CHANGES IN GLOBAL AND RELATIONSHIP-SPECIFIC ATTACHMENT WORKING MODELS

BY

KEELY A. DUGAN

THESIS

Submitted in partial fulfillment of the requirements
for the degree of Master of Science in Psychology
in the Graduate College of the
University of Illinois Urbana-Champaign, 2021

Urbana, Illinois

Master's Committee:

    Professor R. Chris Fraley, Adviser
    Associate Professor Daniel A. Briley

ABSTRACT

Attachment theorists suggest that people construct a number of distinct working models throughout life. People develop *global* working models, which reflect their expectations and beliefs concerning relationships in general, as well as *relationship-specific* working models of close others—their mothers, fathers, romantic partners, and friends. The present research investigated the interplay of these different working models over time. I analyzed longitudinal data collected from 4,904 adults (mean age = 35.24 years; SD = 11.63) who completed between 3 and 24 online survey assessments (median test-retest interval = 35 days). Using latent growth curve modeling, I examined the associations among both *long-term changes* and *short-term fluctuations* in participants' working models. The findings suggest that different working models not only change together over the long run, but also exhibit co-occurring, short-term fluctuations. This was true concerning the associations between global and relationship-specific models as well as among different relationship-specific models.

ACKNOWLEDGEMENTS

TABLE OF CONTENTS

CHAPTER 1: INTRODUCTION

A core tenet of attachment theory (Bowlby, 1969) is that people construct *working models*, or mental representations, based on their experiences in close relationships.[1] These cognitive-affective models encompass the expectations and beliefs people hold about themselves and others (Collins et al., 2004). For example, people who are high in *attachment anxiety* tend to have a negative self-view and worry that others will reject or abandon them. People who are high in *attachment avoidance* tend to believe that others are unreliable, and therefore avoid intimacy and dependence on others. The working models people develop are believed to contribute to a multitude of intra- and interpersonal outcomes. Research shows that people with secure working models (marked by low levels of anxiety and avoidance) report higher levels of self-esteem, well-being, relationship satisfaction, and commitment (see Mikulincer & Shaver, 2016).

Attachment scholars propose that people construct a variety of different working models (Collins & Read, 1994), including *global* working models, or expectations and beliefs regarding relationships *in general*, as well as *relationship-specific* working models of close others in their lives (e.g., their mothers, romantic partners, best friends). Although past research has demonstrated that these different working models are distinct, nonredundant constructs (Overall, Fletcher, & Friesen, 2003), research has also revealed that the working models people develop are interconnected, often sharing a number of features with one another. People who are more secure in their relationships with their parents, for example, tend to be more secure in their romantic relationships as well (Klohnen et al., 2005).

---

[1] A version of this document has been accepted for publication in the *Journal of Social and Personal Relationships* (Dugan et al., in press). According to SAGE Publishing's Author Archiving and Sharing Policy (Green Open Access), authors may re-use manuscripts accepted for publication in their thesis.

The interconnectedness among different working models raises an important question: Are *changes* in one kind of working model associated with changes in other working models? Previous research has begun to investigate the degree to which changes in different relationship-specific working models might contribute to changes in global working models of attachment (Pierce & Lydon, 2001; Klohnen et al., 2005). However, these previous studies are limited by methodological constraints (e.g., few assessment waves, cross-sectional data). Additionally, research has yet to examine whether changes in different relationship-specific working models are related to one another.

The present research aims to contribute to the existing literature in several novel ways. First, by analyzing longitudinal data collected from 4,904 individuals across multiple assessment waves, I hope to provide nuanced analyses of different forms of change in attachment. Specifically, I will use latent growth curve modeling to investigate both long-term changes and short-term fluctuations in attachment representations. In this framework, *long-term changes* can be examined by estimating the slopes of people's attachment trajectories across time (i.e., their overall patterns of growth in insecurity), and *short-term fluctuations* can be examined by estimating the extent to which people temporarily deviate from those trajectories (e.g., occasions on which people feel more insecure than usual in their romantic relationships).

Second, I will examine how long- and short-term changes in global working models are associated with changes in relationship-specific working models. By doing so, I can address a key assumption in theoretical perspectives on working models: That changes at one level of the representational hierarchy (e.g., global representations) are associated with changes at other levels of the hierarchy (e.g., relationship-specific representations). Finally, I will also investigate how changes in different relationship-specific working models (e.g., mother-specific and partner-

specific) are related to each other. In each of these cases, I aim to reveal how long-term changes and short-term fluctuations in different attachment working models might reverberate through one's network of attachment representations. The results of this study will hopefully shed light on how changes in working models can propagate across domains, and help to identify which attachment working models should be targeted to promote a greater sense of security overall.

Multiple Attachment Working Models

Attachment scholars originally described working models in a trait-like way, assuming that they were fairly stable and invariant across relational contexts (see Baldwin et al., 1996, for a discussion of this issue). However, later research revealed that people often have different sets of expectations and beliefs for the various relationships in their lives (Baldwin et al., 1996; La Guardia et al., 2000). Such findings highlighted the need for a shift in how attachment working models were conceptualized. It seems that people construct *multiple* working models throughout life based on their experiences with different attachment figures (Collins & Read, 1994).

Attachment researchers have suggested that people's collection of working models can be conceptualized as a hierarchy with three levels of abstraction, as pictured in Figure 1 (Overall, Fletcher, & Friesen, 2003). In this framework, people develop a *global* working model, or a set of beliefs regarding close others *in general*. Nested under the global working model are *domain-specific* working models, which reflect the expectations people have for different relational domains (e.g., parental, peer). Finally, people's *relationship-specific* working models of close others in their lives (e.g., their mothers, fathers, best friends) lie at the bottom of the hierarchy.

Figure 1

Hierarchy of Working Models
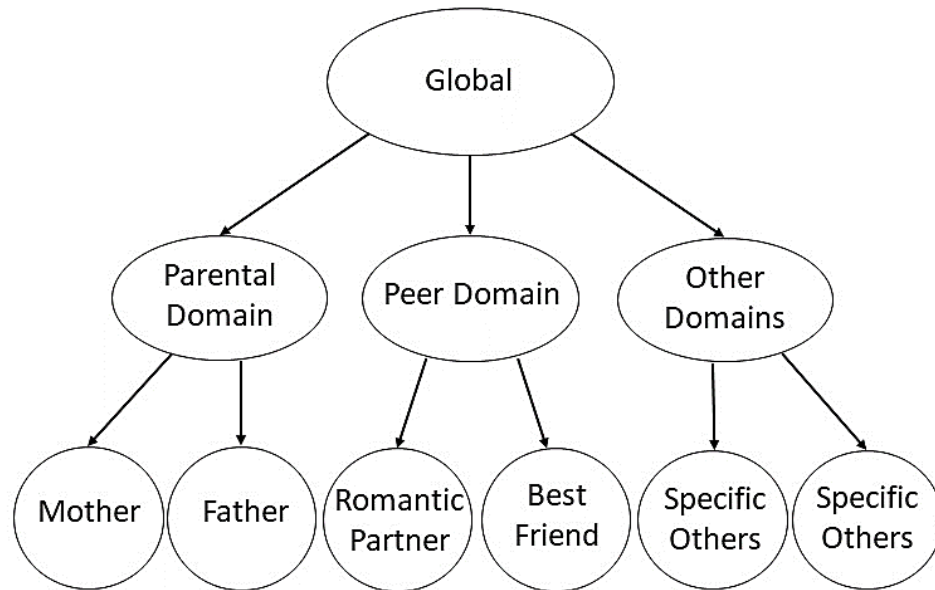
Research has demonstrated that the different working models pictured in this hierarchy are indeed distinct, nonredundant constructs (Cozzarelli, Hoekstra, & Bylsma, 2000). However, previous work has also revealed a certain degree of interrelatedness among people's different attachment representations, with studies consistently finding small to moderate correlations (r ~ .20) among them (e.g., Klohnen et al., 2005).

The connectionist approach to studying attachment, proposed by Fraley (2007), offers one way to explain the interrelations among people's different working models. A connectionist network can be thought of as a collection of neuron-like units linked together by inhibitory and excitatory pathways. In terms of an attachment network, these units might correspond to concepts or episodes that are representative of "warmth," "responsiveness," or "rejection." Through relationship experiences, the network is exposed to patterns of activation. Repeated experiences with a specific close other, such as a romantic partner who is generally warm and responsive, will expose the network to a number of patterns that share common themes ("warm,"

"responsive," etc.). Over time, the network learns the commonalities among these activation patterns and can extract a latent representation—a prototype of the close other. Furthermore, based on the commonalities among different sets of relationship-specific patterns, the network can learn a more abstracted, general representation. Fraley (2007) proposed that, in this way, people can develop relationship-specific and global attachment representations.

The connectionist framework highlights the interconnectivity of different attachment representations. That is, although different working models are "distinct" constructs, they can be conceptualized as prototypical patterns extracted from the same cognitive network. Therefore, the activation of one working model might trigger the activation of other working models. Moreover, changes or "updates" in one working model may have consequences for the other working models in a person's attachment network.

How Might Changes in Relationship-Specific Working Models Be Related to Changes in Global Working Models?

Previous research can lend some insight into the associations we might observe between changes in relationship-specific and global working models. Pierce and Lydon (2001) were one of the first research teams to examine this question longitudinally. Using Bartholomew and Horowitz's (1991) categorical measure of attachment, they assessed college students' ($N = 304$) global and relationship-specific attachment representations (attachment to mother, father, romantic partner, and closest friend) at two time points, separated by an average of four months. Their results suggested that global and relationship-specific working models appear to change together over time. Specifically, they found evidence for *bottom-up* effects, showing that people's relationship-specific working models seem to shape their general working models across time.

