework adopted in this study. The discussion then turns to a summary of issues surrounding the incorporation of change in research frameworks, following which the hypotheses for the current study are presented.

Organizational Commitment

Research on organizational commitment has dramatically shifted during the last 15 years. One shift, in particular, is that commitment is now generally conceived as multidimensional rather than unidimensional (Mayer & Schoorman, 1992, 1998; Meyer & Allen, 1991, 1997; O'Reilly & Chatman, 1986). Common to the multidimensional approaches are two assumptions. The first assumption is that the term *commitment* by itself (without a reference point) refers to a psychological stabilizing or obliging force that binds individuals to courses of action relevant to the target of the force (Meyer & Herscovitch, 2001). In the current study, the target is obviously the organization and the actions of relevance related to turnover. The second assumption is that this force is "experienced as a mind-set that can take different forms. These mind sets reflect distinguishable components of the underlying commitment construct" (Meyer & Herscovitch, 2001, p. 308).

For purposes of the current study, the forms or mind sets were conceptualized through the use of the multidimensional perspective of commitment developed originally by Allen and Meyer (Allen & Meyer, 1990, 1996; Meyer & Allen, 1991, 1997; Meyer & Herscovitch, 2001). The first dimension or form is *affective commitment* (AC), which represents the idea that one's commitment to the organization is driven simply by an emotional attachment to and identification with the organization. In simpler terms, it is a mind-set characterized by a personal desire to follow a

course of action, which in this case is staying with the organization. The second form is *normative commitment* (NC) or a feeling of perceived or moral obligation to stay with a particular course of actions (i.e., stay with one's organization). The third form is *continuance commitment* (CC) or an attachment based on the perceived costs of not continuing with a course of action (i.e., what would be given up if one left the organization). Since the original proposition, it has been suggested that the following two, distinct subdimensions could better characterize the CC dimension: (a) the perceived sacrifice associated with leaving (*high-sacrifice commitment*; HS), and (b) the costs resulting from a lack of employment alternatives (*low-alternatives commitment*; LA) (McGee & Ford, 1987). The HS and LA subcomponents have been found consistently to be related to one another, but differentially related to other constructs, suggesting that the Allen and Meyer framework may be defined through four, rather than three, dimensions (Dunham, Grube, & Castañeda, 1994; Hackett, Bycio, & Hausdorf, 1994; Meyer, Allen, & Gellatly, 1990).

Common to the Allen and Meyer (Allen & Meyer, 1990, 1996; Meyer & Allen, 1991, 1997; Meyer & Herscovitch, 2001) commitment dimensions is the notion that each component should impact the employee's intentions, and decision, to remain a member of the organization. The notion that each component plays a role in the turnover process is the conceptual linchpin that unifies these constructs as "components" of organizational commitment (Jaros, 1997). Indeed, a common model, and the one adopted for purposes of the current study, is to view commitment as an antecedent to individual intentions to quit, and in turn, to place intentions to quit as the immediate precursor to actual turnover behavior (Griffeth et al., 2000; Maertz & Campion, 1998; Tett & Meyer, 1993). Reinforcing this perspective are the results from a recent meta-analysis (Meyer, Stanley, Herscovitch, & Topolnytsky, 2002). With the original three-component perspective, though statistically significant and negative, the average effect sizes between the three commitment dimensions and actual turnover behavior were small in magnitude (AC: $\rho = -.17$; NC: $\rho = -.16$; CC: $\rho = -.10$). In contrast, the effect sizes with withdrawal cognitions, such as TI, were much stronger in magnitude (AC: $\rho = -.56$; NC: $\rho = -.33$; CC: $\rho = -.18$). Further, the effects on withdrawal cognitions across studies were consistently strongest for AC, then for NC, and followed by CC. It is interesting to note that within CC, only the HS subcomponent correlated significantly with withdrawal cognitions ($\rho = -.21$), whereas the LA subcomponent did not ($\rho = -.01$). Overall, these findings in conjunction with those typically found in turnover research (e.g., Griffeth et al., 2000) support the view that the role of organizational commitment in the turnover process is one that has a direct impact on withdrawal cognitions, such as TI, which are the direct antecedents to actual turnover behavior.

Operationalizing Change

Although the importance of change in commitment to understanding employee reactions to the work place is conceptually recognized, the vast majority of researchers to date have analyzed static levels of commitment rather than assessed actual changes in commitment. For example, using cross-sectional designs, some researchers compared the mean commitment levels of groups of employees of different ages or career stages interpreting the mean

differences as indices of change (Allen & Meyer, 1993; Gregersen, 1993; Morrow & McElroy, 1987). Others used longitudinal data (repeated measures within groups) and interpreted change through a comparison of group means over time through analysis of variance (ANOVA), correlation, and regression procedures (Farkas & Tetrick, 1989; Lee, Ashford, Walsh, & Mowday, 1992; Meyer & Allen, 1987, 1988; Meyer, Bobocel, & Allen, 1991; Mowday & McDade, 1980; Van Maanen, 1975). Finally, Beck and Wilson (2000) attempted to operationalize change in organizational commitment by combining cross-sectional and longitudinal data collections, which they termed a *cross-sequential design* approach (for technical details, see Beck & Wilson, 2001; Schaeie & Baltes, 1975). However, as underscored by Chan and Schmitt (2000, p. 190), important questions concerning intraindividual change cannot be adequately conceptualized and empirically examined with any of these traditional approaches. These questions concern (a) the form of the intraindividual change trajectories (i.e., whether linear or nonlinear, positive or negative), (b) the systematic individual differences at initial status and in the rate of intraindividual change, (c) the consequences and antecedents of both an individual's initial status on the construct of interest and his or her rate of change on that construct across time, (d) whether there is a relationship between an individual's initial status and rate of change on the construct of interest, and (e) whether the change in one variable is related to the change in another.

Latent growth modeling (LGM) has recently gained widespread acceptance as a powerful approach to the description, measurement, and analysis of longitudinal change and, therefore, as a means to address the above questions (Lance et al., 2000b, p. 108). Its acceptance is due in large part to the fact that LGM overcomes many of the problems characterizing other approaches (e.g., repeated measures, regression, difference scores) encountered in attempting to operationalize longitudinal change (for comparative reviews, see Chan, 1998; Duncan, Duncan, Strycker, Li, & Alpert, 1999; Lance, Meade, & Williamson, 2000a). To capture intraindividual change, LGM develops a trajectory of change along each of the focal constructs for each individual across time, aside from the individual's initial status on the constructs (McArdle & Epstein, 1987; Meredith & Tisak, 1990; Muthen, 1991; Willett & Sayer, 1994). The LGM approach requires that the constructs be measured at several occasions (at least three) in order to define second-order or higher order latent constructs, initial status, and change (i.e., slope) of the variable(s) of interest. More precisely, the first-order latent constructs representing the variable of interest (e.g., latent commitment constructs at Times 1, 2, and 3), display a separate loading on second-order latent factors, one defining initial status and the other defining the rate of change along the first-order constructs (i.e., the commitment construct). This is referred to as *second-order factor* (SOF) LGM.

In summary, applying SOF LGM into the turnover process model presented above, allows us to not only isolate change in commitment but also to isolate the concomitant change in individual TIs. Thus, it permits us to potentially test the hypothesized association between changes in those constructs. Further, by isolating individual vectors of change in TI, we can examine the expected influence that this change will have on actual turnover behavior. In short, by isolating change in this manner, we are more accurately representing the true conceptual premises regarding the evolution of change in commitment that underlies many of our

conceptual frameworks. Discussion now turns to specific hypotheses regarding change in the commitment dimensions and the impact of those changes in the turnover process.

