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**Exploring the Pathways to Psychological Well-Being: Residential Mobility, Parental  
Sensitivity, and Adjustment in Emerging Adults**

### Abstract

This study investigated the impact of parental sensitivity on emerging adults' psychological well-being. Using a moderated mediation model, it explored how adjustment (prosocial and aggressive behavior) mediates the association between parental sensitivity and psychological well-being for mothers and fathers. Additionally, residential mobility was examined as a moderator in the relationship between parental sensitivity and adjustment. A sample of 445 emerging adults ( $M_{age} = 21.46$ ,  $SD_{age} = 2.33$ ) reported the number of their past moves and rated their parents' sensitivity, their adjustment, and their psychological well-being. Results revealed that high maternal sensitivity positively predicted psychological well-being through increased prosocial behavior. This indirect relationship was significant only among individuals with lower levels of residential mobility. This pattern was not observed with paternal sensitivity, and the model yielded insignificant results for aggressive behavior. These findings highlight the significance of early maternal sensitivity in influencing the adjustment and psychological well-being of emerging adults.

**Keywords:** emerging adulthood, parental sensitivity, adjustment, psychological well-being, residential mobility

### **Exploring the Pathways to Psychological Well-Being: Residential Mobility, Parental Sensitivity, and Adjustment in Emerging Adults**

How does parental sensitivity, defined as the attitudes and behaviors which include love and acceptance expressed by parents towards their children (Sumer & Gungor, 1999), during childhood impact the psychological well-being of emerging adults? This question beckons a deeper exploration into the complex dynamics shaping an individual's mental and emotional landscape as they transition from adolescence to adulthood. To illustrate, consider the case of Sarah, whose parents consistently showed sensitivity towards her emotional needs, providing a secure and loving environment throughout her childhood. They not only encouraged her to express her feelings but also validated her experiences. Now, as an emerging adult, Sarah navigates life with confidence in her abilities and possesses a strong sense of self-worth, factors that consistently contribute to her overall psychological well-being. Unpacking this example not only allows us to explore the transformative power of parental sensitivity but also prompts a closer examination of the potential mechanisms and boundary conditions influencing the relationship between parental sensitivity and the psychological well-being of emerging adults.

Previous research has shown that parental sensitivity is a crucial determinant of adjustment in childhood (Newton et al., 2014; Wei & Kendal, 2014) and adolescence (Ang, 2006; Francis et al., 2021). For example, early maternal sensitivity predicted higher child prosocial behavior (Newton et al., 2014) and lower child externalizing behavior (Wei & Kendal, 2014). Furthermore, prosocial behavior has been found to be a protective factor of psychological well-being (Hui et al., 2020; Jeong et al., 2022; Miles et al., 2022; Weinstein & Ryan, 2010), while high externalizing behavior has been associated with lower psychological well-being (Kjeldsen et al., 2016). Thus, it is essential to consider fluctuations in positive adjustment (e.g., prosocial behavior) and negative adjustment (e.g., aggressive behavior) as

they might be particularly important in explaining the link with psychological well-being. Furthermore, relatively little is known about the factors that mediate the relationship between paternal sensitivity and psychological well-being in emerging adults. Thus, one of the primary objectives of the present research was to examine the mediating role of prosocial and aggressive behavior in the relationship between parental sensitivity and psychological well-being in emerging adulthood. The majority of research examining the effects of parental sensitivity on adjustment has predominantly concentrated on maternal sensitivity (e.g., Pastorelli et al., 2015). However, this current study seeks to provide a more comprehensive understanding by investigating the effects of both maternal and paternal sensitivity on the outcomes under study.