However, as Klohnen and colleagues (2005) later pointed out, the inferences that can be drawn from Pierce and Lydon's study are limited. Their use of only two assessment waves and Bartholomew and Horowitz's (1991) categorical measure of attachment, which has demonstrated relatively low test-retest reliability (Baldwin & Fehr, 1995), precludes any conclusions regarding "true" changes in global and relationship-specific attachment working models over time. Furthermore, Klohnen and colleagues emphasized the importance of identifying *which* relationship-specific working models make the greatest contributions to global attachment working models. They sought to answer this question themselves by administering continuous measures of global and relationship-specific attachment to 129 college students. Their results revealed that people's peer attachment representations (partner-specific and best friend-specific) were most strongly associated with their global attachment representations (mean peer-general correlation = .58). People's parental attachment representations were also correlated with their global representations, but to a lesser degree (mean parent-general correlation = .31).

This pattern of results is compatible with work that has shown that many adolescents and young adults transfer their attachment functions from their parents to their peers (Heffernan et al., 2012). That is, they begin to use close friends, and eventually their romantic partners, as the primary sources for fulfilling their attachment needs. It appears that adults' expectations and beliefs regarding relationships in general are more strongly tied to their peer relationships than their parental ones.

Whereas Klohnen and colleagues made impressive strides in disentangling the relations among global and relationship-specific working models, their research involved cross-sectional data, and therefore cannot support inferences about how *changes* in different working models may be related to one another. Nonetheless, their research presents a few possibilities worth

considering. Namely, Klohnen et al.'s findings would suggest that changes in people's global attachment will be strongly associated with changes in their peer attachment representations (partner-specific and best friend-specific), but may only be weakly associated with changes in their parental attachment representations (mother-specific and father-specific).

How Might Changes in Different Relationship-Specific Working Models Be Related to One Another?

Previous research suggests that relationship-specific working models *within the same relational domain* (e.g., parental, peer) tend to be more strongly associated with one another than working models from different domains (e.g., Hudson et al., 2015; Klohnen et al., 2005). For example, Fraley, Heffernan, et al. (2011) administered the Relationship Structures (ECR-RS) questionnaire to 388 adults, obtaining measures of their attachment to their mothers, fathers, best friends, and romantic partners. They found that mother-specific and father-specific attachment were moderately correlated ($r_{anxiety} = .44$; $r_{avoidance} = .40$). However, there were only small correlations between mother- and partner-specific attachment ($r_{anxiety} = .11$; $r_{avoidance} = .12$), and between father- and partner-specific attachment. There was a slightly larger association between attachment to partner and attachment to best friend ($r_{anxiety} = .20$; $r_{avoidance} = .18$).

Although research has yet to examine how changes in different relationship-specific working models are related to one another, the above findings point towards a few possibilities. It seems likely that, among adults, changes in mother- and father-specific attachment will demonstrate the strongest associations with one another, as they belong to the same relationship domain (i.e., parental). Moreover, the experiences that have shaped adults' parental working models (e.g., mother- and father-specific) are most likely to overlap with one another. That is, by

adulthood, people tend to have more memories involving both their parents, than memories involving multiple attachment figures in other relational domains (e.g., friends and partners).

The working models that adults have of their romantic partners and best friends are also often grouped together in a "peer" domain (e.g., Klohnen et al., 2005), defined by attachments to chosen associates. However, during young adulthood, many people begin to spend more time with their partners than their friends (Heffernan et al., 2012), creating a largely unique set of memories and expectations. Therefore, some attachment scholars have proposed that attachments to romantic partners (current and ex-partners) belong to a separate, romantic domain (Overall, Fletcher, & Friesen, 2003). Still, previous research would suggest that changes in partner- and best friend-specific working models will demonstrate somewhat stronger associations with one another (e.g., Fraley, Heffernan, et al., 2011; Hudson et al., 2015).

New Approaches to Studying Change

Research on stability and change in attachment has traditionally focused on the extent to which people change in attachment insecurity across two measurement occasions (e.g., Pierce & Lydon, 2001). Such research can be used to examine whether, relative to Time Point 1, people report a higher, lower, or fairly similar level of attachment insecurity at Time Point 2. As this description implies, research studies that involve two measurement waves can only present a picture of change that is *linear* in nature. Nevertheless, as Girme (2020) has argued, experiences in close relationships are often characterized by "ebbs and flows" of thoughts and emotion—in other words, *nonlinear* patterns of change. Thus, studies that involve only two waves of data might fail to capture the complexity of changes that actually take place.

Indeed, more recent longitudinal research that has collected data on multiple measurement occasions suggests that people demonstrate considerable day-to-day and month-to-

month fluctuations in attachment insecurity (e.g., Fraley, Vicary, et al., 2011; Girme et al., 2018). That is, rather than simply moving up or down on the attachment dimension in question, people tend to deviate stochastically around their trajectories over time, in a way similar to the black line shown in Figure 2.

What implications do these findings have for understanding the ways in which different working models change together? First, considering that people demonstrate substantial within-person fluctuations in attachment insecurity across time, it is critical to distinguish people's long-term patterns of change from their momentary fluctuations. As an example, consider the data in Figure 2. Imagine that a researcher decided to measure this person's level of attachment insecurity at Time 0 and then again four months later (Time 4). If we compare these two data points, it appears as if this person decreased in attachment insecurity over time. Now, imagine that the same researcher instead measured this individual's attachment insecurity at Time 0 and Time 6. If this interval was selected, it would appear as if this person experienced a relatively sharp increase in attachment insecurity.

As this example illustrates, one of the challenges of examining *long-term* changes in attachment is accounting for the fact that the "ebbs and flows" that people experience are not always in a common direction (i.e., people can deviate in positive and negative directions from their overall trajectories). Therefore, to capture people's long-term trajectories, it is necessary to collect data on multiple measurement occasions. Modeling techniques, such as latent growth curve modeling, can then be used to separate people's long-term trajectories from their momentary fluctuations. In Figure 2, the person's long-term trajectory is represented by the blue line, and their short-term deviations from it are represented by the dashed red lines.

9

This example, however, highlights an additional challenge in examining changes in attachment over time. People's deviations from their long-term trajectories of attachment insecurity should not just be treated as error and discarded. A portion of these deviations might be error. But, to the extent to which attachment is measured precisely, some of this "noise" reflects real, short-term change. In Figure 2, we can see that this person has experienced a dynamic pattern of nonlinear change across time (i.e., the black line), which can be decomposed into a long-term trajectory (blue line) and short-term deviations from it (dashed red lines). Thus, to gain a better understanding of the *associations between changes* in attachment across relational domains, it is necessary to examine changes at both the longer time scale (e.g., associations between the slopes of different working models) and the shorter time scale (e.g., associations between the residuals of different working models).

Figure 2

Modeling Change Dynamics
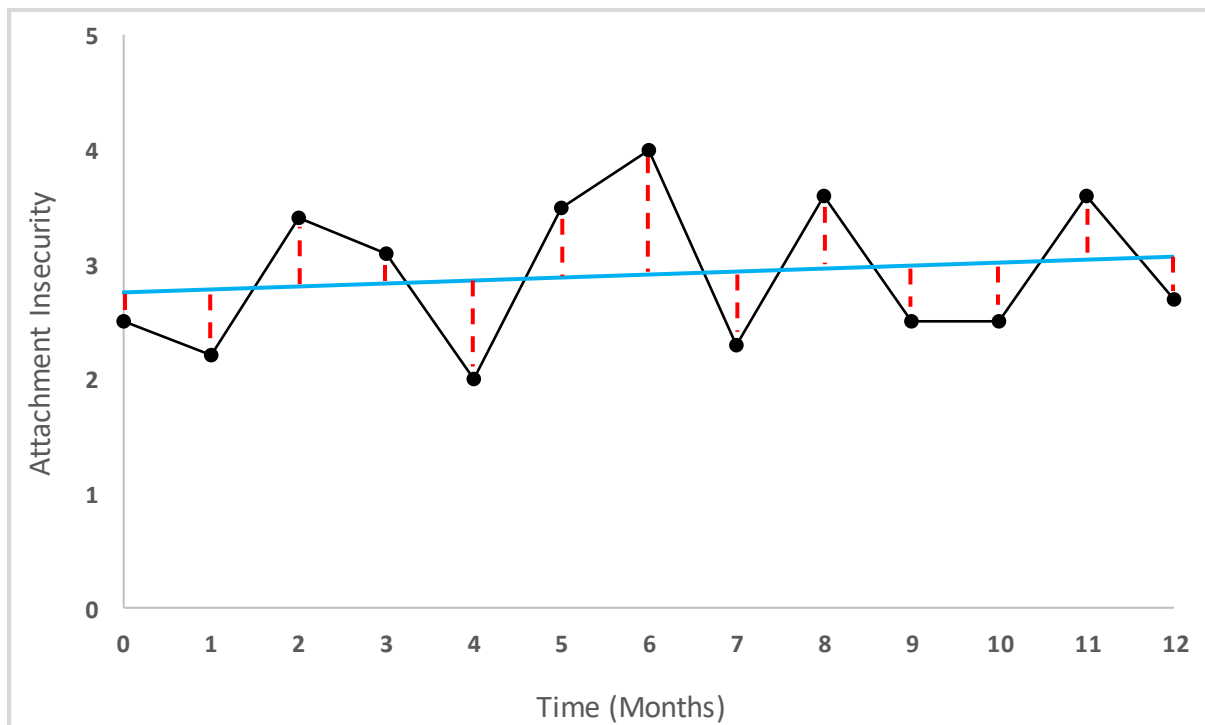
Overview of the Present Research

  The purpose of the present research was to investigate the interplay of different attachment working models over time. Specifically, I examined (1) how changes in people's relationship-specific working models are associated with changes in their global working models, and (2) how changes in people's different relationship-specific working models are related to one another. Additionally, I examined both *long-term changes* and *short-term fluctuations* in attachment working models. As such, the present study not only explored how different working models might change together over the long run, but also how momentary "security shifts" in one working model might reverberate through a person's network of attachment representations.