Hypotheses

Change in Commitment

One reason why we expected our sample to display a decrease in commitment over time stems from the fact that during the period of this study, the host country, Belgium, encountered a radical change in the reasons why downsizing was implemented in companies. As documented in a study conducted by Price-Waterhouse-Coopers Consulting (Hollanders, 2002) that concerned changes in the Belgian economic environment between 1999 and 2001, a majority of companies at that time justified their downsizing practices by the willingness to increase the value of their shares. Unlike in the United States, where such reasoning is acceptable, this represents a radical departure in European economies in which worker rights have traditionally transcended those of the organization's stockholders. Hence, breaches in psychological contracts may have been quite salient to the current sample during the time period of the study (i.e., 2000–2001), and thus, for reasons provided in the previous paragraph, declines in commitment may have been particularly pronounced.

The latter anecdotal evidence is substantiated to some degree by the empirical literature as well, and this literature has also indicated that the declines are more likely for AC and NC than for HS and LA. First, as noted previously, even though researchers may not have relied on LGM to operationalize change, the studies nonetheless indicated that AC and NC typically declined in levels across time, particularly when that time period included the first few months of work (Farkas & Tetrick, 1989; Meyer & Allen, 1988; Meyer et al., 1991; Vandenberg & Self, 1993). Beck and Wilson (2000) also reported a steady, persistent decrease of AC over long periods of time (i.e., from 1 to 9 years and from 15 to 19 years). Similarly, Lance et al. (2000b), who did use LGM, also reported a significant decline in a form of commitment quite similar conceptually to AC (i.e., internalization; cf. O'Reilly & Chatman, 1986). However, previous findings regarding CC have shown basically no change. For example, Meyer et al. (1991) reported no change in CC. Vandenberg and Self (1993) also found no change in CC, but these results may not be reliable given reasons outlined in their article. Finally, in the one study that used LGM, Lance et al. (2000b) also reported a flat trajectory (no change) in their form of commitment that was closest conceptually to CC (i.e., compliance; cf. O'Reilly & Chatman, 1986).

One reason we may expect change in AC and NC rather than in CC and its HS and LA variants may have to do with the attributes underlying the sets of commitments. Specifically, the psychological contract literature has typically supported the existence of two broad bases (i.e., relational and transactional; Rousseau & McLean Parks, 1993) underlying individuals' relationships to the employing organizations. The relational bases dictate that some part of psychological attachment is due to the socio-emotional or social exchange elements of the workplace (e.g., value congruence with the organization, positive affect toward colleagues). In contrast, the transactional bases emphasize that some elements of commitment may be due in part to tangible facets (e.g., having a great deal

vested in the organization, not having a suitable employment alternative). Of relevance to the current study, however, is the work of Morrison and Robinson (1997), who stressed that relational bases of the employment relationship are more sensitive than are transactional ones to unforeseen changes in or breaches of obligations on the part of the employer, particularly those falling within the social exchange area—the very types of changes that have been going on in the general economy and most saliently within Belgium. As both AC and NC can be considered as representations of relational-based psychological contracts because of their inclusion of socio-emotional elements, we can expect these dimensions to be most susceptible to the types of changes in the work environment outlined above. It is for this reason that in the current study we expected declines in AC and NC but not in HS and LA, which represent elements of the relationship stemming from transactional bases. Therefore, the first hypotheses were the following:

Hypothesis 1A: During the time period of this study, a decreasing trajectory of change will occur in employees' AC.

Hypothesis 1B: During the time period of this study, a decreasing trajectory of change will occur in employees' NC.

Hypothesis 1C: During the time period of this study, no change (flat trajectory) will occur in employees' HS.

Hypothesis 1D: During the time period of this study, no change (flat trajectory) will occur in employees' LA.

Change in Turnover

Based on the role of commitment in the turnover process as reviewed previously, it stands to reason that a potential consequence of a negative change in commitment should be the accentuation of the withdrawal process; that is, if negative change occurs across the AC and NC constructs in this study, and if the observed negative associations from previous research are indeed valid reflections of the true underlying relationship between organizational commitment and withdrawal cognitions, then an increasing change in TI should be observed in the current sample as an employee's sense of personal desire (i.e., AC), or perceived obligation (i.e., NC) to remain in the organization declines. The declines in AC and NC free the employee to begin thinking about other employment alternatives. Thus, there is weakened cognitive dissonance between at least the socio-emotional forms of commitment (AC and NC) and engaging in withdrawal cognitions, such as stating an increased intention or probability of leaving the organization in the near future. Hence, we fully expected to observe an increasing trajectory (strengthening) of an employee's TI during the course of the current study. Given also that this increase in intention is purportedly driven by decreases in the perceived socio-emotional bases defining the employment relationship, it is reasonable to assume that the changes in AC and NC would be associated with the change in TI. Further, given the past support for an association between TI and actual turnover behavior (Griffeth et al., 2000), it would be reasonable to assume that an increasing trajectory in TI would be predictive of actual turnover behavior for the months following the last data collection. Thus,

the second, third, and fourth hypotheses of the current study were the following:

Hypothesis 2: During the time period of this study, an increasing trajectory of change will occur in employees' stated intention to quit the organization.

Hypothesis 3A: The greater the rate of declining change in affective commitment, the greater the rate of increasing change in TI.

Hypothesis 3B: The greater the rate of declining change in normative commitment, the greater the rate of increasing change in TI.

Hypothesis 4: The greater the rate of increasing change in individual TI, the stronger the actual turnover behavior.

In as much as Hypotheses 1 through 4 focus on the dynamic or changing attributes of commitment and TI, the cumulative evidence from prior research would support expected associations among the static elements of these constructs as well. Recall that LGM creates two latent variables (initial status and change). The initial status latent variable closely approximates that used in the cross-sectional (one point in time) designs characterizing the vast majority of prior research. Thus, given the cumulative evidence (Meyer et al., 2002), the initial status of AC, NC, and HS would be expected to have negative associations with initial status on TI. The evidence did not support an association of LA with TI, and thus, no expectations for it were forthcoming. Finally, the evidence would support a positive association between the initial status on TI and actual turnover behavior. Thus, the fifth and sixth hypotheses of the current study were:

Hypothesis 5A: Initial status on AC will be negatively associated with initial status on TI.

Hypothesis 5B: Initial status on NC will be negatively associated with initial status on TI.

Hypothesis 5C: Initial status on HS will be negatively associated with initial status on TI.

Hypothesis 6: Initial status on TI will be positively associated with actual turnover behavior.

Method

Sample and Procedures

A random sample of 1,277 university alumni who graduated from a university located in Belgium between 1988 and 1997 was selected for this study. Prospective participants understood that they would complete three waves of surveys at 3-month intervals (Time 1 [T1], Time 2 [T2], and Time 3 [T3]). The study was conducted during the years 2000 and 2001. Questionnaire packets included measures of commitment (AC, NC, HS, and LA) and TI at each occasion. Nine months after T3, participants who responded at all three measurement periods were contacted to obtain information about turnover. All questionnaires were sent directly to the individual's residential address. A cover letter accompanying the questionnaire explained the objectives of the study and assured participants that responses would be confidential. Participants returned their completed

questionnaires to the researchers' office in a prestamped, preaddressed envelope. Two weeks after questionnaire delivery, follow-up letters were sent to noncompliant individuals stressing the value of the survey and the importance of their participation. Questionnaires were coded to allow researchers to send the reminder memo and also to match respondents across time.

