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Reciprocal Relation Between Authenticity and Calling among Chinese University Students: A Latent Change Score Approach

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Abstract

It is common to hear that following one's "true self" is an important means to find a calling, yet no study has directly examined this possibility. In this study, we investigate the change pattern between authenticity and calling. Specifically, we conducted a three-wave longitudinal study with 459 Chinese university students over one year and examined the reciprocal dynamic relationship between authenticity (i.e., authentic living, self-alienation, and accepting external influence) and calling. Results of a bivariate latent change score model examining within-individual changes over time showed that increases in authentic living were positively correlated with increases in calling, while increases in self-alienation and accepting external influence negatively correlated with increases in calling. We also found that higher levels of calling predicted less decrease in authentic living. However, higher levels of authentic living significantly predicted a decrease in calling over time. Our findings contribute to the literature on calling by suggesting a dynamic change pattern of authenticity and calling among Chinese university students.

Keywords: Calling, authenticity, authentic living, accepting external influence, latent change score model

Reciprocal Relationship Between Authenticity and Calling among Chinese University Students: A Latent Change Score Approach

The notion that one's career can be approached as a calling has drawn substantial scholarly attention in recent years within vocational psychology and related fields (Brown & Lent, 2016). Popular conceptualizations of calling often convey a sense that one's career is closely tied to a broader sense of purpose and meaning in life, and may be used to help others or advance the greater good (e.g., Dik & Shimizu, in press). Research on calling also reflects the broader interest within contemporary career development research on value-driven and self-managed approaches to one's career (Hall & Chandler, 2005; Zhang, Hirschi, Herrmann, Wei, & Zhang, 2015). Evidence suggests that one's perception of a calling is associated with positive career-related outcomes, subjective career success, and greater well-being (see Duffy & Dik, 2013, for a review). More recently, with longitudinal designs, research has also focused on identifying factors that affect the perception of a calling, and how callings emerge and develop (e.g., Bott & Duffy, 2015; Dobrow, 2013; Hirschi & Herrmann, 2013; Duffy, Douglass, Autin, & Allan, 2014; Praskova, Hood, & Creed, 2014; Zhang, Hirschi, Herrmann, Wei, & Zhang, 2017).

However, the existing research is still limited on the question of how a sense of calling develops. First, despite the recent progress in understanding the mechanisms through which calling links to criterion variables, researchers have paid little attention to the role of self-perception may play as people develop a sense of calling. In particular, little is known regarding how perceptions of calling are related to people's sense of authenticity. However, a link between authenticity and calling seems highly plausible, given that several scholars have pointed to the benefits of "following the true self" for the development of a calling (e.g., Weiss, Skelley, Haughey, & Hall, 2003; Elangovan, Pinder, & McLean, 2010). Hall and Chandler (2005) also noted that a calling is shaped by "knowing why" investments, involving clearly understanding the self and achieving an identity. Yet these are essentially theoretical assumptions; researchers have not systematically examined the effect of authenticity on calling. Furthermore, calling may also contribute to changes in authenticity because calling is presumed to refine one's perception of self (Hall & Chandler, 2005; Elangovan et al., 2010). This possibility also requires, but has not yet been subject to, empirical examination. In this study, we adopted a latent change score (LCS) approach with longitudinal data collected over three time points in an attempt to empirically investigate the potentially reciprocal effects between calling and authenticity to address this limitation.

Second, despite signs of increasing internationalization within the calling literature (e.g., Kim, Praskova, & Lee, 2016; Zhang, Dik, Wei, & Zhang, 2015), much more research is needed that investigates the development of a calling in different cultural contexts. To address this issue, the present study specifically focuses on how the change pattern between authenticity and calling unfolds over time in a Chinese university student sample. China has witnessed dramatic economic and cultural change in recent decades, resulting in corresponding changes

in many people's career development (Wong & Slater, 2002; Zhou, Leung, & Li, 2012). One of the most notable changes is that people are increasingly taking a more self-directed approach to developing their careers (Wong & Slater, 2002; Yi, Ribbens, & Morgan, 2010). However, many people in China still express interdependent and communal career decision-making strategies to a greater extent than has been observed in Western samples (e.g., Willner, Gati, & Guan, 2015). This complex relation of self-direction and social dependency in career development might have important implications for how Chinese students and employees approach their careers as a calling. A first indication of this stems from a cross-sectional study which found that a self-directed career attitude positively relates to higher levels of a calling among Chinese employees (Zhang, Hirschi, et al., 2015). In this study, we extend this line of research and argue that authenticity, as a factor closely related to self-direction and independence, could be a significant promoter of developing a calling in Chinese university students.

In doing so, our study makes several contributions. First, we add to the very limited research on calling antecedents by shedding light on how the development of a calling among university students is related to changes in authenticity. Second, by testing the effect of perceiving a calling on changes in authenticity, this study examines the possibility that a sense of calling can lead to changes in self-perceptions. In fact, using a LCS model, we are able to simultaneously probe the effect of authenticity on changes in calling as well as the reverse effects. Finally, considering that researchers advocate conducting more research on calling in non-Western countries (Duffy & Dik, 2013), this study also contributes to an understanding of how callings develop in a Chinese context.

The Conceptualization of Calling and Authenticity

Scholars have proposed several definitions of calling. Dobrow and Tosti-Kharas (2011) defined calling unidimensionally, as a consuming and meaningful passion people experience toward a domain. Other definitions are multidimensional, typically including some combination of four dimensions. The first dimension refers to the perception of a transcendent summons or guiding force, which can be external (e.g., needs of society or country, family expectations) or internal (e.g., inner passion, strong interests; e.g., Dik & Duffy, 2009; Elangovan et al., 2010; Hagmaier & Abele, 2012). The second emphasizes the alignment of one's calling with a broader sense of meaning and purpose in life (e.g., Dik & Duffy, 2009; Hagmaier & Abele, 2012; Praskova, Creed, & Hood, 2014). The third dimension refers to altruistic or prosocial motivation, representing that individuals with a calling have an intention or tendency of using their work to help others or serve a greater good (e.g., Dik & Duffy, 2009; Hagmaier & Abele, 2012; Praskova, Creed, et al., 2014). Finally, the fourth dimension refers to active engagement or increased effort, and is sometimes framed as an outcome of calling and other times as a defining characteristic (e.g., Elangovan et al., 2010; Praskova, Creed, et al., 2014).