CHAPTER 2: METHOD

Procedure

The data analyzed in the present research were collected as part of the yourPersonality Project, a broader longitudinal study on attachment, personality, and life events (Fraley, Gillath, & Deboeck, 2020). The original dataset was divided into an exploratory sample ($N = 300$) and a confirmatory sample ($N = 4,920$). I did not obtain access to the confirmatory dataset until after the core analytic plan was pre-registered on Open Science Framework (OSF; https://osf.io/nftj3).

Participants

Participants provided their survey responses via the yourPersonality Project website. They were initially directed to the website based on web search keywords (e.g., "attachment quizzes," "personality tests") which indicated that they were interested in learning more about their attachment styles or personality traits. The website allows people to create a free account by entering their email address and verifying that they are at least 18 years of age. Once users validate their email address, they can fill out surveys on attachment, personality traits, and life experiences. The website provides graphical and text feedback based on their survey responses.

Account users who (1) indicated that they resided in the United States and (2) did not fail any attention-check items were invited via email to participate in a paid research study approximately 30 days after their initial assessment. Those who agreed to participate were asked to complete additional assessments once every 30 days. They were sent email reminders to complete the surveys and paid anywhere between $1 and $8 in Amazon.com credit for each assessment wave completed.

The confirmatory sample initially included 4,920 participants who completed between 3 and 24 assessment waves.[2] After applying the pre-registered exclusion criteria, the analytic sample contained data from 4,904 participants. The average number of waves completed by participants was 9.75 (SD = 5.76). Because some participants did not complete the surveys immediately after receiving the email reminders, the median retest interval (within- and across-people) was 35 days ($Q1$ = 32; $Q3$ = 60). The distribution of the retest intervals was positively skewed with a mean of 60.22 (SD = 66.48).

A majority of participants identified as female (82.26%), with 17.64% identifying as male. The age of participants ranged from 18 to 87 years old, with a mean age of 35.24 years (SD = 11.63; median = 33). At the time of their initial assessments, 39.36% of participants were single, 35.28% were dating, and 25.04% were married. Further demographic information can be found in Table 1.

---

[2] I deviated slightly from the OSF pre-registration by deciding not to exclude participants who were over the age of 65. This exclusion criterion was originally selected to follow suit with the broader longitudinal study from which the data came (i.e., the yourPersonality Project). However, there is no theoretical reason to believe that older individuals should differ from younger individuals in terms of changes in their working models. Also, although the yourPersonality Project required participants to be at least 18 years of age, twelve people who agreed to take part in the study later reported ages under 18. Their data were excluded from the present analyses. As pre-registered, I also excluded four individuals who reported relationship lengths greater than their age.

Table 1

Sample Demographic Information (Based on First Assessment Wave)

	Descriptive Statistic/ Percentage
Age (in years)	$M = 35.24$, $SD = 11.63$
Gender	
Female	82.26%
Male	17.64%
No response	0.10%
Race/Ethnicity	
Asian/Pacific Islander	6.87%
Black	3.28%
Indian or Pakistani	0.73%
Latinx or Hispanic	5.28%
Middle Eastern	0.53%
Native American	0.45%
White	74.55%
Multiracial	4.61%
Other/No response	3.71%
Relationship Status	
Single	39.36%
Dating	35.28%
Married	25.04%
No response	0.33%
Socioeconomic Status (SES)	$M = 5.80$, $SD = 1.72$
Education	
Some high school	0.33%
Currently in high school	0.77%
Completed high school	2.53%
Some college/university	11.19%
Currently in college/university	15.82%
Completed college/university	26.06%
Some graduate/professional school	5.67%
Currently in graduate/professional school	8.79%
Completed graduate/professional degree	28.43%
No response	0.41%

Note. SES was measured using the MacArthur Scale of subjective socioeconomic status (e.g., Kraus, Piff, & Keltner, 2009). Participants were asked to indicate their social status, relative to other people in their country (the United States), using a ladder with 10 rungs. Higher values indicate higher social status.

Measures

Adult Attachment

The Experiences in Close Relationships-Relationship Structures (ECR-RS; Fraley, Heffernan, et al., 2011) questionnaire was used to assess participants' attachment representations at each assessment wave. The ECR-RS is designed to measure one's global attachment representation, as well as four relationship-specific attachment representations: attachment to mother, father, romantic partner, and best friend.[3]

Each section of the ECR-RS contains nine items. Three items assess attachment anxiety (e.g., "I'm afraid that this person may abandon me"), and the remaining six items assess attachment avoidance (e.g., "I don't feel comfortable opening up to this person"). Participants were instructed to rate each item on a scale from 1 (*strongly disagree*) to 5 (*strongly agree*). The items for attachment anxiety and avoidance were averaged separately, producing two composite scores for each domain. Reliability information on the ECR-RS is available in Fraley, Heffernan, et al. (2011).

Data Analysis

All of the primary analyses were conducted in Mplus Version 8.4 (Muthén & Muthén, 2017). First, I fit a series of univariate latent growth curve models to examine participants' overall long-term *growth* in global attachment security as well mother-specific, father-specific, partner-specific, and best friend-specific security. Second, I used bivariate growth curve models

---

[3] Participants were asked to indicate if their mother and father were still alive. If their parent was no longer living, they were not administered the set of items corresponding to that parent. At their initial assessment, 10.83% of participants indicated that their mother was no longer living, and 19.15% indicated that their father was no longer living.

to examine the associations among long-term changes (*slope-slope correlations*) and short-term

fluctuations (*correlations among residuals*) in different working models.

Figure 3

Bivariate Latent Growth Curve Model
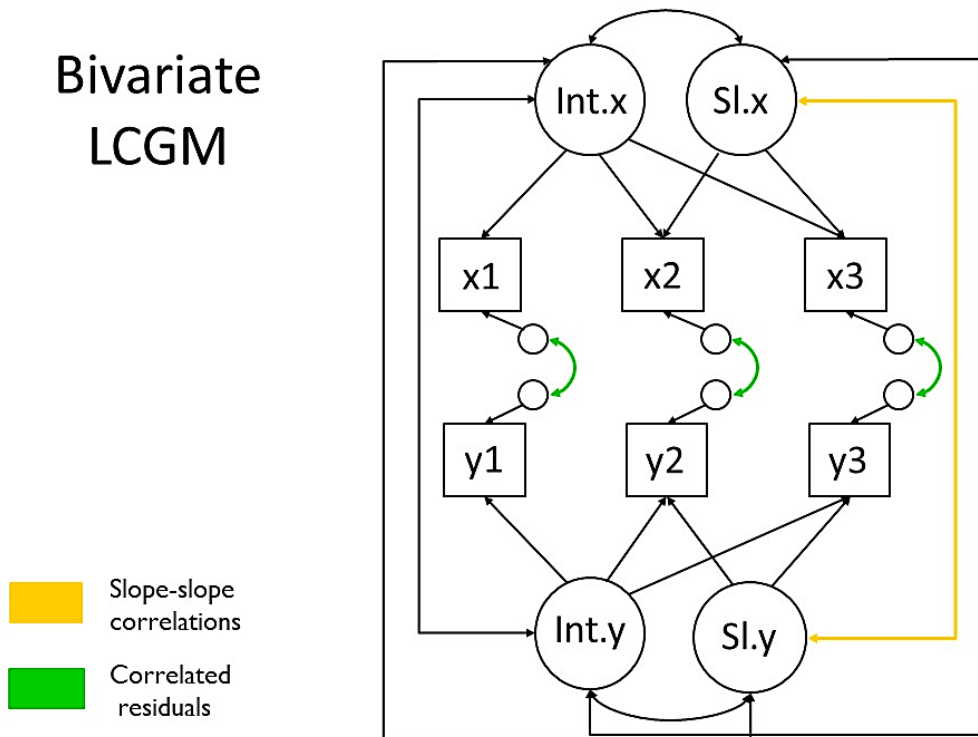
Note. This is an example of a bivariate LGCM model for three waves of data.

Bivariate latent growth curve modeling allows long-term and short-term dynamics to be

modeled in a way that is familiar to behavioral scientists. In this framework (see Figure 3),

people's long-term trajectories in attachment insecurity (the blue line in Figure 2) can be

approximated using linear growth models. Specifically, long-term trajectories are modeled using

latent intercepts and latent slopes. The latent intercepts represent people's initial levels of

attachment insecurity, and the latent slopes reflect their rates of change across time.

As such, associations between *long-term changes* in different working models can be measured as *slope-slope covariances* (see the yellow line in Figure 3). To give an example, if we were to observe a positive correlation between the slopes of people's attachment to their partners and mothers, this would suggest that people who become more secure in their romantic relationships over time also tend to become more secure in their relationships with their mothers over time.