However, it is crucial not to limit childhood experiences solely to relationships with parents. Major life experiences such as residential mobility, defined as “the number of residential moves an individual experienced during a certain period of time or expects in the future” (Oishi, 2010, p. 6), also play a vital role in individuals’ adjustment and their psychological well-being. Although previous research has demonstrated a link between residential mobility and adjustment (Haynie & South, 2005; Oishi et al., 2007; Parente & Mahoney, 2009) and psychological well-being (Anderson et al., 2014; Jolleyman & Spencer, 2008; Tseliou et al., 2015), there is a lack of research exploring whether residential mobility moderates the relationship between early experiences with parents and adjustment as well as the link between early life experiences and psychological well-being. Therefore, the second purpose of the present research was to test a moderated mediation model. This model posits that the association between early parental sensitivity and the psychological well-being of emerging adults is mediated by their prosocial and aggressive behavior, and that this mediation is further moderated by their past history of residential mobility.

### **Parental Sensitivity and Psychological Well-Being**

Parental sensitivity is an important component of attachment security (Posado et al., 2002; Finger et al., 2009). According to attachment theory (Bowlby, 1969), the bond established between a primary care-giver, usually the mother, and child serves to provide a secure base for the child. Previous studies have shown that attachment security is positively associated with positive psychosocial adjustment in children and adolescents (e.g., Oldfield et al., 2016; Waters et al., 2010). For example, Pastorelli et al. (2015) found a positive relation between maternal sensitivity and prosocial behavior in children. Moreover, previous studies have indicated that secure attachment and both maternal and paternal sensitivity are advantageous for psychological well-being during emerging adulthood (Armsden & Greenberg, 1987; Guarnieri et al., 2015; Kumar & Mattanah, 2016; Love & Murdock, 2004; van Wel et al., 2000; Weisskirch, 2018). In other words, individuals who have secure attachment with their parents in childhood tend to have higher psychological well-being in emerging adulthood. For example, Yamawaki et al. (2011) found that both maternal and paternal care are predictors of higher psychological well-being in emerging adulthood. Consistent with these findings, in a retrospective study, fathers' sensitive (mother sensitivity was not measured) and involved behaviors towards their children during adolescence positively predicted their children's psychological well-being in emerging adulthood (Allgood et al., 2012). This suggests that secure and sensitive relationships with both mothers and fathers may support psychological well-being not only in childhood and adolescence but also in emerging adulthood. These findings indicate that the effects of parenting practices, including acceptance and sensitivity, are not temporary, but have long-term effects on developmental processes. However, little is known about the mediating mechanisms underlying the relationship between perceived parental sensitivity in childhood and psychological well-being in emerging adulthood.

### **Aggression and Prosocial Behavior as the Mediators**

Emerging adulthood is a period in which roles and relationships dramatically change (Arnett, 2007; Kumar & Mattanah, 2016). Nevertheless, relationships with parents still remain significant (van Wel et al., 2000). Thus, it is important to explore the effects of childhood parenting practices during emerging adulthood.

Although there is some evidence showing that both maternal and paternal sensitivity are related to prosocial behavior in children and adolescents (Ferreira et al., 2016), Carlo et al. (2011) found that paternal warmth is less predictive than maternal warmth for prosocial behavior in children and adolescents. Similarly, Soucie et al. (2012) showed that mothers' but not fathers' authoritative parenting (which includes parents' sensitive behaviors towards their children) predicted prosocial engagement in adolescents and emerging adults. When examining the results among emerging adults, perceived positive and sensitive parenting in childhood is mostly related to positive developmental outcomes in emerging adulthood. For example, authoritative parenting from both mother and father, which is characterized by caring and sensible behaviors towards children, is associated with prosocial behavior in emerging adults (Clark et al., 2015). In a similar vein, perceived maternal and paternal acceptance (especially acceptance from fathers) served as a protective factor for risky behaviors (Schwartz et al., 2009), and effective parenting (from both father and mother) was related to low externalizing problems (i.e., low aggressive behavior) in emerging adults (McKinney et al., 2016). Given these findings, it is likely that perceived parental sensitivity may promote prosocial behavior and inhibit aggressive behavior in emerging adults. Based on attachment theory and previous literature, we examined whether parents' sensitive behaviors towards their children were related to aggressive and prosocial behavior during emerging adulthood.