Of the 1,277 alumni who were contacted at T1, 578 responded to the first questionnaire (45%). A total of 486 of the T1 respondents completed questionnaires at T2 (84%), and 443 of the T2 respondents returned their questionnaire at T3 (91%). Finally, 364 out of the 443 individuals (82%) responded to the Time 4 [T4] measure (i.e., turnover).

Because they changed organizations between T1 and T3, 34 of the respondents were excluded from the sample, leaving a final sample of 330 employees. This final sample of employees had an average age of 30.7 years ($SD = 4.03$) and had been employed by their organization an average of 3.8 years ($SD = 3.16$) at T1. Among participants, 70.3% were men and 29.7% were women. The 330 employees worked in a variety of organizations, the most common of which was industrial (17.3%). The rest were in public administration (13.9%), banking and insurance (12.1%), computer science (10.3%), consulting (9.7%), transportation and communication (7.0%), research (6.4%), or construction (5.8%). Among respondents, 38% worked in large organizations (more than 1,000 employees), 34% in midsize organizations (100–1,000 employees), and 28% in small organizations (fewer than 100 employees).

To determine whether attrition produced any detectable outlying responses or demographic differences in the usable sample, we conducted several analyses. Specifically, we used dummy variables to classify respondents into four groups: (a) Group 1 represented those who completed measures only at T1 ($n = 93$); (b) Group 2 represented those who completed measures only at T1 and T2 ($n = 42$); (c) Group 3 represented those who completed measures only at T1, T2, and T3 ($n = 79$); (d) and, finally, Group 4 represented individuals who completed measures at all four measurement times. Three waves of analyses were conducted. First, we examined whether the four groups differed on age, gender, type of job, the size of the organization, and organizational tenure. No differences were found between the four groups on any of those variables. The second wave of analyses tested whether there were any differences across the four commitment dimensions used at each time. We conducted a multivariate analysis of variance (MANOVA) to detect whether there was an overall response bias across the T1 measures as a function of group memberships. We conducted a second MANOVA on the T2 responses to the four commitment dimensions measures, which we limited to Groups 2, 3, and 4. And finally, we conducted a MANOVA on the T3 responses to the four commitment dimensions measures, which we limited to Groups 3 and 4. All three multivariate analyses of variance were nonsignificant, $F(12, 1719) = 1.02$; $F(8, 956) = .92$; and $F(4, 434) = 1.10$, respectively. The third wave of analyses tested whether there were differences on the intention to quit the organization used at each time. We conducted the first ANOVA on the T1 measures of intent to leave on all four groups; the second on the T2 measures of intent to leave on Groups 2, 3, and 4; and the third on the T3 measures of intent to leave on Groups 3 and 4. All three ANOVAs yielded nonsignificant results, $F(3, 572) = 1.74$; $F(2, 482) = .32$; $F(1, 437) = .18$, respectively. In summary, at least within the confines of the current study, respondent attrition did not appear to create any sort of bias along the primary variables.

Measures

Because this study was conducted in a French-speaking context, all measures were translated from English to French by one translator and then back-translated independently by a second translator (cf., Brislin, 1980). Minor discrepancies among translated versions were observed but were resolved by a short discussion among translators. All items were anchored with a 5-point Likert-type scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*).

Organizational commitment. We operationalized organizational commitment using a revised version of the Meyer, Allen, and Smith (1993) scales that was adapted for international contexts (cf., Meyer, Barak, & Vandenberghe, 1996). The version contained six items each for the AC and NC dimensions and three items each for the HS and LA dimensions (Stinglhamber, Bentein, & Vandenberghe, 2002). The four scales were administered at the first three measurement times.

Intent to leave. Intent to leave was measured with two items: "I often think about quitting this organization" and "I intend to search for a position with another employer within the next year." These items were adapted from Hom and Griffeth (1991) and Jaros (1997). This scale was administered at the first three measurement times.

Turnover. Turnover was obtained 9 months after the T3 survey (T4). Voluntary leavers were given a rating of "2," whereas stayers were given a rating of "1." The percentage of turnover was 13%.

Tenure. To avoid the interpretation that findings could be attributed to tenure in the organization rather than to the evolution of the employee–employer relationships, we controlled for this variable in all analyses. Tenure was measured with one item at T1: "How many years have you been working in your current organization?"

Data Analysis

There were two phases of analysis. The first phase followed the procedures and process as detailed in Chan (1998) and applied by Lance et al. (2000b). This phase of analysis consisted of (a) the tests for measurement invariance and (b) the three waves of the LGM analysis. Structural equation modeling (SEM) procedures were used within this phase. As such, the same standards for interpreting the fit of a model were applied in each wave. Specifically, we used the following five fit indices to assess model fit: (a) the chi-square goodness of fit test, (b) the comparative fit index (CFI; Bentler, 1990), (c) Bentler and Bonett's (1980) nonnormed fit index (NNFI), which is a generalization of the Tucker–Lewis index (Tucker & Lewis, 1973), (d) the standardized root mean square residual (SRMR; Bentler, 1995), and (e) the root mean square error of approximation (RMSEA; Steiger, 1990). For comparing the fit of any two nested models, the $\Delta\chi^2$ statistic was applied (Bentler & Bonett, 1980; Medsker, Williams, & Holahan, 1994). This first phase was designed to examine Hypotheses 1–3 and Hypothesis 5. The second phase of analysis consisted of hierarchical logistic regression. Switching to this form of analysis was necessitated by the categorical nature of the turnover variable. Thus, this analysis was undertaken to specifically examine Hypotheses 4 and 6, which included the use of turnover.

Measurement invariance. Due to space constraints, no results from this wave of analysis are presented in the forthcoming Results section (the authors may be contacted for a written description of the details and outcomes). The procedures outlined in Chan (1998, particularly pp. 448–449) were strictly adhered to in the context of the current study. Briefly, measurement invariance tests are a prerequisite to LGM. Invariance within an LGM context is said to exist if (a) the nature of the construct that is operationalized by measured variables remains unchanged across measurement occasions (configural invariance) and (b) the relations between measures and their corresponding constructs are invariant across measurement occasions (metric invariance). Both forms of invariance were strongly supported for the four commitment dimensions and TI in this study. Finally, as per the procedures outlined in Chan (1998), the invariance constraints were kept in place during the LGM analyses.

LGM analyses. A SOF LGM procedure was applied to test the hypotheses regarding longitudinal change in commitment dimensions and TI and the relationships between the two. SOF LGM modeling has been discussed recently by Chan (1998, 2002), and examples of its application may be found in Chan and Schmitt (2000) and Lance et al. (2000b). The analyses proceeded in three phases.

Univariate SOF LGM analyses were performed in Phase I of the LGM procedure to determine the basic form of the growth trajectory for each of

the five focal variables (AC, NC, HS, LA, and TI). To establish the final model that most adequately depicted the change trajectory, a series of nested univariate SOF LGM models were fitted to the data for each variable. Because metric invariance was established, all univariate models included equality constraints on the first-order factor (FOF) loadings for like items across the three measurement times. In addition, same-item residuals were allowed to covary across measurement occasions. The intercept factor loadings on the three FOFs were fixed at 1.0 (cf. Chan, 1998).