Latent growth curve modeling can also be used to examine the short-term fluctuations in attachment insecurity that people may experience at various points in time. These deviations, or *residuals* (the red dashed lines in Figure 2), give rise to nonlinearities in the observed longitudinal data for any given individual. If the residuals for two variables are correlated (see the green lines in Figure 3), this indicates that, when people deviate from their trajectories in one domain, they also deviate from their trajectories in another. For instance, if the residuals for *attachment to partner* and *mother* are positively correlated, this would imply that, on occasions when people feel particularly insecure in their romantic relationships, they also tend to feel particularly insecure in their relationships with their mothers (and vice versa). This is valuable information because it suggests that part of the "noise" in people's observed trajectories might be accounted for by psychologically relevant processes.

I analyzed all possible pairs of attachment variables, including global attachment with each of the relationship-specific attachment representations, as well as each of the relationship-specific representations paired with one another. In the present analyses, I constrained the covariances among people's residuals at each assessment wave to be equal. By doing so, I was able to derive a single estimate of the association between short-term fluctuations in each pair of attachment representations.

17

Traditional latent growth curve modeling (as conducted in a structural equation modeling framework) assumes that the time intervals between measurement occasions for all participants are equal.[4] This was not the case in the dataset analyzed in the present study. As mentioned previously, the distribution of the retest intervals was positively skewed with a median of 35 days and a mean of 60.22 (SD = 66.48). However, the TSCORES function available in Mplus (Muthén & Muthén, 2017) can properly account for unequally spaced measurement occasions across participants. Specifically, the TSCORES function allows for individually-varying times of observation by specifying time variables. I used the number of days since participants created their online account as the time variable at each assessment wave. This was automatically calculated by the yourPersonality Project website each time that participants made a survey submission. I divided each "days from start" value by 365, changing the scale of the time variable to years for ease of interpretation.

---

[4] Although hierarchical linear modeling (HLM) can also accommodate individually-varying times of observation, an SEM framework is ideal for examining the growth parameters of two outcome variables simultaneously.

CHAPTER 3: RESULTS

Descriptive statistics were calculated in R (Version 4.0.3; R Core Team, 2020). The

means, standard deviations, and correlations among variables measured in the first two

assessment waves are displayed in Table 2. The full correlation matrix, which includes these

variables measured at each of the 24 assessment waves, can be found on the OSF project page

(https://osf.io/tv8d7/).

Table 2

Descriptive Statistics

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1. General Anx. T1	-																			
2. General Avoid. T1	.26	-																		
3. General Anx. T2	.74	.26	-																	
4. General Avoid. T2	.22	.78	.32	-																
5. Mother Anx. T1	.37	.21	.32	.18	-															
6. Mother Avoid. T1	.25	.33	.22	.30	.58	-														
7. Mother Anx. T2	.33	.18	.36	.19	.78	.52	-													
8. Mother Avoid. T2	.22	.29	.24	.33	.54	.88	.57	-												
9. Father Anx. T1	.34	.19	.28	.16	.45	.24	.38	.22	-											
10. Father Avoid. T1	.24	.29	.21	.27	.20	.33	.18	.29	.58	-										
11. Father Anx. T2	.31	.18	.32	.18	.40	.22	.47	.24	.78	.51	-									
12. Father Avoid. T2	.22	.26	.23	.30	.20	.30	.20	.33	.55	.86	.56	-								
13. Partner Anx. T1	.60	.15	.51	.13	.22	.15	.19	.12	.22	.16	.20	.13	-							
14. Partner Avoid. T1	.20	.42	.18	.38	.12	.16	.11	.14	.11	.13	.10	.12	.41	-						
15. Partner Anx. T2	.50	.16	.59	.20	.20	.14	.23	.15	.18	.13	.22	.15	.72	.36	-					
16. Partner Avoid. T2	.15	.33	.20	.39	.10	.12	.14	.14	.07	.09	.11	.11	.32	.69	.46	-				
17. Friend Anx. T1	.43	.28	.40	.24	.27	.18	.24	.16	.26	.20	.23	.16	.26	.14	.22	.10	-			
18. Friend Avoid. T1	.18	.46	.19	.42	.13	.15	.11	.13	.14	.16	.12	.15	.07	.20	.09	.15	.50	-		
19. Friend Anx. T2	.36	.24	.42	.25	.21	.13	.26	.14	.23	.17	.27	.18	.21	.11	.25	.12	.70	.39	-	
20. Friend Avoid. T2	.15	.38	.19	.43	.09	.12	.11	.14	.12	.16	.14	.19	.06	.16	.08	.17	.42	.70	.53	-
Mean	3.37	2.68	3.27	2.67	1.95	3.08	1.91	3.05	2.14	3.32	2.08	3.29	3.03	2.21	2.91	2.17	2.05	1.99	2.08	2.07
SD	1.05	.80	1.06	.79	1.07	1.17	1.05	1.17	1.13	1.11	1.09	1.11	1.23	.83	1.19	.83	1.00	.74	.98	.77

20

Longitudinal Trends in Attachment

I fit a series of univariate latent growth curve models in Mplus (Version 8.4; Muthén & Muthén, 2017) to assess the longitudinal patterns of change for each attachment representation: global, mother-specific, father-specific, partner-specific, and best friend-specific attachment. Attachment anxiety and avoidance were modeled separately. Because I used the TSCORES function in Mplus to account for individually-varying times of observation in the analytic dataset, traditional fit statistics could not be calculated for the univariate models. However, the output files for all of the models can be viewed on the OSF project page.

The unstandardized parameter estimates from the univariate analyses are summarized in Tables 3 (anxiety) and 4 (avoidance). Overall, the results suggest that participants generally became more secure over time. In terms of both their global and relationship-specific attachment representations, participants showed significant decreases in attachment anxiety and avoidance. The only attachment representation that did not follow this trend towards greater security was best friend-specific attachment. On average, participants did decrease in best friend-specific anxiety across the study period, but they generally increased in best friend-specific avoidance. There was considerable variance among the slopes of all of the attachment variables measured. This indicates significant variation in the rates at which participants became more or less secure over time.

Table 3

Parameter Estimates for Univariate Latent Growth Curve Models (Attachment Anxiety)

	Estimate	S.E.	Est/S.E.
General attachment anxiety			
Intercept (Mean)	3.215	.015	217.185*
Intercept (Variance)	.864	.016	54.302*
Slope (Mean)	-.364	.010	-36.861*
Slope (Variance)	.202	.011	18.796*
Mother-specific anxiety			
Intercept (Mean)	1.898	.015	126.262*
Intercept (Variance)	.893	.024	36.619*
Slope (Mean)	-.100	.008	-12.674*
Slope (Variance)	.134	.009	14.193*
Father-specific anxiety			
Intercept (Mean)	2.064	.017	124.626*
Intercept (Variance)	.977	.025	38.763*
Slope (Mean)	-.108	.009	-12.274*
Slope (Variance)	.149	.012	12.418*
Partner-specific anxiety			
Intercept (Mean)	2.900	.016	176.396*
Intercept (Variance)	1.102	.020	55.246*
Slope (Mean)	-.344	.011	-30.402*
Slope (Variance)	.295	.016	18.811*
Best friend-specific anxiety			
Intercept (Mean)	2.061	.013	158.598*
Intercept (Variance)	.708	.018	38.550*
Slope (Mean)	-.036	.009	-4.042*
Slope (Variance)	.200	.013	15.695*

Note. $*p < .001$

Table 4

Parameter Estimates for Univariate Latent Growth Curve Models (Attachment Avoidance)

	Estimate	S.E.	Est/S.E.
General attachment avoidance			
Intercept (Mean)	2.658	.011	248.543*
Intercept (Variance)	.502	.010	49.056*
Slope (Mean)	-.100	.006	-17.198*
Slope (Variance)	.076	.004	17.397*
Mother-specific avoidance			
Intercept (Mean)	3.050	.017	176.384*
Intercept (Variance)	1.233	.020	61.546*
Slope (Mean)	-.100	.008	-12.026*
Slope (Variance)	.171	.010	17.512*
Father-specific avoidance			
Intercept (Mean)	3.280	.017	189.899*
Intercept (Variance)	1.108	.020	56.274*
Slope (Mean)	-.112	.008	-13.732*
Slope (Variance)	.143	.009	15.088*
Partner-specific avoidance			
Intercept (Mean)	2.185	.011	201.763*
Intercept (Variance)	.485	.013	36.840*
Slope (Mean)	-.104	.007	-14.257*
Slope (Variance)	.119	.008	15.233*
Best friend-specific avoidance			
Intercept (Mean)	2.061	.011	195.575*
Intercept (Variance)	.450	.012	38.084*
Slope (Mean)	.115	.008	13.684*
Slope (Variance)	.158	.011	14.907*

Note. *$p < .001$

Global and Relationship-Specific Attachment

Next, I examined the interplay between global and relationship-specific attachment representations over time using bivariate latent growth curve models. Attachment anxiety and avoidance were modeled separately. The parameter estimates from these analyses are summarized in Tables 5 (unstandardized) and 6 (standardized).

In these tables, the associations among latent intercepts are included to show the associations between people's initial global attachment security and their security in each specific relationship. These associations exist for non-developmental reasons (see Khan et al., 2020) and are controlled for in estimating slope-slope correlations and the correlations among residuals. As described earlier, slope-slope correlations serve as evidence for associated long-term changes, and correlations among residuals of trajectories serve as evidence for co-occurring fluctuations in different attachment representations.