Aggressive and prosocial behavior have been studied not only as outcomes but also as predictors of many psychological constructs. Previous findings showed that aggressive and

prosocial behavior play important roles for psychological well-being (Bartels et al., 2013; Lauri & Calleja, 2019). Aggressive behavior is often associated with negative emotions such as anger (Aydın & Akgün, 2014) and is considered a destructive behavior. Therefore, it is likely to be negatively related to individuals' psychological well-being. On the other hand, prosocial behavior, which is often exhibited to benefit others, can be displayed in different ways such as helping, sharing, and comforting someone in distress (Eisenberg, 1986). According to Batson (2010), when individuals witness someone in distress, they may behave prosocially to reduce the negative arousal they feel. For this reason, individuals who behave prosocially towards someone in distress are likely to have high psychological well-being through reduced feelings of sadness/regulating their own negative emotions.

While the vast majority of research focuses on the relationship between parental sensitivity and its consequences in children and adolescents (e.g., Ang, 2006; Francis et al., 2021; Newton et al., 2014), there has been limited research on this relation as well as possible mediators and boundary conditions, in emerging adulthood. Therefore, the present study aimed to investigate the mediating role of emerging adults' adjustment (specifically, aggressive and prosocial behavior) in the relations between perceived maternal and paternal sensitivity in childhood and psychological well-being during emerging adulthood. We tested these mediated relations separately for mothers and fathers in the current study.

### **Residential Mobility as a Moderator**

Although past work has established parental sensitivity as a critical determinant of adjustment, not all children exposed to low parental sensitivity display high levels of aggressive behavior and low levels of prosocial behavior. It is therefore important to identify moderating variables. Numerous studies have shown that stressful life experiences, such as residential moves, also have significant effects on the behavioral outcomes of children and adolescents (Ackerman et al., 1999; Fowler et al., 2014; Haynie & South, 2005; Parente &



Mahoney, 2009). Whether an individual spends their entire life in one location or undergoes frequent relocations results in substantial differences in life challenges they encounter (Choi & Oishi, 2020; Oishi, 2010). Past work has linked residential instability to problem behaviors in preschool children (Ackerman et al., 1999; Fowler et al., 2014), adolescents (Fowler et al., 2014), and young adults (Fowler et al., 2015). These findings also imply differences in individuals' adjustment and well-being in response to residential mobility.

Theoretically, the adaptive calibration model (ACM; Del Giudice et al., 2011) can explain the critical moderating role of residential mobility on the relationship between parental sensitivity and adjustment. The ACM proposes that the stress response system (SRS) calibrates itself depending on environmental conditions and produces a more adaptive response accordingly. Insensitive parenting (Belsky et al., 1991) and residential instability (Ellis et al., 2009) have been identified as signs of unpredictable environments. According to the ACM (Del Giudice et al., 2011), in an unpredictable and dangerous environment, the SRS calibrates itself by adopting a fast life-history strategy (e.g., early reproduction, high number of offspring with low investment in each, high impulsivity), which is more advantageous in that particular environment. Conversely, in a more predictable and safer environment (in this case, an environment characterized by sensitive parenting and residential stability), the SRS adopts a slow life-history strategy (e.g., delayed reproduction, fewer offspring with higher investment in each, low impulsivity) to increase fitness benefits. Aggression has been identified as a marker of a fast life-history strategy (Lu & Chang, 2019), while prosocial behavior has been linked to a slow life-history strategy (Zhu et al., 2020). Based on the ACM, we would thus predict more aggression in an environment where parental sensitivity and residential stability are low, and more prosocial behavior in an environment with high parental sensitivity and residential security. The current project therefore tested whether

residential mobility moderated the relationship between parental sensitivity and prosocial and aggressive behavior.