These dimensions have been found in research across diverse cultural contexts (e.g., Kim et al., 2016). Directly relevant for our investigation, in a qualitative study among Chinese

university students, Zhang, Dik, et al. (2015) found these four dimensions when defining calling (i.e., guiding force, meaning and purpose, altruism and active tendency). However, Zhang, Dik, et al. (2015) also noted several differences in the typical sources of calling in a Chinese context compared to notions of a calling from a Western context, for instance a greater emphasis on a sense of duty and collective expectations. Considering these differences, Zhang, Herrmann, Hirschi, Wei, and Zhang (2015) developed a Chinese Calling Scale to measure calling in Chinese university students and empirically verified three dimensions: Guiding force, meaning and purpose, and altruism, that we also apply in this study.

Regarding authenticity, different theoretical frameworks correspond to different definitions of the construct. Kernis (2003) proposed that authenticity is an important component of optimal esteem, a genuine, noncontingent, stable high self-esteem. Kernis and Goldman (2006) further conceptualized authenticity as a four-dimensional construct: the awareness of one's self-relevant feelings and cognitions, an unbiased processing of self-evaluative information, a behavioral consistency, and an openness and honesty in relationships. In the present study, we adopt the definition of authenticity from Wood, Linley, Maltby, Baliousis and Joseph (2008). Drawing from person-centered theory, Wood et al. (2008) conceptualized authenticity using a tripartite conceptualization: self-alienation, authentic living, and accepting external influence. *Self-alienation* is a negatively poled factor of authenticity and refers to an individual's feeling of not knowing oneself, or feeling out of touch with one's true self. It captures the incongruence between conscious awareness and actual experience. *Authentic living* refers to whether an individual can behave and live in a way that expresses or honors the true self. It is considered a positive component of authenticity that further captures the congruence between conscious awareness and behavior. The third component, *accepting external influence*, refers to the extent to which an individual is influenced by other people or believes that one has to conform to the expectations of others. It also represents a negatively poled component of authenticity, capturing the introjection of others' views. Self-alienation, authentic living, and accepting external influence are related but distinct components that jointly represent authenticity. Based on this tripartite conceptualization, Wood et al. (2008) developed a measure (used in the present study) consisting of three subscales that assess each of the components of authenticity described above.

The Dynamic Reciprocal Relation between Authenticity and Calling

Self-alienation and calling. We assume that self-alienation and calling show mutual negative effects over time. Researchers have repeatedly claimed that finding or developing a calling requires self-reflection and a clear awareness of one's true self (e.g., Weiss et al., 2003; Hall & Chandler, 2005; Elangovan et al., 2010). A clear sense of self could hence be regarded as a psychological resource that helps to develop a clearer sense of one's calling. Conversely, self-alienation refers to a lack of understanding of the true self (Wood et al., 2008) and hence represents a lack of psychological resources that help to develop a calling. Thus, people with high self-alienation may experience a decrease in calling over time.

As for the effect of calling on self-alienation, we anticipate that a stronger presence of a calling will decrease one's self-alienation. People with a calling would perceive a strong feeling of meaningfulness (Duffy & Dik, 2013; Zhang, Hirschi, et al., 2015; Zhang, Herrmann, et al., 2015). This meaningfulness may facilitate a deepened understanding of one's self and the world more generally (Steger, 2012). Thus, the presence of a calling might contribute to a better understanding of the self. For example, Hall and Chandler (2005) proposed that calling's effect on career success could lead to an identity shift, such as in the form of more accurate and more favorable self-perception. Elangovan et al. (2010) also proposed that the relation between calling and one's self-perception may be reciprocal in that discerning a calling is not only dependent on self-perceptions but may also influence one's self-perception in return. Thus, one's self-awareness may be strengthened because of the perception of a calling. In sum, we hypothesize:

Hypothesis 1a. An increase in self-alienation relates to a decrease in calling over time.

Hypothesis 1b. Self-alienation predicts a decrease in calling over time.

Hypothesis 1c. Calling predicts a decrease in self-alienation over time.

Authentic living and calling. We posit mutual positive effects between authentic living and calling over time, such that authentic living relates to an increase in calling over time and calling relates to an increase in authentic living over time. Drawing from Elangovan et al. (2010), a calling is developed by actions that embody the convergence of one's ideal, ought, and actual selves after obtaining clarity in one's self-view. This fits well with the authentic living in that one needs to connect self-awareness with actual behavior to enact one's self-view. This enactment may also reflect the courage or confidence to live out one's authentic self in order to develop one's calling (Hall & Chandler, 2005; Steger, 2012). Thus, people who follow their true self by living authentically should be more likely to discern a calling.

Moreover, we hypothesize that strong callings will increase one's authentic living. We reason this change pattern because as a highly meaningful career experience, calling may promote one's confidence and courage to act in a more authentic way (Steger, 2012; Wood, et al., 2008). Indeed, a high level of meaningfulness in life was found to be positively associated with an increase in authentic living (Lenton, Slabu, & Sedikides, 2016). Hence, we expect that people with a strong sense of calling would experience a corresponding increased tendency of living authentically. In sum, we hypothesize:

Hypothesis 2a. An increase in authentic living relates to an increase in calling over time.

Hypothesis 2b. Authentic living predicts an increase in calling over time.

Hypothesis 2c. Calling predicts an increase in authentic living over time.

Accepting external influence and calling. As for the relation between accepting external influence and calling, we also expect a reciprocal negative effect over time. Specifically, an external force has long been recognized as an important source of developing a calling in both Western and Eastern contexts (Duffy & Dik, 2013; Zhang, Dik, et al., 2015). Particularly in a Chinese context, Chinese culture promotes collectivist values that encourage individuals to

prioritize the needs of the collective over their personal needs and even sacrifice personal needs for the collective (Yang, 2009; Zhou et al., 2012; Guan, Capezio, Restubog, Read, Lajom, & Li, 2016). As a result, research shows that external forces can be a salient component in defining a calling in a Chinese context (Zhang, Dik, et al., 2015). Zhang, Dik, et al. (2015) showed in a qualitative study that a small number of Chinese college students reported that their calling was more externalized, meaning they felt a need to set aside their personal career aspirations to pursue a career path that satisfied the preferences of other (influential) people (e.g., parents' expectations).