For each variable, four univariate SOF LGM models were fitted. These models tested (a) the functional form of longitudinal change as captured by the change variable and (b) the structure of the FOF residuals. First, the functional form of longitudinal change may be strictly linear, which is obtained by fixing the change factor loadings at 0.0, 1.0, and 2.0 (a straight line growth over the three measurement occasions). Alternately, it can be optimally estimated, with the first two factor loadings on the change variable being fixed at 0.0 and 1.0 and the third one being freely estimated. The linear change trajectory model is nested under the optimal change model. Second, the FOF residuals may be *homoscedastic* (i.e., constrained to be equal across repeated measurements) or *heteroscedastic* (i.e., freely estimated; Willett & Sayer, 1994). In the first case, the distribution of errors associated with FOFs are thought to be homogeneous over time, whereas in the second case, this assumption is not made. The homoscedastic structure model is nested under the heteroscedastic structure model. Investigators often assume that measurement errors are homoscedastic over time (classical test theory). However, with consecutive measurements on individuals changing over time, this assumption may be unrealistic (cf. Willett & Sayer, 1994). Hence, this second set of tests allowed us to examine the reasonableness of the homoscedasticity assumption.

During Phase II of the LGM analysis, a multivariate SOF LGM model was tested to assess relationships between the initial status and change variables across commitment dimensions. This was achieved by combining the four univariate SOF LGM models retained for commitment into a single model. In this model, the factor covariances between intercepts (initial statuses) and slopes (changes) were freely estimated. This stage is crucial for identifying cross-domain relationships among attributes of the different change trajectories.

Finally, an augmented multivariate SOF LGM model was specified in Phase III of the LGM analysis in order to estimate structural relationships among initial status and change variables of commitment dimensions and TI. Specifically, this model included paths from (a) initial status of commitment dimensions to initial status of TI, (b) initial status of commitment dimensions to change in TI, and (c) change of commitment dimensions to change in TI.

All analyses were conducted using SEM, with the LISREL 8.54 statistical package (Jöreskog, Sörbom, Du Toit, & Du Toit, 2001).

Logistic regression. As our dependent variable (i.e., turnover) for Hypotheses 4 and 6 was binary by nature, and the LGM analyses, like all SEM models, are predicated on the assumption of a linear relationship, a hierarchical logistic regression analysis was undertaken in which turnover was regressed on the initial status and change in TI whereas the forms of commitment were held constant. The parameter estimates from this analysis permitted the development of different scenarios in which the predicted probability of turnover could be evaluated along varying levels of change in commitment and change in TI.

Results

Before conducting the substantive analyses, we examined the factor structure of the commitment scales for each measurement occasion. In addition to exhibiting high absolute fit indices, the four-factor CFA model (in which HS and LA are distinguished) yielded a significantly better fit to the data than did the three-factor model (including CC as a unidimensional measure) at T1, $\Delta\chi^2(3,$

$N = 330) = 219.73$, at T2, $\Delta\chi^2(3, N = 330) = 267.86$, and at T3, $\Delta\chi^2(3, N = 330) = 363.11$. The descriptive statistics and correlations for the study variables are presented in Table 1. All study variables had strong reliabilities, ranging from .74 to .92, with a mean of .83.

Univariate SOF LGM Analyses

Table 2 presents the results of the analysis in which univariate LGM models were fitted separately for each variable. Nearly equivalent fit was obtained for homoscedastic and heteroscedastic residual structure models (contrasts between Model 1 vs. Model 2 and Model 3 vs. Model 4; see Table 2) for all variables except NC. Thus, the more parsimonious homoscedastic structure was preferred for AC, HS, LA, and TI. For NC, the heteroscedastic model improved significantly over the homoscedastic structure, indicating that NC was not captured with the same precision across time. The heteroscedastic structure model was thus preferred in this case. One possible explanation for the superiority of the heteroscedastic model for NC would be that NC is more sensitive to even minor changes in employers' obligations toward employees across time (recall that NC items emphasize the "felt obligation" of employees toward the organization), hence it may be difficult for employees to determine their NC with a constant reliability across time. Results also indicated that the optimal change function did not improve model fit significantly over the linear function (cf. contrasts between Model 1 vs. Model 3 and Model 2 vs. Model 4; see Table 2), for AC, HS, LA and TI. The linear function was thus retained in these cases. For NC, given that its heteroscedastic residual structure has been established, we decided to select the linear change trajectory model (cf. contrast between Model 1 vs. Model 3: see Table 2) as being more realistic.

An examination of the SOF LGM parameter estimates (factor means, variances, and covariance) in each of the five selected models (see Table 3) was used to develop an understanding of the form of the growth trajectory within our sample. In support of Hypotheses 1A and 1B, the slope (i.e., change) factor mean was negative and statistically significant for AC and NC; that is, the extent to which employees felt affectively and normatively committed toward their organizations decreased linearly across the time period of this study. Further, the slope (change) factor variances for both variables were also statistically significant, indicating that some employees declined at much faster rates than did others over the same time period. Similarly, the intercept factor variances for both AC and NC were statistically significant, revealing that systematic individual differences in AC and NC existed at initial status (some people had higher mean levels than others at T1). Finally, the factor covariance between intercept and slope for both AC and NC was negative and statistically significant, indicating that respondents who had a high mean level of AC or NC at T1 (initial status) decreased in AC or NC, respectively, at much faster rates over time (had steeper declining slopes) than those who started off with a lower mean level of AC or NC.

With respect to HS and LA, their slope factor means were not statistically significant, as seen in Table 3, indicating that these forms of commitment remained stable within the 6-month period of the study (had a flat trajectory). These findings supported Hypotheses 1C and 1D. As a consequence, a no-growth model that specified only a single SOF representing those variables' initial

Table 1
Descriptive Statistics and Correlations Among the Study Variables

Variable	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1. AC/T1	3.17	.85	.81																
2. AC/T2	3.11	.78	.79**	.78															
3. AC/T3	3.10	.81	.75**	.80**	.83														
4. NC/T1	2.25	1.04	.38**	.30**	.26**	.91													
5. NC/T2	2.20	1.01	.29**	.30**	.25**	.74**	.92												
6. NC/T3	2.05	.91	.30**	.30**	.30**	.74**	.80**	.92											
7. HS/T1	2.82	.96	.18**	.20**	.21**	.09	.12*	.10	.74										
8. HS/T2	2.86	.97	.09	.18**	.16**	-.01	.09	.06	.58**	.78									
9. HS/T3	2.80	.97	.08	.17**	.20**	.06	.13*	.14*	.59**	.66**	.81								
10. LA/T1	1.89	.96	-.19**	-.14*	-.14*	-.10	-.05	-.09	.28**	.28**	.18**	.81							
11. LA/T2	1.92	.97	-.14**	-.14*	-.11*	-.09	-.05	-.09	.18**	.28**	.22**	.69**	.83						
12. LA/T3	1.83	.90	-.23**	-.19**	-.14*	-.11*	-.05	-.06	.21**	.28**	.29**	.64**	.71**	.83					
13. TI/T1	2.45	1.17	-.34**	-.35**	-.37**	-.25**	-.23**	-.21**	-.29**	-.22**	-.23**	.08	.02	.05	.83				
14. TI/T2	2.59	1.20	-.31**	-.35**	-.36**	-.27**	-.28**	-.27**	-.23**	-.26**	-.24**	.03	-.01	.00	.75**	.87			
15. TI/T3	2.74	1.23	-.26**	-.35**	-.42**	-.18**	-.19**	-.25**	-.26**	-.24**	-.33**	.07	.00	.00	.70**	.76**	.88		
16. TO	1.13	.34	-.02	-.04	-.13*	-.03	-.13*	-.15**	-.13*	-.16**	-.27**	-.04	-.04	-.12*	.30**	.35**	.44**		
17. TENU	3.80	3.16	.09	.12*	.14**	-.17**	-.13*	-.15**	.10	.11*	.09	.25**	.26**	.23**	.02	.03	-.01	-.11*	

Note. $N = 330$. Alpha coefficients are reported on the diagonal. AC = affective commitment to the organization; NC = normative commitment to the organization; HS = continuance commitment to the organization; LA = high-sacrifice subdimension; L.A = continuance commitment to the organization—low-alternatives subdimension; TI = turnover intention; T1 = Time 1; T2 = Time 2; T3 = Time 3; TO = turnover; TENU = tenure.
* $p < .05$. ** $p < .01$.

status was used for subsequent SOF latent growth analyses including HS and LA.