Associated Long-Term Changes in Global and Relationship-Specific Attachment

Long-term changes in each of the four relationship-specific attachment representations measured (i.e., attachment to mother, father, romantic partner, and best friend) were significantly associated with long-term changes in global attachment (see Tables 5 and 6; Slope-Slope Associations/Correlations). That is, people who reported becoming more secure in their relationships with their mothers, fathers, partners, or best friends over time also demonstrated an increase in global attachment security.

I compared the relative strengths of these slope-slope associations by examining the (95%) confidence intervals of the standardized estimates.[5] Non-overlapping confidence intervals

---

[5] The comparisons of the slope-slope correlations and the correlations among residuals were not pre-registered. Additionally, it is important to note that these comparisons are mostly descriptive in nature. Each confidence interval corresponds to a distinct and separate model, even though they are displayed side-by-side. Direct comparisons can only be made among estimates obtained from the same model.

were interpreted as evidence for differences between the parameter estimates calculated. Plots of these comparisons can be found in Figure 4. Long-term changes in partner-specific attachment anxiety demonstrated the strongest associations with changes in global anxiety. This trend was not observed for attachment avoidance.

Associated Short-Term Fluctuations in Global and Relationship-Specific Attachment

Short-term fluctuations in each of the four relationship-specific representations (i.e., attachment to mother, father, romantic partner, or best friend) were significantly associated with short-term fluctuations in global attachment (see Tables 5 and 6; Associations/Correlations Among Residuals). On occasions when people reported feeling particularly insecure in their relationships with their mothers, fathers, partners, or best friends, they also reported feeling particularly insecure in general.

As shown in Figure 5, short-term fluctuations in partner-specific attachment anxiety were most strongly associated with fluctuations in global attachment. However, there were only minor differences among the parameter estimates for attachment avoidance (i.e., as indicated by non-overlapping 95% confidence intervals). Short-term fluctuations in global avoidance were more strongly associated with fluctuations in partner-specific avoidance, as compared to either father- or best friend-specific avoidance. Additionally, short-term fluctuations in global avoidance demonstrated a stronger relationship with fluctuations in mother-specific avoidance, as compared to best friend-specific avoidance.

Table 5

Unstandardized Parameter Estimates for General Attachment with Relationship-Specific

Attachment

	Intercept-intercept associations	Slope-slope associations	Associations between residuals
General attachment anxiety with:			
Mother-specific anxiety	.385*(.015)	.075*(.007)	.034*(.002)
Father-specific anxiety	.382*(.017)	.086*(.008)	.036*(.002)
Partner-specific anxiety	.681*(.017)	.201*(.011)	.107*(.003)
Best friend-specific anxiety	.436*(.014)	.095*(.007)	.046*(.002)
General attachment avoidance with:			
Mother-specific avoidance	.294*(.013)	.051*(.005)	.028*(.001)
Father-specific avoidance	.244*(.013)	.044*(.004)	.023*(.001)
Partner-specific avoidance	.233*(.009)	.047*(.004)	.035*(.001)
Best friend-specific avoidance	.254*(.009)	.052*(.004)	.027*(.001)

Note. *$p < .001$

Table 6

Standardized Parameter Estimates for General Attachment with Relationship-Specific
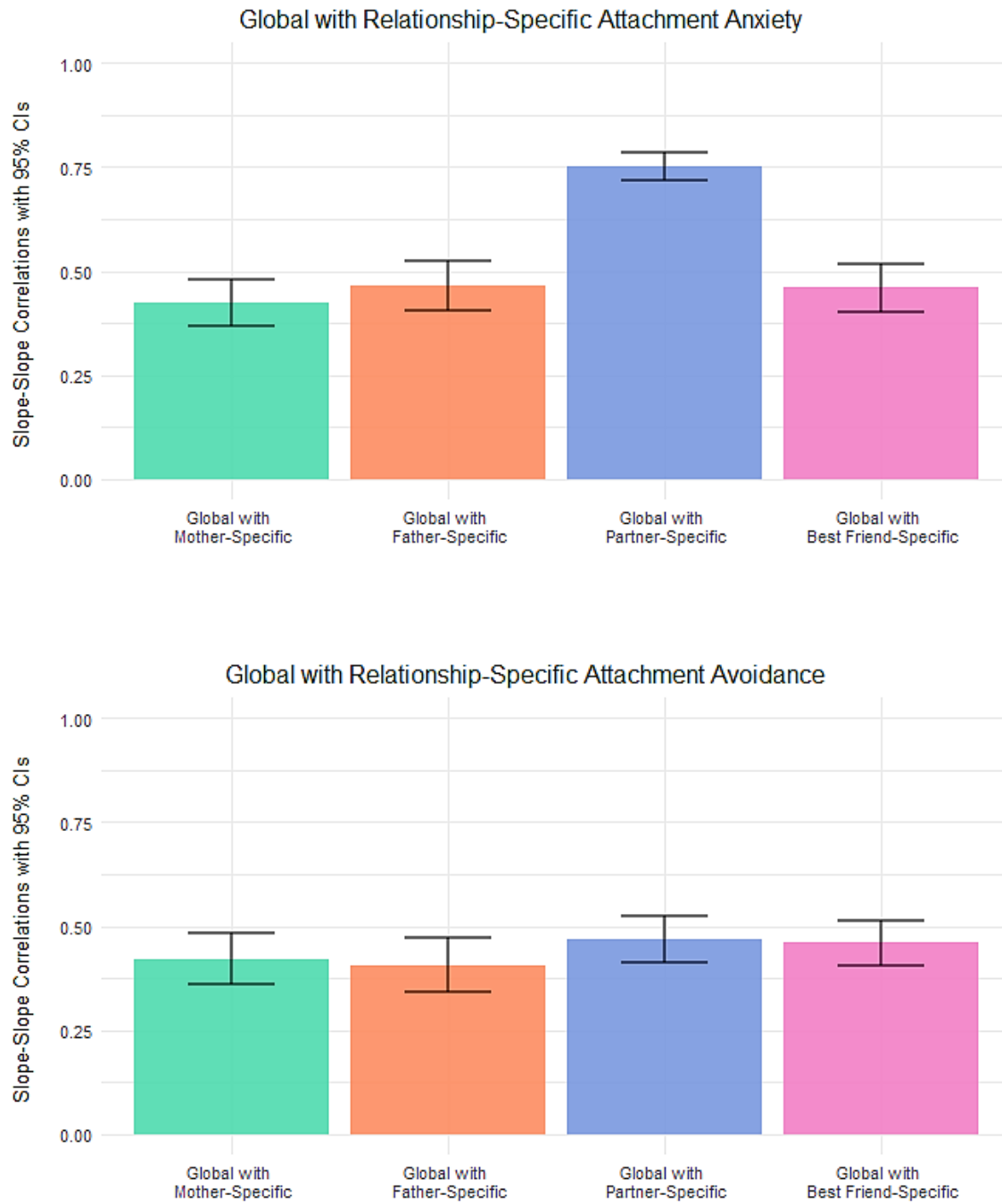
Attachment

	Intercept-intercept correlations	Slope-slope correlations	Correlated residuals
General attachment anxiety with:			
Mother-specific anxiety	.436*(.014)	.424*(.029)	.161*(.007)
Father-specific anxiety	.414*(.015)	.466*(.030)	.160*(.007)
Partner-specific anxiety	.696*(.010)	.751*(.017)	.322*(.007)
Best friend-specific anxiety	.557*(.012)	.460*(.029)	.167*(.007)
General attachment avoidance with:			
Mother-specific avoidance	.372*(.015)	.421*(.031)	.207*(.007)
Father-specific avoidance	.327*(.016)	.406*(.033)	.179*(.008)
Partner-specific avoidance	.471*(.014)	.469*(.029)	.209*(.007)
Best friend-specific avoidance	.536*(.013)	.460*(.028)	.169*(.007)

Note. *$p < .001$

Figure 4

Long-term Correlated Change (Slope-Slope Correlations): Global with Relationship-Specific Attachment

Figure 5

Short-term Correlated Change (Residual Correlations): Global with Relationship-Specific

Attachment

Global with Relationship-Specific Attachment Anxiety

Global with Relationship-Specific Attachment Avoidance

Relationship-Specific Attachment Representations

I next examined whether people's different relationship-specific representations appear to change together over time. To do so, I used bivariate latent growth curve models to analyze each possible pair of relationship-specific attachment representations. The results of these analyses are shown in Tables 7 (unstandardized) and 8 (standardized).

Associated Long-Term Changes in Different Relationship-Specific Representations

Long-term changes in each relationship-specific pair analyzed were significantly associated with one another (see Tables 7 and 8; Slope-Slope Associations/Correlations). People who became more secure in their relationship with one close other (mother, father, partner, or best friend) across the study period also tended to become more secure in their other close relationships. If we compare the 95% confidence intervals of these slope-slope correlations, it appears that long-term changes in mother-specific attachment were most strongly associated with long-term changes in father-specific attachment. This was true for both attachment anxiety and avoidance (see Figure 6).

Associated Short-Term Fluctuations in Different Relationship-Specific Representations

Short-term fluctuations in each relationship-specific pair analyzed were significantly associated with one another (see Tables 7 and 8; Associations/Correlations Among Residuals). At times when people reported feeling particularly insecure in their relationship with one close other (mother, father, partner, or best friend), they also reported feeling particularly insecure in their other close relationships. As can be seen in Figure 7, short-term fluctuations in mother-specific attachment were most strongly associated with fluctuations in father-specific attachment. Again, this was true for both attachment anxiety and avoidance.