External, beyond-the-self forces (e.g., duty, family legacy, needs from society or nation, Duffy, & Dik, 2013; Zhang, Dik, et al., 2015) can thus be an important source for developing a calling. However, accepting external influence as a negative indicator of authenticity more specifically refers to the general tendency of accepting influence from other people. A strong reliance on such proximal social influences may be more of a hindrance than a help when developing a calling. Indeed, research reports that reliance on others is negatively related to career self-efficacy and decidedness (Willner et al., 2015), even in a Chinese context (Mau, 2000; Willner et al., 2015). A strong reliance on others when developing one's career may also prevent having more of an intrinsic motivation for a career, which seems to be critical to perceiving a calling (Conway, Clinton, Sturges, & Budjanovcanin, 2015). Thus, we expect that accepting external influence is overall negatively related to developing a calling.

As for the effect of calling on self-alienation, we posit that the presence of a calling will decrease the tendency to accept external influence. Because having a calling is a highly meaningful career experience and thereby plays a critical role in one's life more generally (e.g., Dobrow & Tosti-Kharas, 2011; Zhang, Dik, et al., 2015), individuals may fear losing it (Lane & Mathes, 2018), and refuse attempts from others to influence their career paths and lives more generally. For instance, Dobrow and Tosti-Kharas (2012) found that people who perceive their careers as a calling tend to ignore advice from trusted mentors. Other studies found that people with a calling also showed a tendency to defend and rationalize an overinvesting in work while neglecting non-work roles (e.g., Duffy et al., 2012). In addition, a calling may strengthen one's autonomous motivation (Bunderson & Thompson, 2009; Conway et al., 2015), resulting in a reduced desire to conform to others' expectations. Thus, we expect that calling relates to a decrease in accepting external influence. In sum, we hypothesize:

Hypothesis 3a. An increase in accepting external influence relates to a decrease in calling over time.

Hypothesis 3b. Accepting external influence predicts a decrease in calling over time.

Hypothesis 3c. Calling predicts a decrease in accepting external influence over time.

Method

Participants and Procedure

The data were drawn from a larger project on career development among Chinese students. Data were collected from students attending five comprehensive universities in China.

We first contacted university staff to obtain their support for our survey. With the staff's help, a three-wave data collection was conducted, with each wave approximately six months apart at the beginning of a university term. All assessments were administered as paper-and-pencil questionnaires in class under the supervision of the staff, as a means to reduce the attrition rate. The same classes were assessed at each measurement wave and students were matched across waves with their student registration numbers. No compensation was offered as an incentive at any of the three waves.

A total of 690 questionnaires were distributed at T1, which resulted in a response rate of 91% ($N = 625$) at T1; 56% ($N = 387$) participated again at T2; and 41% ($N = 286$) participated at T3. The final sample consisted of 459 university students who provided responses for at least two time points. Most participants (82%) were female. The sample reported a mean age of 19.50 years ($SD = 1.12$, ranging from 17 to 22 years) at T1; 53% of the participants majored in natural sciences, and 47% majored in social sciences.

Measures

Table 1 shows the reliability coefficients, means, and standard deviations for all measures at all three assessment points.

Calling. The 11-item Chinese Calling Scale (CCS; Zhang, Herrmann, et al., 2015) was used to assess the extent to which an individual perceived a sense of calling. The CCS measures three dimensions: Guiding Force, Meaning and Purpose, and Altruism. The Guiding Force dimension consists of four items and measures the extent to which individuals feel a guiding influence in the development of their careers (e.g., "I feel that I am destined to pursue my future career"). The Meaning and Purpose dimension contains three items and measures the degree to which individuals feel that their careers connect to a broader sense of meaning in life (e.g., "My career is one of the means reflecting my life value."). The Altruism dimension consists of four items and examines the degree to which individuals tend to help others and make a difference in society through their careers (e.g., "I want to do something beneficial to society via my career"). The items were answered on a five-point scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Previous studies have found the scale scores to be highly reliable ($\alpha = .77$ to $.84$ among three independent Chinese university student samples) and to correlate significantly with career decidedness, the clarity of future work self, dispositional hope, the presence of life meaning, and life satisfaction (Zhang, Herrmann, et al., 2015; Zhang, Hirschi, et al., 2017). Zhang, Herrmann, et al. (2015) also reported the convergent validity of scores on this scale by confirming its high correlation with the scores of the Brief Calling Scale (Dik, Eldridge, Steger, & Duffy, 2012). Consistent with previous research with this scale, we herein focus on the higher-order construct of sense of calling, represented by its three subdimensions (e.g., Zhang, Herrmann, et al., 2015; Zhang, Hirschi, et al., 2017).

Authenticity. A Chinese version (Wang, 2015) of the 12-item scale developed by Wood et al. (2008) was administered to measure participants' three components of authenticity: self-alienation, authentic living, and accepting external influence. The subscale of self-alienation

contains four items and measures the degree to which an individual felt he/she do not know the true self (e.g., “I don’t know how I really feel inside”). The subscale of authentic living contains four items and examines the degree to which an individual lives a life following the true self (e.g., “I live in accordance with my values and beliefs”). The third subscale, accepting external influence, consists of four items and measures the extent to which an individual perceives a need to adhere to others’ influence (e.g., “I always feel I need to do what others expect me to do”). The items were answered on a five-point continuous scale that ranged from 1 (*does not describe me at all*) to 7 (*describes me very well*). Wood et al. (2008) reported good test-retest reliability for subscale scores over two weeks (ranging from .78 - .84) and four weeks (ranging from .78 - .81). Wang (2015) reported good internal consistency reliability among Chinese university students ($\alpha = .81$) and adults ($\alpha = .80 - .93$), as well positive associations with self-esteem and relationship satisfaction.

Analytic Approach

To test the proposed hypotheses, we applied a latent change score (LCS) analysis, as suggested by McArdle (2009). The LCS analysis is appropriate to test reciprocal lagged relations of intra-individual change. It combines the advantages of the latent growth curve model with a cross-lagged analysis by allowing testing change patterns across distinct measurement points (McArdle, 2009). That is, LCS captures the overall change pattern which is not possible in a cross-lagged analysis and is more flexible for testing change patterns at distinct intervals than is possible with the latent growth curve model. Figure 1 presents a path diagram of a univariate LCS model. As shown, a latent change score variable (i.e., ΔX_{T1-T2}) is created for the different time lags, capturing the intra-individual change in a construct of interest over the respective time period (McArdle, 2009; Petscher, Quinn, & Wagner, 2016). A latent intercept factor is created for capturing the initial level of the variables. The latent mean slope factor represents the constant change in the variables over time. The β path is autoregressive and expresses proportional change over time. The combination of the constant change and the proportional change indicates the nature of the overall change patterns. For instance, a positive constant change combined with a negative proportional change suggests a mean increase change that is decelerating over time (Petscher et al., 2016). To test the change pattern of two variables, we extended this univariate model to a bivariate LCS model (see Figures 2 to 4). The most important components in this model for our purposes are the coupling parameters γ (i.e., $\text{calling}_{T1} \rightarrow \Delta \text{authentic living}_{T1-T2}$), which indicate how a variable predicts change in another variable over time.