Similarly, although parental sensitivity may affect psychological well-being through adjustment, not all individuals who were exposed to low parental sensitivity exhibit low levels of psychological well-being. It is important to explore potential moderators. The present research aims to investigate whether individual differences in residential mobility history moderate the indirect relationship between parental sensitivity and psychological well-being. Several studies have discussed the negative association between frequent moving and the psychological well-being of children and adolescents (Anderson et al., 2014; Humke & Schaefer, 1995; Jelleyman & Spencer, 2008). Furthermore, past work indicates that residential mobility is one of the determinants of psychological well-being in adults (Choi & Oishi, 2020; Oishi, 2010; Oishi & Schimmack, 2010). Frequent moving has been linked to low levels of psychological well-being among introverted individuals (Oishi & Schimmack, 2010). Similarly, frequent moving increased anxiety in adults (Oishi et al., 2012), as well as feelings of loneliness and sadness (Oishi et al., 2013). It is likely that the negative effects of low parental sensitivity on psychological well-being through negative adjustment may be stronger for people who have frequently changed their residence in the past. Similarly, the positive effects of high parental sensitivity on psychological well-being through positive adjustment may be stronger for people who have been more residentially stable in the past. Therefore, we aimed to examine whether residential mobility impacts the indirect relationship between parental sensitivity and psychological well-being through adjustment. To our knowledge, no previous study has examined the indirect effects of parental sensitivity on psychological well-being through adjustment moderated by residential mobility in emerging adulthood.

### **The Present Research**

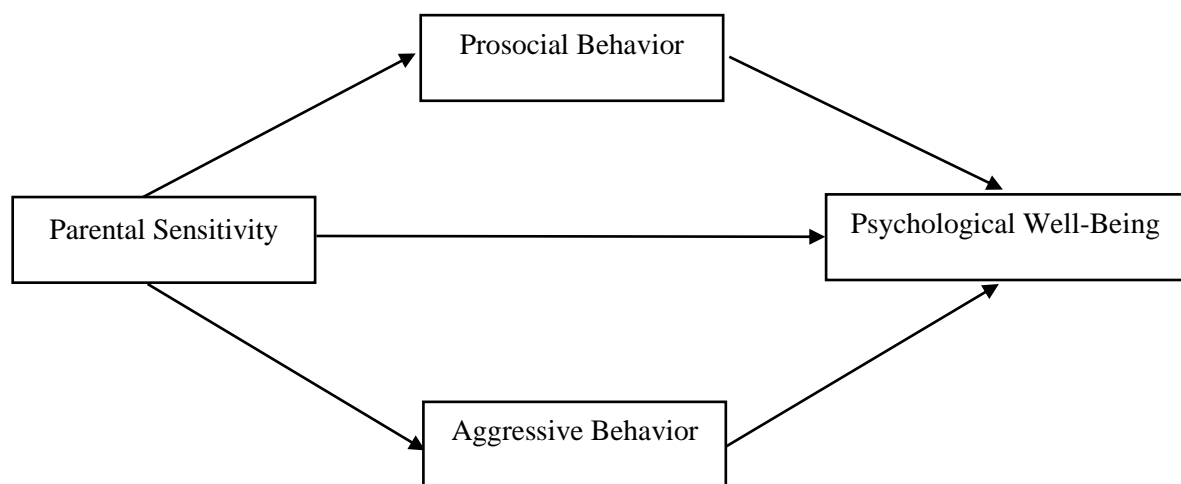
First, we tested a mediation hypothesis where adjustment would mediate the link between parental sensitivity and psychological well-being (Figure 1). This yielded the following predictions:

*Prediction 1:* High maternal/paternal sensitivity predicts high prosocial behavior which, in turn, predicts greater psychological well-being.

*Prediction 2:* Low maternal/paternal sensitivity predicts high aggressive behavior and in turn predicts lower psychological well-being.

### Figure 1

*Indirect Effect of Parental Sensitivity on Psychological Well-Being through Adjustment*



*Note.* The model was tested separately for mothers' and fathers' sensitivity.