Finally, the results for TI revealed that the slope factor mean was positive and significant. That is, intention to quit increased linearly over the time period of this study and, thus, supported Hypothesis 2. Also, the slope (change) factor variance was statistically significant revealing that individuals differed in their rates of increase in intention to quit. In a related vein, the statistically significant intercept factor variance indicated that some individuals possessed significantly greater intention to quit at initial status than did other individuals. However, the covariance between the initial status and change latent variables was statistically nonsignificant. This is quite interesting because it means that no matter what an individual's initial status was on TI, he or she experienced an increase in intention to quit over the period of the study.

Multivariate SOF LGM Analysis

Recall that a multivariate SOF LGM model was performed for all commitment dimensions together by combining the four univariate SOF LGM models described in the previous section. This model fit the data quite well, $\chi^2(1432, N = 330) = 2231.17, p < .01, CFI = .93, NNFI = .93, SRMR = .08, RMSEA = .04$. The values of the growth factor means, factor variances, and within-domain covariances (not reported in Table 4) were virtually identical to their corresponding values obtained in the univariate models reported in the previous section, suggesting that there were no anomalies in the results when the univariate models were combined, and most importantly, that Hypotheses 1A through 1D remained viable.

The results reported in Table 4 provided interesting information regarding the pattern of cross-domain associations among the commitment initial status and change latent variables. First, the AC and NC initial status latent variables were positively associated (.46). Second, the association between their respective change latent variables was also statistically significant (.65). That is, the steeper the rate of decline in AC for an individual, the steeper the rate of decline in NC. Third, the initial status of AC was associated in the same way with the rate of change in NC (-.26) as with its own rate of change (-.32). Finally, the initial status of NC was associated in the same way with the rate of change in AC (-.36) as with its own rate of change (-.37). These results indicated, therefore, that an individual who started off with a higher level of AC decreased this level and the level of NC at a faster rate than an individual who started off with a lower level of AC. Similarly, an individual who started off at initial status with a higher level of NC decreased this level and the level of AC at a faster rate than an individual who started off with a lower level of NC.

Augmented Multivariate SOF LGM Analysis

The last aspect of the LGM analyses specified a multivariate SOF LGM that included the commitment dimensions and TI. Results from these analyses were directly relevant to evaluating Hypotheses 3 and 5. First, it should be noted that this model yielded a good fit to the data, $\chi^2(1773, N = 330) = 2909.84, p < .01, CFI = .92, NNFI = .92, SRMR = .13, RMSEA = .04$. Table 5 presents the standardized structural parameter estimates of the direct effects from this augmented model. In complete support of

Table 2
Univariate SOF LGMs: Tests of Alternative SOF LGM Specifications

Model	Change function	FOF residuals structure	χ^2	<i>df</i>	CFI	NNFI	SRMR	RMSEA	$\Delta\chi^2$	Δdf
AC										
Model 1 (M1)	Linear	Heteroscedastic	331.53***	140	.94	.94	.120	.065		
Model 2 (M2)	Linear	Homoscedastic	332.22***	142	.94	.94	.120	.064		
Model 3 (M3)	Optimal	Heteroscedastic	331.52***	139	.94	.94	.120	.066		
Model 4 (M4)	Optimal	Homoscedastic	332.20***	141	.94	.94	.120	.065		
M1 vs. M2									.69	2
M1 vs. M3									.01	1
M3 vs. M4									.68	2
M2 vs. M4									.02	1
NC										
Model 1	Linear	Heteroscedastic	345.77***	140	.96	.96	.080	.067		
Model 2	Linear	Homoscedastic	358.58***	142	.96	.95	.084	.068		
Model 3	Optimal	Heteroscedastic	343.48***	139	.96	.96	.080	.067		
Model 4	Optimal	Homoscedastic	350.41***	141	.96	.95	.081	.067		
M1 vs. M2									12.81***	2
M1 vs. M3									2.29	1
M3 vs. M4									6.93*	2
M2 vs. M4									8.17***	1
HS										
Model 1	Linear	Heteroscedastic	47.15**	26	.98	.98	.047	.047		
Model 2	Linear	Homoscedastic	48.45**	28	.98	.98	.048	.045		
Model 3	Optimal	Heteroscedastic	45.60**	25	.98	.98	.047	.048		
Model 4	Optimal	Homoscedastic	47.58**	27	.98	.98	.052	.046		
M1 vs. M2									1.30	2
M1 vs. M3									1.55	1
M3 vs. M4									1.98	2
M2 vs. M4									.87	1
LA										
Model 1	Linear	Heteroscedastic	52.53***	26	.98	.98	.048	.056		
Model 2	Linear	Homoscedastic	57.47***	28	.98	.98	.060	.057		
Model 3	Optimal	Heteroscedastic	49.06***	25	.99	.98	.048	.053		
Model 4 ^a	Optimal	Homoscedastic	—	—	—	—	—	—		
M1 vs. M2									4.94	2
M1 vs. M3									3.47	1
M3 vs. M4									—	
M2 vs. M4									—	
TI										
Model 1	Linear	Heteroscedastic	17.38**	6	.99	.98	.030	.075		
Model 2	Linear	Homoscedastic	17.44*	8	.99	.99	.031	.059		
Model 3	Optimal	Heteroscedastic	17.35***	5	.99	.98	.030	.086		
Model 4	Optimal	Homoscedastic	17.36*	7	.99	.99	.030	.066		
M1 vs. M2									.06	2
M1 vs. M3									.03	1
M3 vs. M4									.01	2
M2 vs. M4									.08	1

Note. SOF = second-order factor; LGM = latent growth modeling; FOF = first-order factor; CFI = comparative fit index; NNFI = nonnormed fit index; SRMR = standardized root mean square residual; RMSEA = root mean square error of approximation; AC = affective commitment to the organization; NC = normative commitment to the organization; HS = continuance commitment to the organization–high-sacrifice subdimension; LA = continuance commitment to the organization–low-alternatives subdimension; TI = turnover intention.

^a This model failed to converge to a proper solution after 1,000 iterations (as represented by the dashes).

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

Table 3
Univariate SOF LGMs: Growth Parameters Estimates

Parameter	Initial status (IS)		Change (CH)		Covariance IS-CH (σ_{IS-CH})
	$M (\mu_{IS})$	Variance (σ_{IS}^2)	$M (\mu_{CH})$	Variance (σ_{CH}^2)	
AC linear & homoscedastic	3.11***	.53***	-.04**	.03***	-.04**
NC linear & heteroscedastic	2.35***	.96***	-.11***	.06*	-.09*
HS linear & homoscedastic	3.04***	.51***	-.03	.01	.03
LA linear & homoscedastic	2.18***	.85***	-.03	.04*	-.06*
TI linear & homoscedastic	2.64***	1.13***	.14***	.05*	-.01

Note. Standardizing the manifest variables destroys the ability to examine change because the standardization equates the means and variances (Rovine & von Eye, 1991; Tisak & Meredith, 1990; Tucker, 1966). Therefore, we present here the unstandardized estimates (as is most typical in this type of research). SOF = second-order factors; LGM = latent growth model; AC = affective commitment to the organization; NC = normative commitment to the organization; HS = continuance commitment to the organization-high-sacrifice subdimension; LA = continuance commitment to the organization-low-alternatives subdimension; TI = turnover intention.