We used Mplus (version 7, Muthén & Muthén, 1998-2012) to conduct the LCS analyses. The constructs were specified as latent variables, which were indicated by their respective items or dimensions: self-alienation (four items), authentic living (four items), accepting external influence (four items), and calling (three dimensions). To assess the model fit, we used several indices. First, the χ^2 -test statistic was applied to evaluate the specified model’s acceptability. Second, several fit indices were used: the comparative fit index (CFI), the Tucker-Lewis index

(TLI), the root-mean-square error of approximation (RMSEA), and the standardized root-mean-square residual (SRMR). It has been suggested that values greater than or equal to .90 for CFI and TLI and values lower than or equal to .08 for RMSEA and SRMR indicate a good fit (Bentler, 1990; Weston & Gore, 2006).

Results

Preliminary Analyses

First, we tested the potential impact of missing data by creating a dummy variable that separated the participants who participated in all three waves from those who participated in only two waves (Little, 2013). A series of *t*-tests (when another variable was continuous) and χ^2 -tests (when another variable was categorical) were conducted. We found that “missingness” was nonsignificantly related to self-alienation, authentic living, accepting external influence, and calling at T1 ($p > .05$), and also was nonsignificantly related to gender ($\chi^2 = 3.70, p > .05$) and study major ($\chi^2 = .21, p > .05$). However, participants with missing waves were significantly younger ($M = 19.30$ vs. $19.77, t = -4.50, p < .001$). Adopting this method, we also created a dummy variable that separated the participants who participated in only T1 with those who participated in at least two waves. We found this missingness pattern was also nonsignificantly related to self-alienation, authentic living, accepting external influence, and calling at T1 ($p > .05$), or to gender ($\chi^2 = 2.59, p > .05$) and study major ($\chi^2 = .05, p > .05$). However, participants who participated only at T1 were slightly older ($M = 19.72$ vs. $19.50, t = 2.21, p < .05$). These results suggest that missingness was not systematically associated with the study variables but with demographic variables, which suggested that the pattern of missingness may be missing at random (MAR; Enders, 2010). Including age as a control variable did not meaningfully change the results and we hence report all results without control variables to increase power and interpretability of the analyses.

We adapted a full information maximum likelihood (FIML) procedure to estimate the missing data. FIML is recommended because it yields less biased estimates than other approaches (e.g., listwise deletion, mean imputation; Enders, 2010). Thus, FIML is particularly preferable for longitudinal studies in which missing data are common (Graham, 2009). Table 1 displays the correlation coefficients of all study variables. As shown, authentic living, and calling were all positively moderately correlated with each other at each time point (from .16 to .37, $p < .01$). However, the correlations of self-alienation and accepting external influence with calling were all close to zero or negative (from -.19 to .01).

Measurement Model and Longitudinal Invariance

To confirm that the study variables were empirically distinct, we compared a four-factor model that distinguished self-alienation, authentic living, accepting external influence, and calling at T1 with a one-factor model in which all indicators loaded onto a single factor. The one-factor model was a poor fit ($\chi^2 = 933.26; df = 90; CFI = .61; TLI = .55; RMSEA = .14; SRMR = .11$). The model fit of the five-factor model was acceptable ($\chi^2 = 239.32; df = 84; CFI = .93; TLI = .91; RMSEA = .06; SRMR = .04$) and significantly better than that of the one-

factor model ($\Delta\chi^2 = 495.78$; $df = 6$; $p < .001$). We also compared the four-factor model with a two-factor model which included an overall authenticity factor and a calling factor at T1. The two-factor model fit the data poorly ($\chi^2 = 723.20$; $df = 89$; CFI = .71; TLI = .66; RMSEA = .13; SRMR = .10) and also significantly worse than the four-factor model ($\Delta\chi^2 = 352.99$; $df = 5$; $p < .001$). These findings supported the construct validity of the study variables and indicated that the constructs were distinct. All items and dimensions displayed loadings on their hypothesized factors of .45 to .82.

Next, a longitudinal invariance analysis was conducted to test whether the measures had the same meaning and structure across time points (Cole & Maxwell, 2003). Metric invariance (factor loading invariance) has been recommended as sufficient to conduct meaningful analyses in longitudinal studies (Cole & Maxwell, 2003; Little, 2013). The baseline model allowed the same indicators to be correlated across time points and also allowed latent study variables to be correlated within each time point (e.g., authentic living at T1 correlated with self-alienation at T1, accepting external influence at T1, and calling at T1). This model showed an acceptable fit ($\chi^2 = 1463.32$; $df = 834$; CFI = .91; TLI = .89; RMSEA = .04; SRMR = .05). Constraining the factor loadings to be equal across time points did not significantly decrease the fit ($\chi^2 = 1476.68$; $df = 856$; CFI = .91; TLI = .90; RMSEA = .04; SRMR = .05; $\Delta\chi^2 = 11.41$; $df = 22$; $p > .05$). This finding indicated that the factor loadings of the study variables were time invariant. Thus, metric longitudinal invariance was supported.

Testing the Univariate LCS Models

Before testing the proposed bivariate LCS models, we first tested the univariate LCS models by examining the change patterns of self-alienation, authentic living, accepting external influence, and calling separately. Before running the LCS models, observed raw scores were transformed to *z*-scores using the means and standard deviations observed at T1. This changes the unit of scores to standard deviations, which may yield more interpretable and meaningful results (e.g., Alessandri, Borgogni, & Latham, 2017). To specify the univariate LCS model we followed the procedure by Petscher et al. (2016); that is, we fixed paths from a latent variable at T_n to the same variable at T_{n+1} (e.g., authentic living_{T1} to authentic living_{T2}) and the paths from a latent change score variable to the same variable at T_{n+1} (e.g., Δ authentic living_{T1-T2} to authentic living_{T2}) to 1. The paths from the latent mean slope factor to the latent change score variables were also all fixed to 1. Finally, the covariance between the latent mean slope factor and the latent intercept factor was estimated freely.