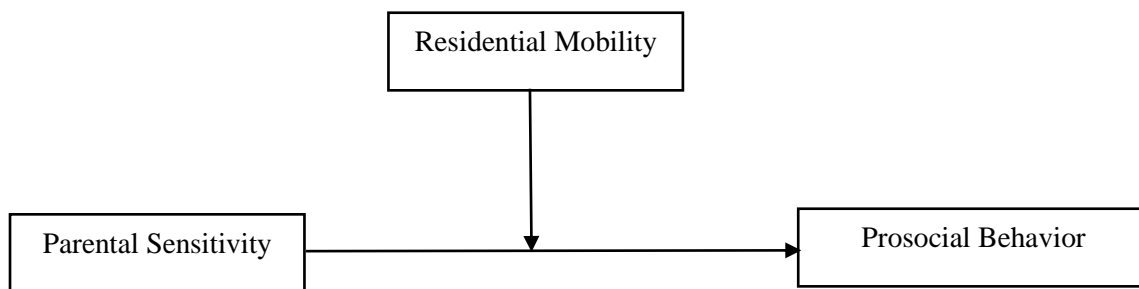
Second, we tested a moderation hypothesis where residential mobility moderated the relationship between parental sensitivity and adjustment (Figure 2). The following predictions were advanced:

*Prediction 3:* High maternal/paternal sensitivity predicts greater prosocial behavior for those with lower residential mobility.

*Prediction 4:* Low maternal/paternal sensitivity predicts greater aggressive behavior for those with higher residential mobility.

## Figure 2

Hypothesized Moderation Model.



*Note.* The model was tested separately for mothers' and fathers' sensitivity.

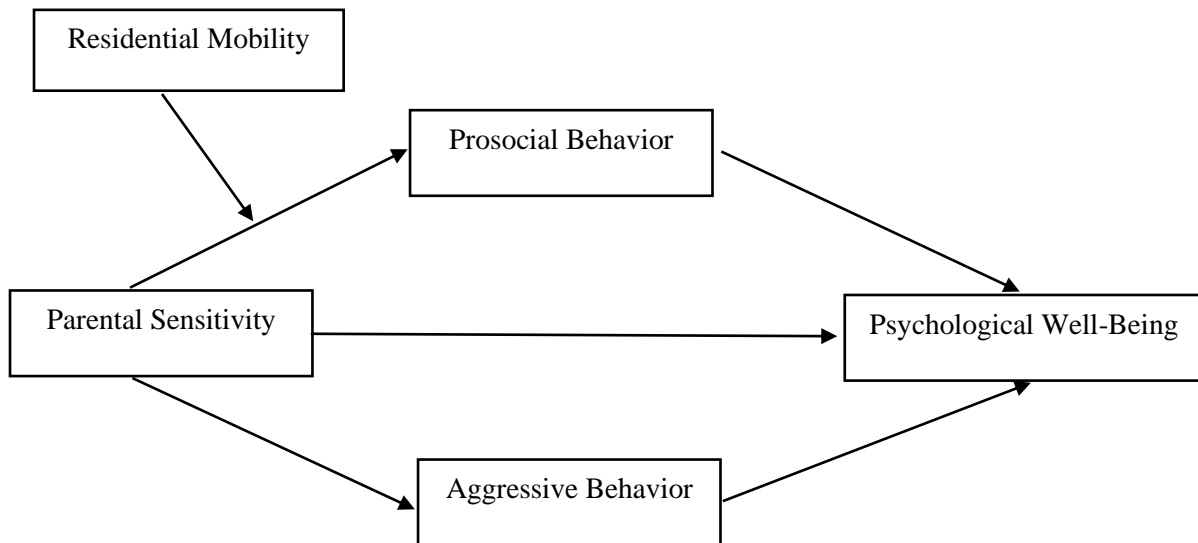
Third, we tested a moderated mediation model where residential mobility would moderate the indirect relationship between parental sensitivity and psychological well-being through adjustment (Figure 3). This yielded the following predictions:

*Prediction 5:* The indirect positive effect of maternal/paternal sensitivity on psychological well-being through high prosocial behavior is significant for those with lower residential mobility.

*Prediction 6:* The indirect negative effect of maternal/paternal sensitivity on psychological well-being through high aggressive behavior is significant for those with higher residential mobility.

**Figure 3**

Hypothesized Moderated Mediation Model.



*Note.* The model was tested separately for mothers' and fathers' sensitivity.