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

Hypotheses 3A and 3B, the changes in AC and NC were significantly associated (-.88 and -.35, respectively) with the change in TI across the time periods of this study. Because both AC and NC followed a decreasing trajectory of change, the negative sign associated with the effect of the AC and NC change variables on the change component of TI (an increase) indicates that the rate of decrease in AC or NC is positively associated with the rate of increase in TI. In short, therefore, the faster an individual declined in AC and NC, the faster she or he increased in TI across the same time period.

The results in Table 5 also supported Hypothesis 5. As expected, the initial status latent variables of AC (Hypothesis 5A), NC (Hypothesis 5B), and HS (Hypothesis 5C) were negatively associated with the initial status of TI (-.40, -.16, and -.31, respectively). These findings mirrored those reported in the bulk of past research in which associations between static assessments of the constructs were tested. Of interest was the statistically significant, positive association between the initial status latent variable for LA and the initial status latent variable for TI (.11). Although past research findings did not clearly permit us to state a hypothesis regarding this association, our expectation was to find a statistically nonsignificant association. What the current finding sug-

gested, however, is that the stronger a person's commitment to an organization because of an LA frame of mind at a given moment in time, the stronger the TI at that moment in time. Most important, the fact that the initial status of HS and LA correlated in opposite directions with the initial status latent variable for TI lends weight to current concerns about the dimensionality of the CC scale and doubts expressed by some researchers regarding the relevance of LA as a component of commitment (Jaros, 1997; Stinglhamber et al., 2002).

Logistic Regression

In as much as the findings from the LGM analyses supported conclusions regarding the relationships among the changes in affective and normative commitment with the change in TI, the hypotheses including turnover (Hypotheses 4 and 6) may not be unambiguously tested through the use of SEM procedures. The reason quite simply is that the dependent variable, turnover, is binary by nature, and as such possesses an S-shaped association to its predictors (Liao, 1994; Long, 1997). Yet, the LGM analyses, like SEM models, are typically predicated on the assumption of intrinsic linearity. Therefore, a hierarchical logistic regression analysis was undertaken in which turnover was regressed on the initial status and change in TI, whereas the forms of commitment were held constant. The predictors for turnover were entered as

Table 4
Latent Intercorrelations Among Growth Parameters of the Commitment Dimensions in a Multivariate SOF LGM Model

Parameter	1	2	3	4	5	6
1. IS-AC	—					
2. CH-AC	-.32**	—				
3. IS-NC	.46***	-.36***	—			
4. CH-NC	-.26**	.65***	-.37**	—		
5. IS-HS	.25***	.16	.12*	.06	—	
6. IS-LA	-.28***	.17	-.12*	.06	.39***	—

Note. SOF = second-order factors; LGM = latent growth model; IS = initial status; AC = affective commitment to the organization; CH = change; NC = normative commitment to the organization; HS = continuance commitment to the organization-high-sacrifice subdimension; LA = continuance commitment to the organization-low-alternatives subdimension. * $p < .05$. ** $p < .01$. *** $p < .001$.

Table 5
Structural Effects of Growth Parameters on Turnover Intention

Endogenous variable	IS-AC	CH-AC	IS-NC	CH-NC	IS-HS	IS-LA
IS-TI	-.40***		-.16**		-.31***	.11*
CH-TI	-.05	-.88***	-.06	-.35*	-.12	.01

Note. IS = initial status; AC = affective commitment to the organization; CH = change; NC = normative commitment to the organization; HS = continuance commitment to the organization-high-sacrifice dimension; LA = continuance commitment to the organization-low-alternatives dimension; TI = turnover intention. * $p < .05$. ** $p < .01$. *** $p < .001$.

blocks into the analysis in the following order: (a) tenure, (b) T1 and T3 means for high sacrifice and low alternatives commitment, (c) T1 means for affective and normative commitment, (d) T3 means for affective and normative commitment, (e) T1 mean for TI, and (f) T3 mean for TI. There were several assumptions underlying this ordering and analysis. First, by entering tenure and both the T1 and T3 means for HS and LA in the first two blocks, we were simply holding these constant or controlling for them in the remaining analyses. Second, by entering the T1 values of the AC and NC variables as a block before entering the T3 values of those same variables makes the T3 values an analysis of the residual (after controlling for the T1 values and the other variables in the preceding blocks) or change in those variables from T1 (Cohen, Cohen, West, & Aiken, 2003). Hence, the intent here was to mimic the fact that the LGM analysis supported a declining, yet linear change in AC and NC, and this fact needed to be modeled as closely as possible in this analysis. It should be noted that because the LGM analysis supported a linear decline, we could use the T3 values to create the contrast to T1 because presumably the T2 values would be between those extremes. The third assumption was similar to the last one but as pertaining to the TI variable. Namely, only after controlling for tenure, HS and LA and the change in AC and NC was the T1 mean for TI entered, and it was from this basis then that the T3 mean for intention was entered into the equation. Thus, the T3 value actually represents the residual or change in intention from T1 after controlling for all of the other variables in the model. To verify that it was indeed a change value, we correlated that T3 residual in TI with the simple difference of subtracting T1 from T3 ($r = .85$).

The logistic regression model was statistically significant, $\chi^2(11, N = 330) = 88.37, p < .01$. Unlike ordinary least squares regression where r^2 may be obtained with some accuracy, the same is not true with logistic regression, and as such, a pseudo- r^2 value must be used instead. In the current case, that value was .44 (Nagelkerke r -square) indicating that approximately 44% of the variance in turnover may be accounted for by the logistic model. The obtained parameter estimates from the logistic model are presented in Table 6. The results in Table 6 were completely supportive of Hypothesis 4 but not of Hypothesis 6. Specifically, the change in TI (represented by T3 TI) possessed a statistically significant association with actual turnover behavior at T4. However, the initial status of TI (represented by T1 TI) was not significantly associated with actual turnover behavior.

A functional aspect of the parameter estimates in Table 6 is that they may be used to develop different scenarios regarding the role of the variables in the model to impact the probability of the occurrence of the focal behavior (Liao, 1994; Long, 1997). For example, by using the means for each variable (i.e., the constant values), a .04 predicted probability is obtained. That is, the "average" person in the current sample only had a 4% chance of leaving the organization. The problem, though, is that the number of scenarios is seemingly boundless, and thus, the researcher must select those that make the most sense within the context of the study. In this vein and at the suggestion of the reviewers, we developed six contrasted scenarios. Given that the LGM focuses attention on the changes in AC, NC, and TI, all six scenarios represent manipulations along those variables while maintaining organizational tenure and the T1 and T3 means for low alternatives and high sacrifice commitments constant.

Table 6
Results of the Hierarchical Logistic Regression Analysis for Turnover

Variable	β	Exp β	Wald (<i>df</i>)	Significance
Block 1				
Organizational tenure	-.170	.844	3.82 (1)	.05
Block 2				
T1/HS	.171	1.187	.34 (1)	.56
T1/LA	-.142	.867	.22 (1)	.64
T3/HS	-.662	.516	4.21 (1)	.04
T3/LA	.073	1.076	.04 (1)	.83
Block 3				
T1/AC	.413	1.511	1.35 (1)	.25
T1/NC	.544	1.724	2.97 (1)	.09
Block 4				
T3/AC	.023	1.023	.01 (1)	.95
T3/NC	-.674	.510	2.90 (1)	.09
Block 5				
T1/TI	.288	1.334	1.65 (1)	.20
Block 6				
T3/TI	1.152	3.164	19.21 (1)	.00

Note. The constant for the model was -6.051 . Exp = exponential; T1 = Time 1; HS = continuance commitment to the organization–high-sacrifice dimension; T3 = Time 3; LA = continuance commitment to the organization–low-alternatives dimension; AC = affective commitment; NC = normative commitment; TI = turnover intention.