Table 7

Unstandardized Parameter Estimates for Relationship-Specific Attachment

|	Intercept-intercept correlations	Slope-slope correlations	Correlated residuals
Partner-specific attachment anxiety with:			
Mother-specific anxiety	.253*(.018)	.050*(.007)	.025*(.002)
Father-specific anxiety	.272*(.019)	.062*(.008)	.027*(.002)
Best friend-specific anxiety	.293*(.015)	.064*(.009)	.038*(.002)
Mother-specific attachment anxiety with:			
Father-specific anxiety	.482*(.022)	.084*(.008)	.052*(.003)
Best friend-specific anxiety	.267*(.016)	.052*(.007)	.023*(.002)
Father-specific attachment anxiety with:			
Best friend-specific anxiety	.280*(.017)	.057*(.007)	.025*(.002)
Partner-specific attachment avoidance with:			
Mother-specific avoidance	.126*(.014)	.025*(.005)	.015*(.001)
Father-specific avoidance	.099*(.014)	.019*(.005)	.015*(.001)
Best friend-specific avoidance	.098*(.009)	.012*(.005)	.019*(.002)
Mother-specific attachment avoidance with:			
Father-specific avoidance	.400*(.022)	.065*(.007)	.037*(.002)
Best friend-specific avoidance	.124*(.013)	.025*(.006)	.016*(.001)
Father-specific attachment avoidance with:			
Best friend-specific avoidance	.142*(.013)	.022*(.006)	.015*(.001)

Note. *$p < .001$

Table 8

Standardized Parameter Estimates for Relationship-Specific Attachment

|	Intercept-intercept correlations	Slope-slope correlations	Correlated residuals
Partner-specific attachment anxiety with:			
Mother-specific anxiety	.253*(.017)	.232*(.032)	.108*(.007)
Father-specific anxiety	.260*(.018)	.278*(.033)	.110*(.007)
Best friend-specific anxiety	.330*(.016)	.254*(.035)	.123*(.007)
Mother-specific attachment anxiety with:			
Father-specific anxiety	.508*(.018)	.539*(.041)	.301*(.011)
Best friend-specific anxiety	.334*(.018)	.299*(.039)	.113*(.008)
Father-specific attachment anxiety with:			
Best friend-specific anxiety	.334*(.018)	.316*(.041)	.119*(.007)
Partner-specific attachment avoidance with:			
Mother-specific avoidance	.163*(.018)	.166*(.035)	.085*(.008)
Father-specific avoidance	.134*(.018)	.139*(.037)	.089*(.007)
Best friend-specific avoidance	.210*(.018)	.085*(.036)	.094*(.007)
Mother-specific attachment avoidance with:			
Father-specific avoidance	.341*(.017)	.389*(.039)	.273*(.010)
Best friend-specific avoidance	.166*(.017)	.145*(.034)	.094*(.008)
Father-specific attachment avoidance with:			
Best friend-specific avoidance	.201*(.018)	.142*(.038)	.093*(.007)

Note. *$p < .001$

Figure 6

Long-term Correlated Change (Slope-Slope Correlations): Relationship-Specific Attachment
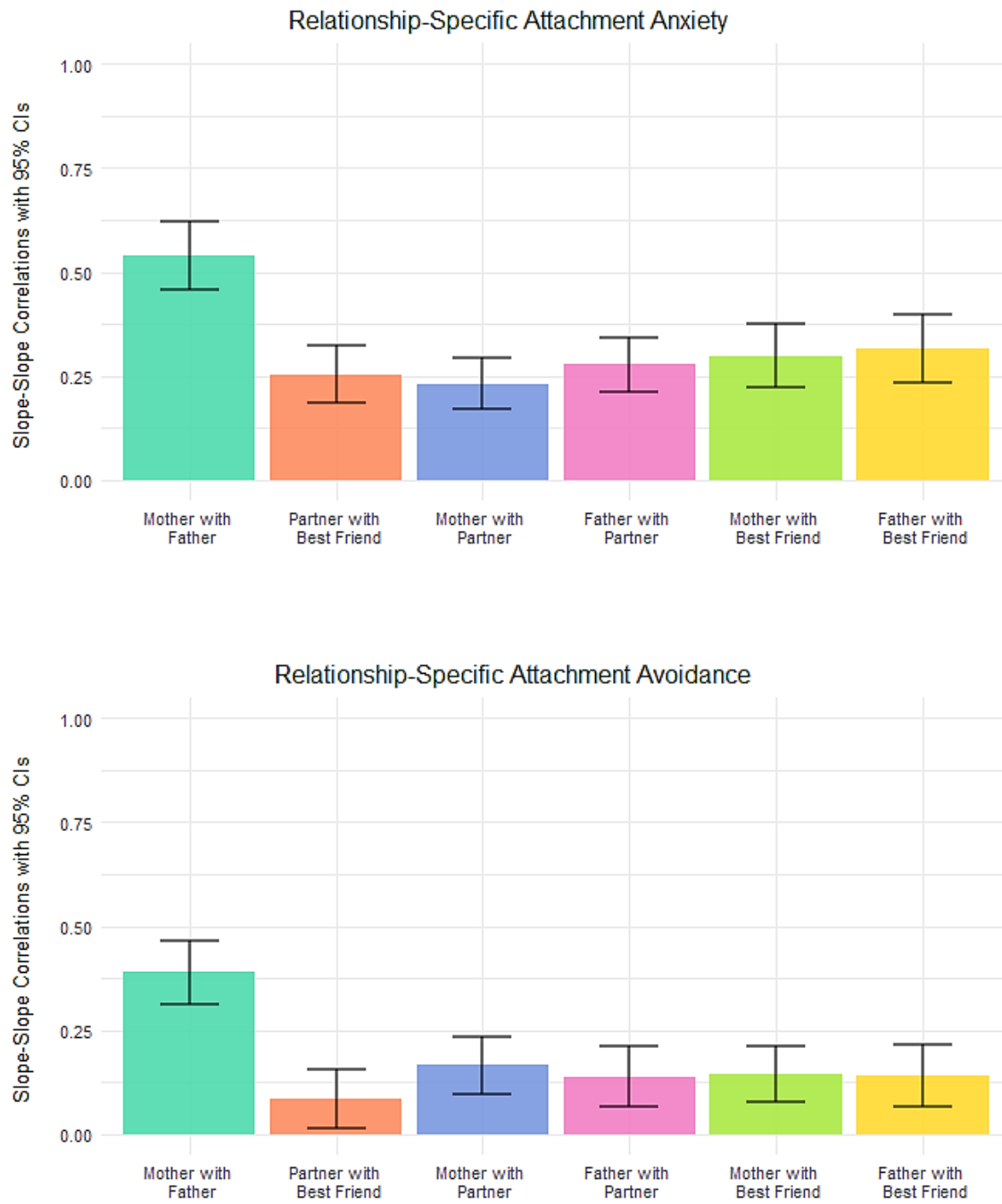
Figure 7

Short-term Correlated Change (Correlated Residuals): Relationship-Specific Attachment
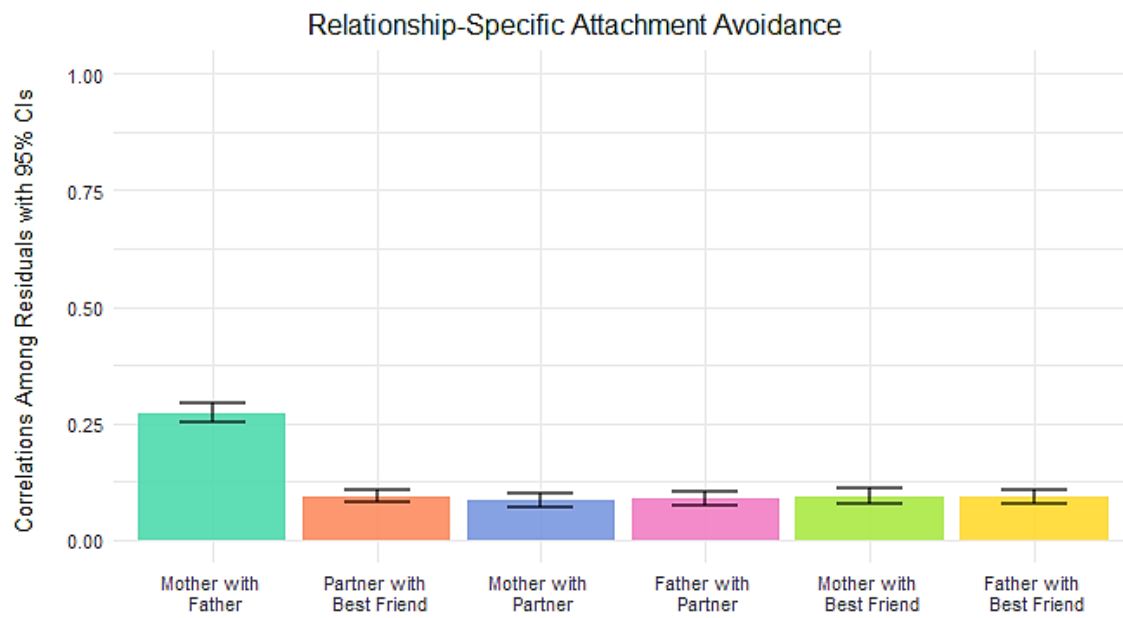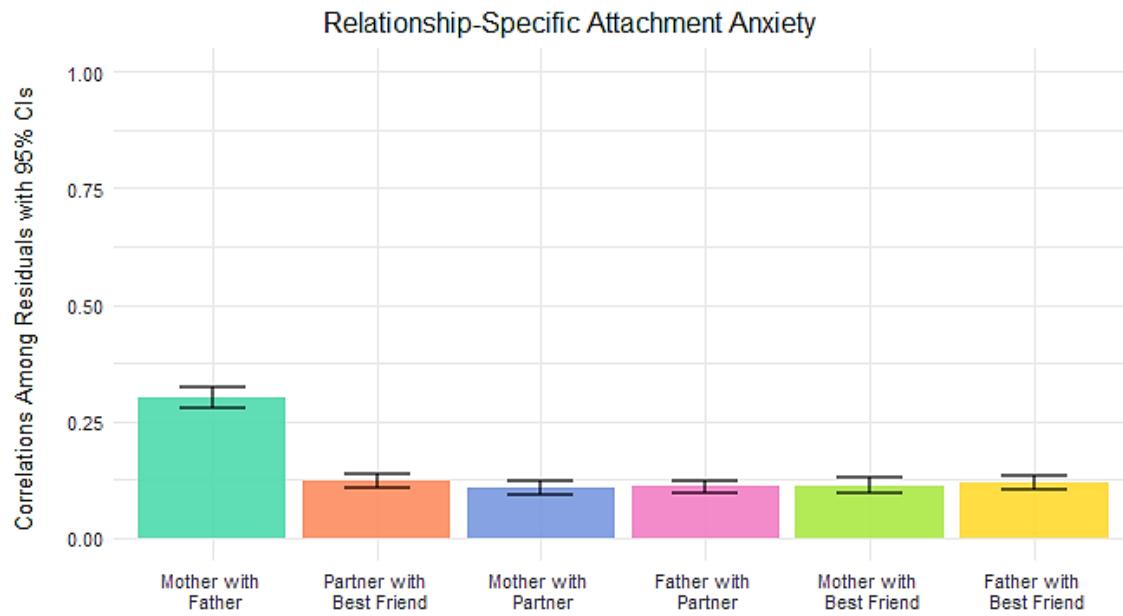
CHAPTER 4: DISCUSSION