The univariate LCS model of calling showed a good fit to the data ($\chi^2 = 67.06$; $df = 27$; CFI = .96; TLI = .94; RMSEA = .06; SRMR = .05). There was significant declination in calling over time (slope = $-.08$, $p < .01$). The proportional change parameters were significantly negative for calling ($\beta_{T1-T2} = -1.27$, $p < .001$; $\beta_{T2-T3} = -1.30$, $p < .001$), indicating a mean decrease that is decelerating over time. Among authenticity's three subcomponents, the univariate LCS model of authentic living fit the data well ($\chi^2 = 157.82$; $df = 56$; CFI = .92; TLI = .91; RMSEA = .06; SRMR = .07), and the model of accepting external influence yielded a reasonable level

of fit ($\chi^2 = 288.68$; $df = 56$; CFI = .89; TLI = .87; RMSEA = .10; SRMR = .07). However, the model of self-alienation fit somewhat poorly to the data ($\chi^2 = 258.39$; $df = 56$; CFI = .87; TLI = .84; RMSEA = .09; SRMR = .08). There was no significant growth in any of them, self-alienation (slope = .01, $p > .05$), authentic living (slope = -.03, $p > .05$), or accepting external influence (slope = .03, $p > .05$). However, we found significant within-individual change for each variable between each measurement wave. Specifically, self-alienation ($\beta_{T1-T2} = -.72$, $p < .001$; $\beta_{T2-T3} = -.95$, $p < .001$), authentic living ($\beta_{T1-T2} = -.78$, $p < .001$; $\beta_{T2-T3} = -.88$, $p < .001$), and accepting external influence ($\beta_{T1-T2} = -1.23$, $p < .001$; $\beta_{T2-T3} = -1.24$, $p < .001$) all showed a significant within-individual decrease between each of the measurement points.

Testing the Bivariate LCS Models

Next, we examined three bivariate LCS models, pairing calling with each of authenticity's three subcomponents for exploring their dynamic reciprocal relations (Figures 2 to 4). In bivariate LCS models, the critical parameter is the coupling parameter, indicating how a variable relates to a change in another variable over time. The bivariate model of calling with self-alienation fit to the data reasonably well ($\chi^2 = 470.45$; $df = 183$; CFI = .88; TLI = .87; RMSEA = .06; SRMR = .06). As shown in Figure 2, slope of self-alienation was negatively correlated with slope of calling ($r = -.09$, $p < .01$), indicating that participants who increase more in calling express significantly decreases in self-alienation; thus, *Hypothesis 1a* was supported. However, the coupling parameters were nonsignificant for both from self-alienation to calling ($\gamma_{T1-T2} = .03$, *ns*; $\gamma_{T2-T3} = .08$, *ns*) and from calling to self-alienation ($\gamma_{T1-T2} = .14$, *ns*; $\gamma_{T2-T3} = -.13$, *ns*), thus *Hypothesis 1b* and *1c* were not supported.

For the bivariate model of calling with authentic living, it fit well to the data ($\chi^2 = 373.08$; $df = 183$; CFI = .92; TLI = .91; RMSEA = .05; SRMR = .06). The slope of authentic living was positively correlated with slope of calling ($r = .34$, $p < .001$), indicating that participants who increased more in authentic living also increased more in calling, thereby supporting *Hypothesis 2a*. In coupling effects, higher between-person levels of authentic living significantly predicted more within-individual change in calling ($\gamma_{T1-T2} = .45$, $p < .01$; $\gamma_{T2-T3} = .46$, $p < .01$). However, because the latent change score of calling was negative, this means that higher authentic living predicted more of a decrease in calling, failing to support *Hypothesis 2b*. In reverse, higher presence of calling significantly negatively predicted a within-individual change in authentic living ($\gamma_{T1-T2} = -.96$, $p < .001$; $\gamma_{T2-T3} = -.94$, $p < .001$, see Figure 3). Because the latent change scores of authentic living were negative, this means that higher levels of calling predicted less decline in authentic living over time, in line with *Hypothesis 2c*.

Finally, the bivariate model of calling with accepting external influence (Figure 4) also fit the data well ($\chi^2 = 479.84$; $df = 183$; CFI = .90; TLI = .89; RMSEA = .06; SRMR = .06). The slope of accepting external influence was negatively correlated with the slope of calling ($r = -.12$, $p < .01$), supporting *Hypothesis 3a*. In coupling effects, accepting external influence did not predict changes in calling ($\gamma_{T1-T2} = -.02$, *ns*; $\gamma_{T2-T3} = .03$, *ns*); thus, *Hypothesis 3b* was not supported. In reverse, calling significantly predicted a decrease in accepting external influence

in time lag between T1 and T2 ($\gamma_{T1-T2} = .29, p < .001$), but not in time lag between T2 and T3 ($\gamma_{T2-T3} = .09, ns$, see Figure 4), thus providing only partial support for *Hypothesis 3c*.

Discussion

The purpose of this study was to explore the dynamic reciprocal relationship of authenticity and calling among Chinese university students over time. While researchers have long recognized the importance of the “true self” in developing a calling (e.g., Weiss et al., 2003; Elangovan et al., 2010), our study is the first to empirically examine how this relationship unfolds over time. We tested a series of univariate and bivariate LCS models focusing on the reciprocal relationship between authenticity’s three components (self-alienation, authentic living, and accepting external influence) and calling with a three-wave longitudinal design. To our knowledge, this study is the first to examine the dynamic change patterns of how a calling unfolds over time using LCS analysis. The results from the univariate LCS models suggest that calling showed a significant slowing decline over time. This is consistent with prior findings of Dobrow (2013), who found a decreasing change in calling over time among American amateur musicians. These may suggest that a strong calling is difficult to sustain in both Western and Chinese contexts. Regarding the relation of calling to authenticity, university students who increased more in authentic living also increased more in calling. This suggests that the change of authentic living and calling may occur in parallel.