## Method

### Participants

Participants were recruited from various major cities in Turkey in 2022. The sample size was determined a priori using G\*Power Software (Faul et al., 2007). The minimum sample size to perform a moderated mediation analysis with a medium effect size and 95% power at  $\alpha = .05$  is 119. A total of 495 individuals accessed the survey. The criteria for inclusion in the study were being between the ages of 18-29 years old and having completed all necessary measures for hypothesis testing. To achieve this, 49 participants were excluded due to missing questionnaire data (including participants who did not complete both mother and father care scales) and an additional one participant was excluded for not meeting the age criterion. Finally, out of the final sample of 445 emerging adults (317 women, 125 men,  $M_{age}$

= 21.46,  $SD_{age} = 2.33$ , age range = 18-29) three preferred not to indicate their gender, but were included in the analyses. One-hundred seventy-eight participants were dating (40%), 15 were married (3%), and 252 were single (57%). In terms of education, 7% ( $N = 29$ ) were high school graduates, 91% ( $N = 407$ ) were undergraduates, 2% ( $N = 8$ ) were graduates, and 1 person preferred not to indicate their education level.

## Measures

### *Parental Sensitivity*

The revised version of the Child Rearing Styles Scale (Sumer & Gungor, 1999) was used to measure parental sensitivity. The scale consists of 22 items and two sub-scales (“acceptance/care/love” and “control”, 11 items each). In the original study, the Cronbach’s alpha values of the scale were found to be .93 and .94 for mother and father, respectively. In this study, only items of "acceptance/care/love" subscale (e.g., “S/he often spoke to me in a soothing manner.”) were used to measure perceived parental sensitivity. Participants rated the items on a 5-point Likert-type scale (1 = Not at all true, 5 = Very true) separately for mother and father. Cronbach’s alpha values for mother and father scales were .93 and .94, respectively.

### *Adjustment*

**Prosocial Behavior.** The Turkish Version of the Prosocial Tendencies Measure (Carlo & Randall, 2002; Kumru et al., 2004) was used to measure prosocial behavior. The scale consists of 23 items and six subscales: public (e.g., “I can help others best when people are watching me”), altruistic (e.g., “I think that one of the best things about helping others is that it makes me look good”), compliant (e.g., “I never hesitate to help others when they ask for it”), emotional (e.g., “I tend to help others particularly when they are emotionally distressed”), confidential (e.g., I prefer to donate money anonymously”) and dire (e.g., It is easy for me to help others when they are in a dire situation”). The Cronbach’s alpha values

were reported as between .52 and .68 for each subscales (excluding dire, .42) in the original adaptation study. Items are rated on a 5-point Likert-type scale (1 = Not at all, 5 = Very much). Scores from the six subscales were averaged to compute an overall prosocial behavior score (Cronbach's  $\alpha = .72$ ).

**Aggressive Behavior.** The Aggression Questionnaire (Buss & Perry, 1992) was used to measure aggressive behavior tendency. The questionnaire consisted of 29 items and adapted to Turkish by Sümer (2003). The 22-item Turkish version of the scale includes four subscales (physical aggression (e.g. "I can't control my urge to hit another person once in a while"), verbal aggression (e.g. "I can say what I think about people when they annoy me"), hostility (e.g. "I wonder why sometimes I feel so bitter about things") and anger (e.g. "Sometimes I feel like a bomb ready to explode"). The Cronbach's alpha values were reported as between .72 and .77 for each subscales (excluding verbal aggression, .58) in the adaptation study. Scale items are rated on a 5-point Likert-type scale (1 = Not at all true, 5 = Very true). Scores from the four subscales were averaged to compute an overall aggressive behavior score in this study (Cronbach's  $\alpha = .86$ ).

### ***Residential Mobility***

Participants were asked to report how many times they moved to a new place in their lifetime to assess residential mobility as in prior studies (e.g., Oishi & Schimmack, 2010; Yilmaz et al., 2022). Mean number of moves was 3.10 ( $SD = 3.45$ ). The distribution of moves was positively skewed (skewness = 4.77) as in prior studies (Oishi et al., 2012; Oishi & Schimmack, 2010; Yilmaz et al., 2022). The majority (98.4%) of moves were equal to or fewer than 10. To reduce the effect of extreme values on regression coefficients (see Oishi et al., 2012; Oishi & Schimmack, 2010, for a similar approach), we winsorized outliers to 10, which reduced skewness (skewness = 0.93).