The present research investigated the interplay of different attachment working models over time. I examined whether changes in people's relationship-specific working models (i.e., attachment to mother, father, partner, and best friend) are related to changes in their global working models. Additionally, I examined whether changes in people's different relationship-specific working models are related to one another. Using bivariate growth curve modeling, I was able to explore the associations among both *long-term changes* and *short-term fluctuations* in different attachment representations (indicated by *slope-slope correlations* and *correlated residuals*, respectively).

The results suggest that long-term changes in each of the four relationship-specific representations measured (i.e., attachment to mother, father, partner, and best friend) were significantly associated with long-term changes in global attachment. People who became more secure in their relationships with their mothers, fathers, partners, or best friends over time also grew more secure in general. In addition, the results provided evidence for co-occurring fluctuations in people's relationship-specific and global working models. At times when people felt particularly insecure in any of their close relationships, they also reported feeling particularly insecure in general.

I compared the relative strengths of the observed associations by examining the 95% confidence intervals of the parameter estimates. In terms of both long-term changes and short-term fluctuations, partner-specific attachment anxiety demonstrated the strongest associations with general attachment anxiety. This trend was not observed for attachment avoidance. However, short-term fluctuations in general avoidance were more strongly associated with

fluctuations in partner-specific avoidance, as compared to either father- or best friend- specific avoidance.

Next, the results revealed that people's different relationship-specific working models also appear to change together over time. In general, people who became more secure in their relationship with one close other (mother, father, partner, or best friend) also reported becoming more secure in their other specific relationships. Additionally, on occasions when people reported feeling particularly insecure in any of these close relationships, they also reported feeling insecure in their other specific relationships. Long-term changes in mother-specific attachment (anxiety and avoidance) demonstrated the strongest associations with long-term changes in father-specific attachment. Similarly, short-term fluctuations in mother- and father-specific attachment were most strongly associated with one another.

Implications and Future Directions

Previous attachment research has suggested that the different working models people develop are interconnected to some degree (e.g., Klohnen et al., 2005). The present findings expand this idea into the realm of change. It appears that long-term changes in one attachment working model coincide with long-term changes in the other working models people hold. Moreover, when people experience short-term security shifts in one kind of working model, those fluctuations tend to reverberate through their network of attachment representations.

Although the present study cannot support causal conclusions, it is worth considering potential causal relationships that may underlie these findings. One possibility is that the effects of interpersonal experiences on felt security in one domain could "spill over" into other domains. For example, consider a young adult named Liz who has developed generally secure working models throughout life (e.g., parental, peer, global). If Liz enters into an unhealthy romantic

relationship, she will likely develop an insecure partner-specific working model, believing, for instance, that her partner doesn't really care about her. According to the connectionist framework (Fraley, 2007), different attachment working models can be thought of as prototypes extracted from the same cognitive network. When a particular working model is activated, past relationship experiences which are congruent with that working model—even those which took place in a different relationship domain—become more accessible in one's memory (see Baldwin et al., 1996). Returning to our example, this suggests that, on occasions when Liz feels particularly insecure in her romantic relationship (e.g., following conflict or rejection), memories in which she felt similarly insecure in her other close relationships (e.g., with her parents, friends) will become highly accessible. This idea of spreading activation may help to explain why short-term fluctuations in attachment insecurity seem to reverberate across domains.

Furthermore, research on attachment priming suggests that repeated activation of a particular attachment schema could lead to revisions in working models over time (e.g., Carnelley & Rowe, 2007). If Liz, for example, begins to experience chronic feelings of insecurity due to her romantic relationship, and thus regularly reflects on unpleasant memories in her other close relationships, her overall impression of those relationships (and relationships in general) may change over time.

On a more optimistic note, these cascading effects could work in beneficial ways too. For instance, people who participate in therapy that aims to revise the way they approach relationships in general might experience positive changes in each of the close relationships in their lives. Similarly, interventions that are designed to enhance people's sense of attachment security in a particular relationship, such as the strategies developed by Arriaga and colleagues (2018) for romantic partners, may have even more far-reaching benefits than once assumed.

Future work on security-enhancing interventions that target a particular attachment relationship should consider examining subsequent changes in people's other working models as well.

Another potential explanation of the present findings is that external factors may change over time in ways that lead to correlated changes in multiple working models. Stress, for instance, could change over time in ways that undermine security in several attachment relationships simultaneously. It is also possible that certain life events, such as moving away from home or starting a new job, have the potential to impact people in ways that reverberate across their various relationships. These are all intriguing possibilities worth studying in their own right. Moreover, they highlight an important point: It is possible for working models in various domains to change together even if changes in one domain are not causing changes in another.

The present work can also lend insight into the relative strengths of the associations among changes and fluctuations in different working models. Based on previous research by Klohnen et al. (2005), it seemed likely that changes in peer working models (partner-specific and best friend-specific) might demonstrate the strongest associations with changes in global attachment. I did find some evidence suggesting that changes in partner-specific and global attachment are most strongly associated with one another. I did not find particularly strong associations, however, among changes in best friend-specific and global attachment.

Why might this be the case? Previous research has demonstrated that, in adolescence and young adulthood, people tend to transfer their attachment functions from their parents to their friends, *and then* to their romantic partners. That is, as people enter into and progress in romantic relationships, they tend to view their partners as their primary attachment figures (Heffernan et al., 2012). Interestingly, whereas Klohnen and colleagues (2005) found that partner- and best

friend-specific attachment were most strongly associated with global attachment in their study, they also found that romantic relationship length moderated these associations. Among people in more established romantic relationships, their global representations were more strongly predicted by their partner-specific representations, and their best-friend specific representations tended to become less important.

Considering the relationship status (60% dating/married) and average age of participants in the present study, it seems likely that a greater percentage were involved in established romantic relationships as compared to the typical, college-aged research sample. As a result, participants' partner-specific working models might have been more important for understanding the way they approached relationships in general, and their best friend-specific attachments may have already faded in importance. I would encourage future research to investigate how and when the importance of people's peer (partner- and friend-specific) attachments might change as their romantic relationships progress.

Previous research has also suggested that relationship-specific working models *within the same relationship domain* (parental or peer) might be more strongly tied to one another compared to models from different domains (e.g., Fraley, Heffernan, et al., 2011; Hudson et al., 2015). In line with this idea, I found the strongest associations between changes and fluctuations in mother- and father-specific attachment, which both fall under the parental domain. On the other hand, I did not observe particularly strong associations between partner and best friend-specific attachment representations, which are often grouped together as peer working models (i.e., attachments to chosen associates).

Nonetheless, I do not believe the present findings indicate that relationship domains are irrelevant for understanding the associations between changes in different working models.

As mentioned earlier, some attachment scholars have proposed that attachments to romantic partners (current and ex-partners) belong to a romantic domain, separate from the peer domain (Overall, Fletcher, & Friesen, 2003). It could be the case, for instance, that people's partner-specific attachments become more differentiated from their friend attachments as their romantic relationships progress and grow in personal significance. Other attachment scholars have argued against the idea of a peer domain altogether, claiming that there is too much within-person variability in the way people relate to their close friends (Pierce & Lydon, 2001). The present findings point to the need for greater clarification of attachment domains and which specific working models might belong to those domains. Clarifying these issues will help improve our understanding of the associations between changes in different working models.