Our results further support the hypothesis that for Chinese university students, a higher level of calling supports authentic living over time, albeit if only by preventing authentic living from declining. This suggests that people with a calling tend to act in a more authentic manner, even despite in an overall downward trend of authentic living. This may be because that a calling can provide meaning in life that can promote confidence and direction to act authentically (Steger, 2012; Lenton, et al., 2016). However, contrary to our hypothesis, we found that higher levels of authentic living predicted a decrease in calling. This challenges the notion that enacting the authentic self benefits one’s calling (Elangovan et al., 2010), and suggests instead that enacting a more authentic self can also inhibit a calling. It may reflect that Chinese university students who act more authentically than others also perceive more cultural pressure to fit within the context and satisfy others’ expectations (Zhang, Everett, Elkin, & Cone, 2012). Indeed, our results showed that higher initial levels of authentic living were associated with a steeper decline in authentic living over time. A pressure for more conformity to environmental expectations might also hamper the emergence of a calling. Given this unexpected finding, future research should continue to explore the potentially complex relation between authentic living and callings within diverse cultural contexts.

As for the reciprocal relation between self-alienation and calling, we found that university students who experienced an increase in self-alienation perceived a decrease in calling. This supports the idea that a clear understanding of one’s true self may serve as a key prerequisite for a strong sense of calling (Hall & Chandler, 2005; Elangovan et al., 2010). However, our results did not support that a high self-alienation predicts a significant change in

calling over time, or vice versa. This suggests that while self-alienation and presence of calling develop in parallel on a within-person level, a higher relative level of calling or self-alienation, respectively, does not meaningfully predict subsequent within-individual changes in the other construct.

Finally, we found that university students who experienced an increase in accepting external influence perceived a decrease in calling. This supports the notion that even in Chinese context, one's tendency of accepting more external influence may inhibit the perception of calling. This may be because the process of discerning a calling leverages intrinsic motivation rather than extrinsic motivation (Conway et al., 2015). We also found partial support for the notion that higher levels of calling predict a decrease in accepting external influence over time. This is consistent with previous cross-sectional findings that people with high calling tend to defend their calling and are less likely to accept external influence (e.g., Dobrow & Tosti-Kharas, 2012; Dobrow & Heller, 2015; Duffy et al., 2012). This may suggest a general strategy of conserving and protecting a calling that applies in both Western and Chinese contexts. That is, because of calling's meaningfulness and significance, individuals may fear losing it (Lane & Mathes, 2018), and refuse attempts from others to influence their career paths and lives more generally.

Limitations and Future Research

This study has limitations that should be acknowledged when interpreting our results. First, the majority of our sample was female. This may bias the results. However, studies in diverse contexts have consistently found no gender difference on the presence of a calling (e.g., Duffy & Sedlacek, 2010; Hagmaier & Abele, 2012; Hirschi, 2011; Zhang, Hirschi, et al., 2015; Zhang, Herrmann, et al., 2015), as was the case in the present sample. In addition, Zhang, Herrmann, et al. (2015) confirmed the gender invariance among Chinese university students of the calling scale used in this study. Still, it would be preferable to recruit a more gender-balanced sample in future research.

Second, our results were based on time lags of six months. Although the current study did support several of our hypotheses, it is possible that shorter (e.g., one or two months) or longer time lags would lead to different results. The developmental course may also differ for different age cohorts. Future research should consider the influence of different time lags on the linkage between calling and its antecedents and outcomes for university student samples, and potentially also explore the interaction of age or developmental stage with the developmental course of a calling and authenticity.

Third, whereas we considered the potential effect of several demographic variables in the current study (i.e., gender, age, and major category), it is possible that other contextual variables, such as family income level, may affect the process of developing a calling. In addition, personality traits such as conscientiousness could have an effect because of the emphasis on a sense of duty in Chinese people's callings (Zhang, Dik, et al., 2015). These variables may need to be considered in the future research.

Finally, our study was conducted in a Chinese sample and context. Although we see this as an important contribution to the international literature on calling, it also means that caution should be applied when generalizing these findings to other contexts. Especially because the calling construct has been deeply rooted in specific cultural contexts (Duffy & Dik, 2013), we advocate more research of calling across diverse cultures.

Practical Implications

This study's results may have implications for career interventions designed to assist individuals in discerning a calling. Because a calling is not easy to develop or pursue (Novak, 1996; Weiss et al., 2003), career counselors would be wise to consider multiple strategies to assist clients in this regard. For example, our results point to a potential benefit of working to enhance authenticity. Although our results could not confirm the expected predictive effects of authenticity on developing a calling, their positively related developmental patterns suggest that considering authenticity and calling in parallel might be beneficial. Thus, when working with clients who want to pursue a calling, counselors could focus on promoting their self-clarity and ability to behave and act according to their sense of true self. This is compatible with the notion to "follow the path with a heart" (Hall & Chandler, 2005) when pursuing a calling. Counselors might help clients to explore their self-view and overarching life themes, perhaps using techniques derived from career construction theory (Savickas, 2013). Finally, our results suggest that counselors should also acknowledge that university students with a strong sense of calling may be less inclined to accept external influences and may instead need greater self-clarity and self-direction. With these points in mind, career counselors could aim to build a virtuous cycle between a sense of authenticity and the perception of a calling that could be fruitfully integrated into calling interventions.

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Table 1

Correlations, Reliabilities, Means, and Standard Deviations of the Assessed Variables

Variables	M	SD	1	2	3	4	5	6	7	8	9	10	11	12
1. Calling T1	3.66	.58	<i>.83</i>											
2. Calling T2	3.61	.52	.48**	<i>.81</i>										
3. Calling T3	3.61	.48	.48**	.55**	<i>.79</i>									
4. Self-alienation T1	3.50	1.17	-.16**	-.13**	-.09	<i>.77</i>								
5. Self-alienation T2	3.47	1.14	-.13*	-.19**	-.11	.47**	<i>.80</i>							
6. Self-alienation T3	3.54	1.06	-.13*	-.19**	-.18**	.34**	.45**	<i>.79</i>						
7. Authentic living T1	4.97	.98	.36**	.20**	.25**	-.34*	-.20**	-.24**	<i>.72</i>					
8. Authentic living T2	4.94	.93	.21**	.33**	.22**	-.24**	-.35**	-.29**	.43**	<i>.73</i>				
9. Authentic living T3	4.86	.85	.22**	.16*	.37**	-.35**	-.31**	-.34**	.40**	.43**	<i>.74</i>			
10. Accepting external influence T1	3.84	1.21	-.10*	-.13*	-.03	.54**	.26**	.27**	-.29**	-.21**	-.16**	<i>.84</i>		
11. Accepting external influence T2	3.87	1.15	-.09	-.12*	.01	.37**	.59**	.40*	-.24**	-.32**	-.16*	.54**	<i>.85</i>	
12. Accepting external influence T3	3.89	1.06	-.08	-.03	-.06	.30**	.40**	.57**	-.12*	-.16*	-.20**	.45**	.52**	<i>.83</i>

Note. Numbers in diagonal in *italic* are the Cronbach's alpha reliability coefficients. $N_{T1} = 459$; $N_{T2} = 387$; $N_{T3} = 286$. * $p < .05$. ** $p < .01$.