The first scenario represents what happens to the probability of turnover when both AC and NC indicate maximal decline (i.e., T1 values are 5 and T3 values are 1) and when TI increases maximally (i.e., T1 value of 1 and T3 value of 5). The conditions of this scenario represent the pattern of change in the two commitment variables and TIs supported in the LGM analysis. Under these conditions, the predicted probability that someone left the organization at the end of this study was .88. The second scenario is the reverse of the first one and represents what happens to the probability of turnover when both AC and NC indicate maximal increase (i.e., T1 values are 1 and T3 values are 5) and when TI decreases maximally (i.e., T1 value of 5 and T3 value of 1). In this case, the predicted probability is .00. This suggests, therefore, that when AC and NC are strongly increasing, and intentions to quit are maximally decreasing across the same time period, an individual is very unlikely to leave the organization.

Two other scenarios attempt to look at the relative contribution of AC and NC on the actual probability of leaving the organization. The third scenario holds NC constant (T1 and T3 values are at their respective means) but AC is set at maximally declining (T1 value is 5 and T3 value is 1), and TI increases maximally (i.e., T1 value of 1 and T3 value of 5). The predicted probability of actually leaving the organization was .57, which is a value lower than was found in the first scenario above but one that is certainly much

greater than the .04 representing the probability of the “average” person leaving the organization in the current sample. The fourth scenario holds AC constant (T1 and T3 values are at their respective means), whereas NC is set at maximally declining (T1 value is 5 and T3 value is 1), and TI increases maximally (i.e., T1 value of 1 and T3 value of 5). The predicted probability of actually leaving the organization was .80 in this scenario; a value very close to the .88 obtained in the first scenario above. This suggests that although declines in both forms of commitment are important in impacting the probability of turnover, the decline in NC for the current sample was the strongest contributing factor.

Finally, we compared two scenarios to separate the effect of the initial status from the trajectory of change on the same variable. A fifth scenario represents what happens to the probability of turnover when both AC and NC indicate important decline (i.e., T1 values are 5 and T3 values are 2), holding TI constant (T1 and T3 values are at their respective means). This scenario was compared with another one which represents what happens to the probability of turnover when both affective and normative commitments stay at a very low level (i.e., T1 and T values are 1), holding TI constant (T1 and T3 values are at their respective means). Comparing these two scenarios addresses whether declines in commitment contribute to the predicted probability of turnover or whether it is simply enough to know that commitment is low. Prior commitment and turnover research suggests a greater probability of turnover for the second scenario because that research has consistently shown that the more proximal the predictor is to the outcome, the stronger the association between the two. The current findings do not support that conventional wisdom. Specifically, the fifth scenario resulted in a predicted probability of .30 while the sixth scenario yielded a value of .03. Thus, simply possessing low levels of commitment across time is not enough all else being equal to promote the probability of someone actually leaving the organization. Indeed, those individuals were no more likely to leave than were the “average” individuals in the current study. Rather, it appears that it is the dynamic or changing nature of commitment that is important to the probability of someone actually leaving the organization.

Discussion

The development and evolution of one’s commitment to the organization is a fundamental premise underlying many practices designed to promote commitment (e.g., high performance work systems), and for theories describing such processes as socialization, work adjustment or turnover which predicate themselves on the fact that workers change over time in their degrees of psychological attachment to an organization (Lance et al., 2000b; Vandenberg & Self, 1993). The insinuation is that this change has implications for organizational effectiveness. Despite the previous research attempts to do so, the fact is that this fundamental premise underlying the commitment process remains relatively unexamined. The purpose of the current study was to test whether individuals experience significant changes in commitment to the workplace across time (i.e., whether there really is an evolution) and, if so, to address whether these changes are meaningful to our understanding of work place behavior. We fulfilled the purpose by examining commitment’s role in the turnover process through the

use of the Allen and Meyer (e.g., Meyer & Allen, 1991) framework of commitment.

Specifically, the current sample was uniquely suited for this purpose because it consisted of over 300 individuals at various stages in their careers and belonging to many different organizations. Thus, commitment was literally left to its own devices. Further, by using the Allen and Meyer AC, NC, and continuance dimensions (the latter of which consists of HS and LA subdimensions), we could make differential predictions about change. Addressing first whether individuals experience an evolution or change in commitment across time, the answer is an unequivocal yes, but as expected, on only the AC and NC commitment dimensions. Given the current general economic environment, and particularly that of Belgium from which the sample was derived, and the general growth in pessimism and decline in trust that has occurred over the last decade in the general workforce (Morrison & Robinson, 1997; Robinson & Rousseau, 1994), we fully expected AC and NC to decline in levels across the 6 months during which measures on those constructs were administered. Commitment predicated on bases of HS and LA are simply not as sensitive to perceived violations of the psychological contract that occur as a result of the belief that organizations are no longer fulfilling their obligations to their employees. Such obligations are of the socio-emotional variety, and when an organization is perceived as breaking or violating the social exchange relationship, the forms of commitment predicated on relationships (e.g., AC and NC) will be most impacted (Meyer & Allen, 1991; Spreitzer & Mishra, 2002). In the 6 months of data collection for HS and LA, we did not expect the transactional bases on which these forms of commitment are predicated to change enough within the current sample as a whole to shift these forms of commitment in one direction or another. Perhaps if (a) we had followed the sample for a longer time period, (b) we had identified a sample for which alternative employment opportunities fluctuated, or (c) other organizations offered a competitive compensation package to offset the feelings of HS, then changes in HS and LA may have been observed.

With respect to whether or not the changes in AC and NC were meaningful, the results again indicated that they were critical components within the turnover process. Four aspects of the current findings are worth mentioning. First, the magnitude of effects (comparing the standardized coefficients from Table 5) was much stronger for the associations between the changes in commitment and the change in TIs than for the associations representing the traditional tests; that is, between the initial status on AC and NC and initial status on TI. Second, initial status on both AC and NC (again, the traditional test) possessed no statistically significant association with the change in TI. Hence, measuring commitment at one point in time and finding that it also has a statistical association with TI at one point in time (as is the current case, and in the bulk of past research findings) should not be automatically inferred to mean that changing commitment will result in changing TI. Rather, only the change component of AC and NC was significantly associated with the change in TI.

The third aspect of the current findings highlighting the importance of detecting change in AC and NC takes into account the total pattern of findings. Specifically, it is indisputable that turnover is costly to most organizations and is typically a behavior that most wish to limit (Hom & Griffeth, 1995; Mitchell, Holtom, & Lee, 2001). A contribution of this study is to demonstrate that

changes in AC and NC influence turnover through the change in TI. Most important, this study indicates that no matter the standing on TI at T1, the average individual experienced an increase in the intention to leave over the 6 months covered by data collection. The current findings suggest, therefore, that reducing turnover must be a sustained effort over time. Our study shows that a partial reduction in turnover might be achieved by a one-time elevation of initial levels in AC and NC (also HS), thereby causing a one-time reduction of the level of TI. However, given the fact that TI increased regardless of its initial status and the fact that the primary drivers for its increase were the declines in AC and NC (not their initial status), sustained reductions in turnover must be accomplished through sustained, not only one-time, efforts to promote high levels of AC and NC over time.