Limitations

The present research has several limitations. First, a majority of the participants were White (74.55%) and identified as female (82.26%), which may limit the generalizability of the present findings. I hope that future research of a similar nature will be conducted among more diverse samples and will consider additional demographic characteristics (e.g., sexual orientation, disability) that were not accounted for in this study.

Second, the analytic sample only included residents of the United States. It is important to extend this line of research across cultures to see whether a different pattern of findings would emerge. For instance, in collectivistic cultures, the importance of the family unit is more heavily emphasized, as compared to individualistic cultures like the United States (Sato, 2007). Therefore, in collectivistic cultures, we might observe relatively stronger associations between changes in people's parental working models and changes in their global or partner-specific representations.

Third, although I have interpreted the short-term correlated changes (i.e., the correlated residuals) as likely having substantive causes (e.g., events that lead people to feel more insecure across multiple relational domains), it is also possible that these changes are correlated for non-substantive reasons. That is, measurement errors that occur across different domains could also be correlated. This kind of issue can be clarified in future research that is specifically designed to estimate the reliability of changes in attachment scores (e.g., Xu & Shrout, 2013).

Additionally, the results revealed that there was greater variation among individuals' slopes for attachment anxiety, relative to attachment avoidance, across most of the different working models I examined (the only exception being mother-specific attachment; see Tables 3 and 4). I do not believe this is a statistical artifact, but rather suggests that there is greater variation in the rates at which people change in anxiety (versus avoidance) over time. Still, the greater *variance* among the slopes for attachment anxiety may help to explain the relatively larger slope-slope *covariance* estimates I observed for anxiety, as compared to avoidance.

One final limitation to note is the correlational nature of the present research. Although I discuss potential causal relationships that could explain the findings I observed, causal conclusions cannot be drawn from this study. It is important to be clear that there are many potential explanations for the patterns observed here. For example, it could be the case that, following the principles of spreading activation, changes in one representational model actually cause connected representations to change as well. Alternatively, it could be the case that whatever factors lead to a change (e.g., moving, breaking up) in one relational domain are also responsible for changes in another relational domain without any specific causal effect of one representation on another. Further research is needed to tackle the specific causal possibilities that may explain the correlational patterns reported here.

In closing, the present findings suggest that the different attachment working models people hold tend to change together—both over the long run and with respect to short-term fluctuations. I hope that further research on this topic will be conducted in order to reveal how we can best promote and maintain an overall sense of attachment security.

REFERENCES

Arriaga, X. B., Kumashiro, M., Simpson, J. A., & Overall, N. C. (2018). Revising working

models across time: Relationship situations that enhance attachment security.

Personality and Social Psychology Review, 22(1), 71-96.

https://doi.org/10.1177/1088868317705257

Baldwin, M. W., & Fehr, B. (1995). On the instability of attachment style ratings. *Personal

Relationships, 2*(3), 247-261. https://doi.org/10.1111/j.1475-6811.1995.tb00090.x

Baldwin, M., W., Keelan, J. P. R., Fehr, B., Enns, V., & Koh-Rangarajoo, E. (1996). Social-

cognitive conceptualization of attachment working models: Availability and accessibility

effects. *Journal of Personality and Social Psychology, 71*(1), 94-109.

https://doi.org/10.1037/0022-3514.71.1.94

Bartholomew, K., & Horowitz, L. M. (1991). Attachment styles among young adults: A test of a

four-category model. *Journal of Personality and Social Psychology, 61*(2), 226-244.

https://doi.org/10.1037/0022-3514.61.2.226

Bowlby, J. (1969). *Attachment and loss, Vol. 1: Attachment*. Basic Books.

Carnelley, K. B., & Rowe, A. C. (2007). Repeated priming of attachment security influences

later views of self and relationships. *Personal Relationships, 14*(2), 307-320.

https://doi.org/10.1111/j.1475-6811.2007.00156.x

Collins, N. L, Guichard, A. C., Ford, M. B., & Feeney, B. C. (2004). Working models of

attachment: New developments and emerging themes. In W. S. Rholes & J. A. Simpson

(Eds.), *Adult attachment: Theory, research, and clinical implications* (pp. 196-239).

Guilford Press.

Cozzarelli, C., Hoekstra, S. J., & Bylsma, W. H. (2000). General versus specific models of

attachment: Are they associated with different outcomes? *Personality and Social Psychology Bulletin, 26*(5), 605-618. https://doi.org/10.1177/0146167200267008

Dugan, K. A., Fraley, R. C., Gillath, O., & Deboeck, P. R. (in press). Changes in global and relationship-specific attachment working models. *Journal of Social and Personal Relationships*.

Fraley, R. C. (2007). A connectionist approach to the organization and continuity of working models of attachment. *Journal of Personality, 75*(6), 1157-1180. https://doi.org/10.1111/j.1467-6494.2007.00471.x

Fraley, R. C., Gillath, O., & Deboeck, P. R. (2020). Do life events lead to enduring changes in adult attachment styles? A naturalistic longitudinal investigation. *Journal of Personality and Social Psychology, 120*(6), 1567–1606. https://doi.org/10.1037/pspi0000326

Fraley, R. C., Heffernan, M. E., Vicary, A. M., & Brumbaugh, C. C. (2011). The Experiences in Close Relationships-Relationship Structures questionnaire: A method for assessing attachment orientations across relationships. *Psychological Assessment, 63*(3), 615. https://doi.org/10.1037/a0022898

Fraley, R. C., Vicary, A. M., Brumbaugh, C. C., & Roisman, G. I. (2011). Patterns of stability in adult attachment: An empirical test of two models of continuity and change. *Journal of Personality and Social Psychology, 101*(5), 974-992. https://doi.org/10.1037/a0024150

Girme, Y. U. (2020). Step out of line: Modeling nonlinear effects and dynamics in close-relationships research. *Current Directions in Psychological Science*, *29*(4), 351–357. https://doi.org/10.1177/0963721420920598

Girme, Y. U., Agnew, C. R., VanderDrift, L. E., Harvey, S. M., Rholes, W. S., & Simpson, J. A. (2018). The ebbs and flows of attachment: Within-person variation in attachment

undermine secure individuals' relationship wellbeing across time. *Journal of Personality and Social Psychology, 114*(3), 397–421. https://doi.org/10.1037/pspi0000115

Heffernan, M. E., Fraley, R. C., Vicary, A. M., & Brumbaugh, C. C. (2012). Attachment features and functions in adult romantic relationships. *Journal of Social and Personal Relationships, 29*(5), 671-693. https://doi.org/10.1177/0265407512443435

Hudson, N. W., Fraley, R. C., Chopik, W. J., & Heffernan, M. E. (2015). Not all attachment relationships develop alike: Normative cross-sectional age trajectories in attachment to romantic partners, best friends, and parents. *Journal of Research in Personality, 59*, 44-55. https://doi.org/10.1016/j.jrp.2015.10.001

Khan, F., Chong, J. Y., Theisen, J. C., Fraley, R. C., Young, J. F., & Hankin, B. L. (2020). Development and change in attachment: A multiwave assessment of attachment and its correlates across childhood and adolescence. *Journal of Personality and Social Psychology, 118*(6), 1188-1206. https://doi.org/10.1037/pspi0000211

Klohnen, E. C., Weller, J. A., Luo, S., & Choe, M. (2005). Organization and predictive power of general and relationship-specific attachment models: One for all, and all for one?. *Personality and Social Psychology Bulletin, 31*(12), 1665-1682. https://doi.org/10.1177/0146167205278307

Kraus, M. W., Piff, P. K., & Keltner, D. (2011). Social class as culture: The convergence of resources and rank in the social realm. *Current Directions in Psychological Science, 20*(4), 246-250. https://doi.org/10.1037/a0016357

La Guardia, J. G., Ryan, R. M., Couchman, C. E., & Deci, E. L. (2000). Within-person variation in security of attachment: A self-determination theory perspective on attachment, need fulfillment, and well-being. *Journal of Personality and Social Psychology, 79*(3), 367-

384. https://doi.org/10.1037/0022-3514.79.3.367

Mikulincer, M., and Shaver, P. R. (2016). *Attachment in Adulthood: Structure, Dynamics, and Change* (2nd ed.). Guilford Press.

Muthén, L. K., & Muthén, B. O. (1998-2017). Mplus User's Guide. Eighth Edition. Muthén & Muthén.

Overall, N. C., Fletcher, G. J., & Friesen, M. D. (2003). Mapping the intimate relationship mind: Comparisons between three models of attachment representations. *Personality and Social Psychology Bulletin*, *29*(12), 1479-1493. https://doi.org/10.1177/0146167203251519

Pierce, T., & Lydon, J. E. (2001). Global and specific relational models in the experience of social interactions. *Journal of Personality and Social Psychology, 80*(4), 613-631. https://doi.org/10.1037/0022-3514.80.4.613

R Core Team. (2020). *R: A language and environment for statistical computing*. R Foundation for Statistical Computing. http://www. R-project. org/

Sato, T. (2007). The Family Allocentrism-Idiocentrism Scale: Convergent validity and construct exploration. *Individual Differences Research, 5*(3), 194-200.

Xu, J. H., & Shrout, P. E. (2013). Assessing the reliability of change: A comparison of two measures of adult attachment. *Journal of Research in Personality, 47*(3), 202-208. https://doi.org/10.1016/j.jrp.2013.01.005