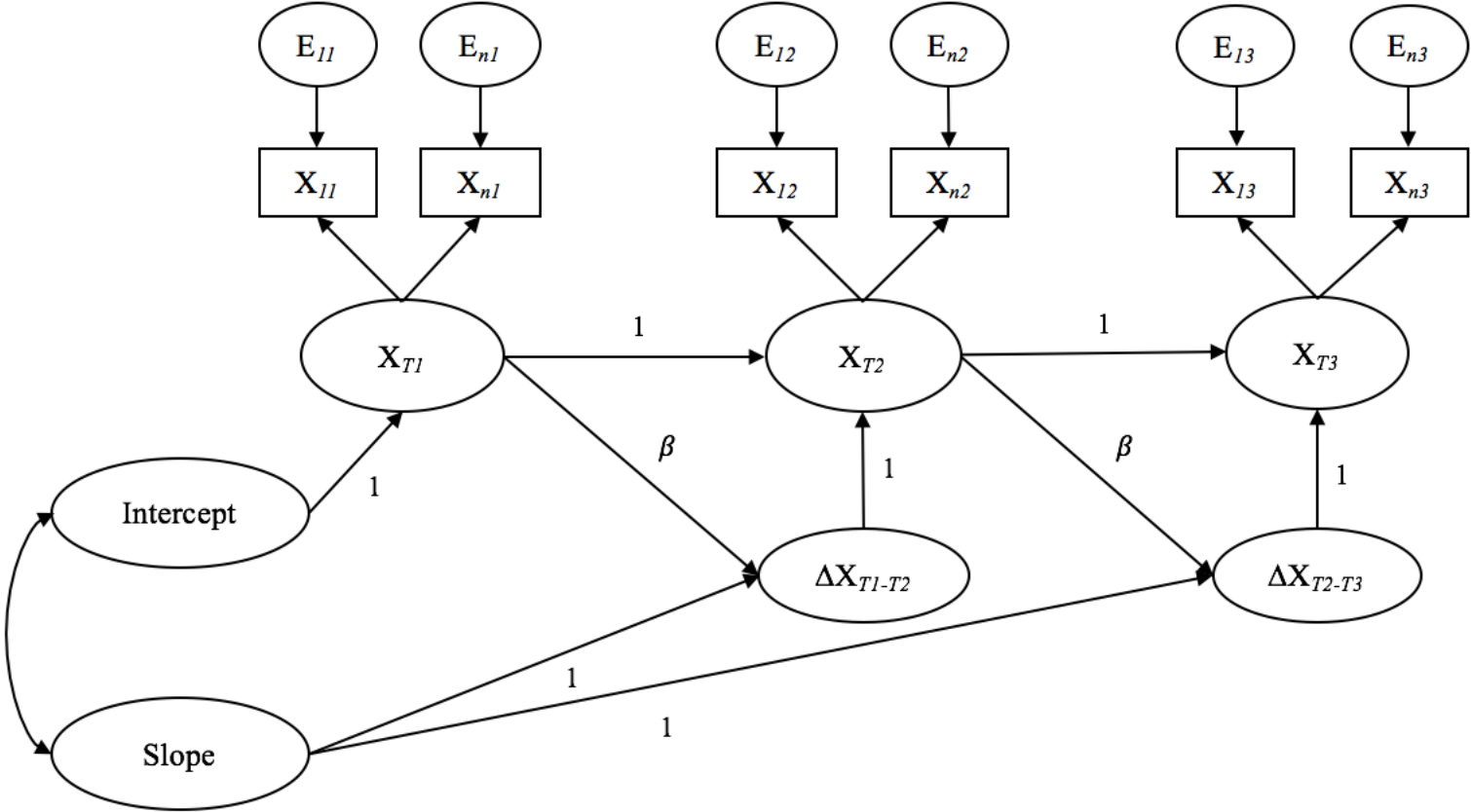


Figure 1. Sample univariate latent change score model. β = proportional change coefficient, ΔX_T = latent change score.