Fourth, the lack of support for Hypothesis 6 (positive association of initial status on TI TI with turnover behavior) as well as the predicted scenarios based on the logistic regression results (particularly the comparison of the 5th [declining commitments] and 6th [consistently low commitments across time] scenarios) supported the importance of looking at change or the dynamic nature of these variables in predicting important work-related behaviors such as turnover. In combination, these findings suggest that just examining associations by using static measures of the underlying variables may actually be misleading in some cases. Specifically, current findings indicate that there may be a cognitive saliency factor operating at some level. That is, merely being at a low (or high) level on a variable even constantly over time may indicate that the variable is simply not salient to the individual. A meaningful change in the level of the variable across time, however, may mean that individuals are cognitively aware of the fact that they are no longer as committed as they were just months before or have come to want to leave the organization. Hence, as the current findings suggest, it is the change in status along those variables that are important and not necessarily the level of that variable at a given moment in time.

The importance of change was not only illustrated in the logistic regression analysis but also through the LGM analysis. That is, the LGM approach actually permits us to separate the effect of the initial status of employees on a given commitment dimension from the trajectory of change these individuals display over time on that variable. This is important to realize for the following reason. Let us take an individual who starts off at 5 on the NC scale and drops precipitously to 2 at the end of the study, and another individual who begins at 1 on the same scale but stays at that level across the study. Previous research would suggest that the second person is more at risk in terms of withdrawal cognitions, due to his or her lower level of commitment at the end of the study. For the same reasons stated above (i.e., cognitive saliency), although it is recognized that the second individual is indeed likely to engage in withdrawal cognitions, the first individual might be more at risk simply because the rate of decrease in commitment is so dramatic that the individual is very conscious of that decline—a conclusion supported by the values of the structural parameters associated with NC in Table 5.

In terms of practical implications, this study also calls for more work examining how organizations can manage the risk of withdrawal among employees over time. One explanation to the declining change trajectories observed in the AC and NC components could be related to the fact that the economic context during

which the study was conducted was one of increased competitive pressures that constrained organizations to use flexible employment practices. Also, organizations changed their management policies and tended to give more weight to the value of their shares than to developing their human assets (Hollanders, 2002). This could have created a shift in the psychological contracting process, which, as argued by Robinson and Rousseau (1994), can lead to declining levels of commitment among employees. If this is true, then organizations could benefit from using techniques such as realistic job previews (RJPs) that can prevent disillusionment over time. There has been much work showing the benefits of RJPs (e.g., Buckley, Fedor, Veres, Wiese, & Carraher, 1998; Premack & Wanous, 1985; Wanous & Colella, 1989), one of which is the effective reduction of turnover among employees (Hom, Griffeth, Palich, & Bracker, 1999). According to Hom et al. (1999), RJPs act indirectly on the attitudinal predictors (i.e., job satisfaction and organizational commitment) of intended and actual turnover. Specifically, they showed that postentry RJPs increase met expectations which in turn activate perceptions of employers' honesty and concern for their employees and increase employees' coping mechanisms and job satisfaction, which ultimately enhance organizational commitment. It would be worth investigating in the future whether such mediating processes also explain change trajectories of commitment over time and could foster employee retention through that means.

Indirectly, the current study also addresses some recurrent concerns with respect to the validity of Allen and Meyer's (e.g., Hackett et al., 1994; McGee & Ford, 1987; Meyer et al., 2002) dimensions of organizational commitment. One longstanding concern is whether AC and NC are really tapping unique bases of commitment (discriminant validity) or are redundant (e.g., Ko, Price, & Mueller, 1997). Although AC and NC (both their initial status and change) were associated with one another, none of the observed coefficients in the current study were sufficiently large to warrant concerns about conceptual redundancy. Further, Table 5 shows that, besides the effect of their initial status, changes in AC and NC were uniquely associated with change in TI. That is, they each accounted for unique amounts of variance in TI. Another longstanding controversy concerns whether or not the CC scale is unidimensional as originally proposed or whether it consists of two distinct dimensions represented by the HS and LA scales (Jaros, 1997; McGee & Ford, 1987; Meyer et al., 1990). The current study did not support the unidimensionality argument. For one, the CFA results supported two dimensions. Most important, however, the HS and LA subdimensions were divergently related to TI; that is, HS had a negative association, whereas LA had a positive association. Thus, current findings suggest that the conceptualization and measurement of continuance commitment need more attention in the future (cf. Powell & Meyer, 2004).

Limitations and Future Research

As we have shown here, it was important to go beyond the traditional aggregate-level analysis of longitudinal data (i.e., in terms of mean differences) and to conceptualize change in commitment dimensions at the individual level to address complex issues concerning change processes that have not been examined before. However, the current study had limitations and, as such, raised issues for future research.

First, longitudinal designs inevitably mean that sample attrition will be present. In the present study, the sample size remained acceptable at T4 ($N = 330$), and several analyses indicated that participant attrition did not produce any detectable outlying responses or demographic differences in the usable sample. However, other researchers may not be as fortunate and, therefore, may have complete data only on a relatively small percentage of the original sample and, thus, might come into conflict with the stringent data requirements underlying LGM. Note that recent extensions to the basic LGM approach have been developed that deal with missing data issues and analytic options for incomplete data sets (e.g., Duncan, Duncan, & Li, 1998; Little & Rubin, 1987; McArdle & Hamagami, 1991). Discussion of these issues is beyond the scope of this article, but future research in which data requirements may be questionable may need to use the missing data options to apply LGM.

Second, this study found evidence for a linearly declining change of AC and NC over time. This supports Brockner et al. (1992) who stated 10 years ago, that it may be “easier to break, rather than build employees’ organizational commitment” (p. 260). However, in as much as the present study did not examine the actual antecedents, interpretations regarding the causes of the declines are speculations at best. Not only should future research include potential antecedents, but also underlying the Brockner et al. (1992) quote is another broader issue. Namely, is increasing commitment across time as important as decreasing commitment? It may be the case, for example, that people are more sensitive to even minor decreases in commitment than they are to comparable increases in commitment. The reverse may be true as well. The point is that the threshold point at which the change causes a difference in behavior may be smaller for decreases than for increases, or vice versa. Additionally, the consequences of the changes may also be different. For example, in the current study, it was very reasonable to assume on the basis of past research that the declining forms of commitment would impact the turnover process. But would declining commitment necessarily impact performance given that even uncommitted people do not necessarily begin to perform poorly out of fear of losing their job before finding another alternative? It may very well be the case that in-role or extrarole (citizenship) performance behaviors are most influenced by increases in commitment. Our point, though, in raising these issues is that by isolating the actual change in commitment, researchers may begin to address more refined questions regarding the actual commitment process—questions that cannot be addressed through traditional research designs.

Finally, it would be worthwhile to examine the generalizability of the current findings. The current sample was all university graduates who were at the relatively early stages of their professional careers. The question is, would we observe similar outcomes among those with less education, working within the less professionalized occupations, or who were much further along in their career stages? Likewise, would we observe similar findings within other cultures? Perhaps Eastern cultures, for example, in which relations are highly emphasized would be prone to increases in commitment across time if that commitment were left to its own devices as it was in the current study. Even though tenure was controlled for in the current study, the implication underlying it as well as the question above concerning career stages, education, and the professional nature of the occupation is that different mind

sets driving the commitment may arise (i.e., professionals may be driven more by the relational bases of commitment [AC and NC], whereas less professional individuals may be driven more by the transactional bases, such as HS or LA). It would be interesting to examine whether the decrease in the relational bases of commitment among commitment manifests itself in the same behaviors as perhaps changes in the transactional bases among the less professionalized occupations. In closing, however, our point is that these questions all deal with change and, therefore, the process underlying commitment. These are questions fundamentally different from those addressed through research designs relying on static measures of the focal constructs.

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