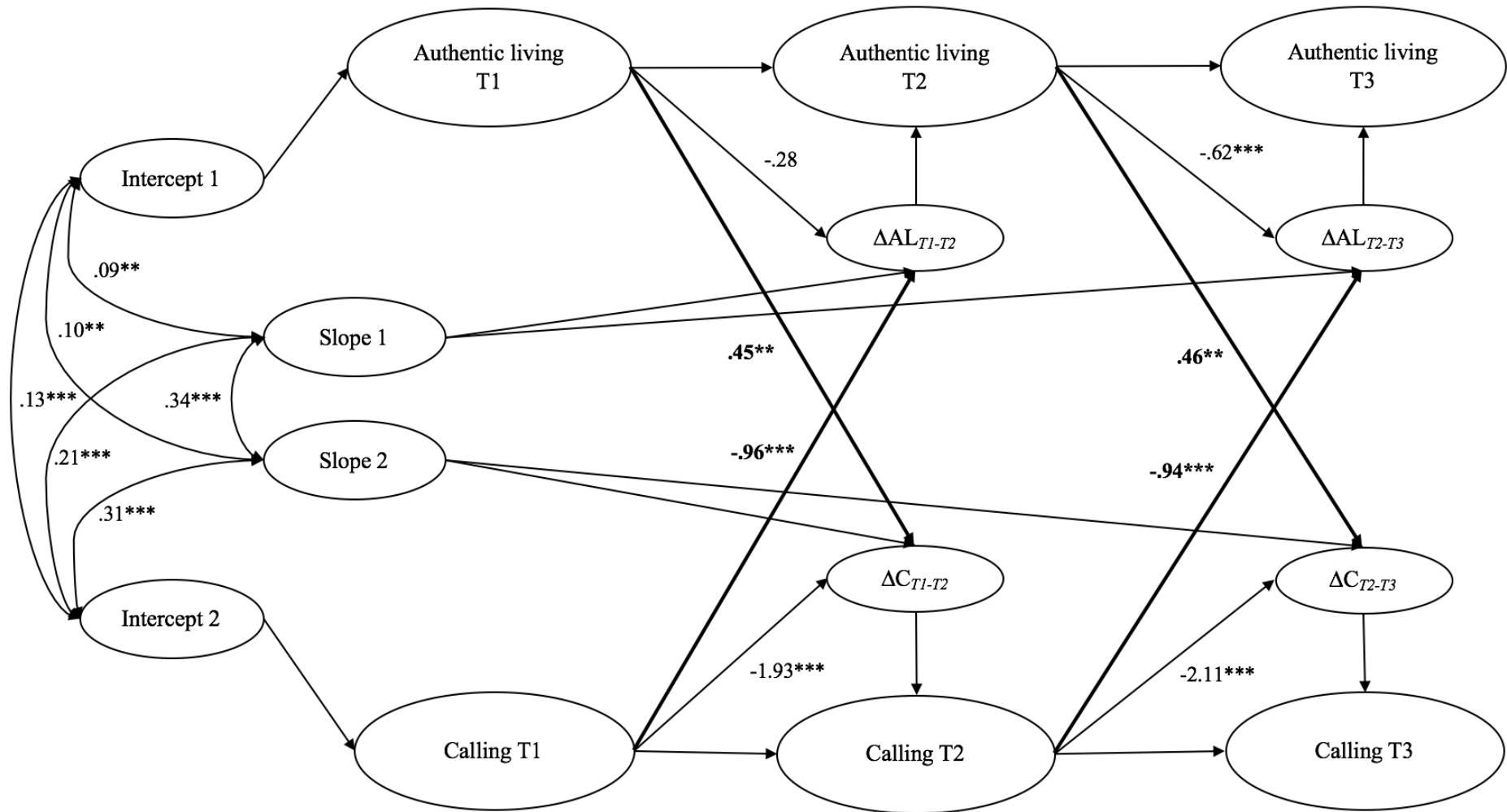


Figure 3. Bivariate latent change score model of authentic living and calling. Unstandardized path coefficients are reported. Paths with no coefficient are fixed to 1. The bold lines and numbers represent the coupling paths and coefficients. * $p < .05$. ** $p < .01$. *** $p < .001$.

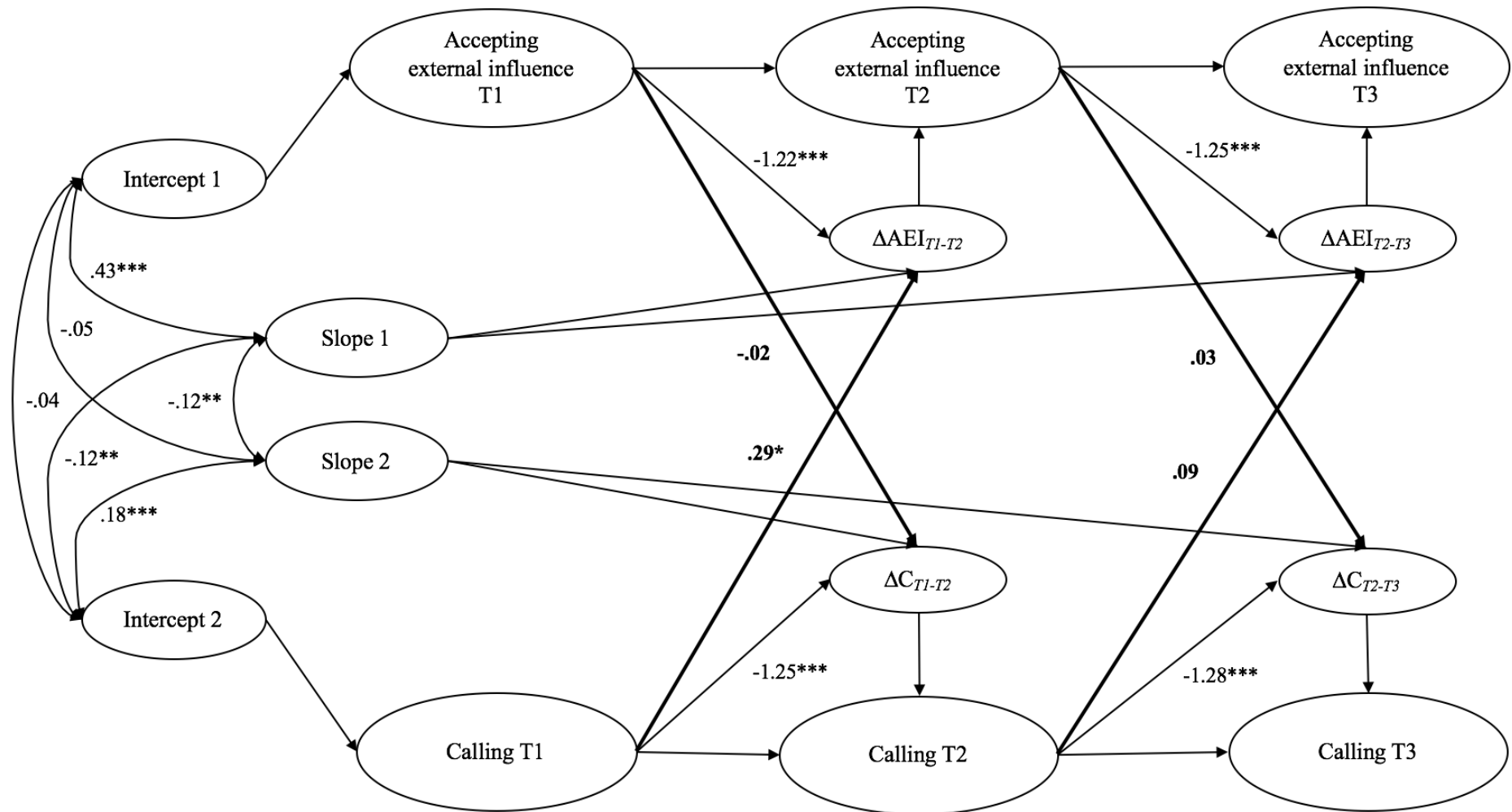


Figure 4. Bivariate latent change score model of accepting external influence and calling. Unstandardized path coefficients are reported. Paths with no coefficient are fixed to 1. The bold lines and numbers represent the coupling paths and coefficients. * $p < .05$. ** $p < .01$. *** $p < .001$.