### ***Psychological Well-being***

The Turkish translation of the short version of the Psychological Well-being Scale (Ryff, 1989; Yilmaz et al., 2022) was used to measure psychological well-being. The scale consists of 18 items and six subscales: autonomy (e.g., “I am not afraid to voice my opinions, even when they are in opposition to the opinions of most people.”), environmental mastery (e.g., “The demands of everyday life often get me down.”), personal growth (e.g., “I think it is important to have new experiences that challenge how you think about yourself and the world.”), purpose in life (e.g., “Some people wander aimlessly through life, but I am not one of them.”), self-acceptance (e.g., “I like most aspects of my personality.”), and positive relations with others (e.g., “I have not experienced many warm and trusting relationships with others.”). In the adaptation study, the Cronbach’s alpha value of the scale was reported as .62 (Yilmaz et al., 2022). Participants rated scale items on a 7-point Likert type scale (1 = strongly disagree to 7 = strongly agree). Scores from six subscales were averaged to compute an overall psychological well-being score. Cronbach’s alpha of the scale was .71.

### *Covariates*

Participants’ age, gender (−1 = female, 1 = male), monthly income, education (−1 = high school or less, 1 = some college or more), and relationship status (−1 = not married, 1 = not married) were included as demographic covariates.

### **Procedure and Data Analysis**

The study was approved by the Institutional Ethics Committee. Emerging adults were invited to participate in an online 15-min survey through convenience sampling method. The survey link was shared with the participants via social media and course announcements. The online survey was created through Qualtrics survey software and answers of the participants were automatically recorded in the Qualtrics system. Participants were asked to give their consent to participate in the study on the first page of the survey. Participants who gave their consent were allowed to fill out the questionnaire by clicking the “next” button.



Firstly, we performed Little's MCAR test to examine whether missing values were randomly distributed. The results showed that the missing values were distributed randomly in this study (Chi-Square = 52.486,  $df = 54$ ,  $p > .05$ ). We conducted main analyses using the PROCESS Macro (Hayes, 2022) for the Statistical Package for the Social Sciences (SPSS v. 26.0). First, we performed mediation analyses. Next, we conducted moderation analyses. Finally, we performed moderated mediation analyses.

## Results

### Descriptive Statistics

Descriptive statistics for all study variables (correlation coefficients, sample sizes, means, and standard deviations) are shown in Table 1. Maternal sensitivity and paternal sensitivity were positively associated with prosocial behaviour. Only paternal sensitivity was negatively associated with aggressive behaviour. While maternal sensitivity, parental sensitivity, prosocial behaviour, age, and monthly income were positively related to psychological well-being, aggressive behaviour was negatively related to psychological well-being. Residential mobility was positively associated with age and negatively associated with paternal sensitivity.

**Table 1***Correlations between Study Variables and Descriptive Statistics*

Variable	1	2	3	4	5	6	7	8	N	M	SD
1. Maternal Sensitivity		.56***	.17***	-.07	.26***	-.01	-.04	.00	445	3.77	.93
2. Paternal Sensitivity			.15**	-.11*	.28***	-.10*	.02	.01	431	3.26	1.06
3. Prosocial Behavior				-.11*	.25***	-.05	.06	-.02	445	3.34	.43
4. Aggressive Behavior					-.21***	.05	-.05	-.04	445	2.64	.58
5. Psychological Well-Being						.00	.15**	.15**	445	4.99	.64
6. Residential Mobility							.18***	.06	445	2.96	2.59
7. Age								.32***	445	21.46	2.33
8. Monthly Income (TL)									406	2236.4	2632.9

*Note.* \$ = 28.85 TL (Turkish Liras). Fourteen participants didn't complete the paternal sensitivity questions despite completing questions for maternal sensitivity. Demographic data were obtained at the end of the survey. Participants who didn't report their monthly income were included in the analyses since they completed the variables of interest. All variables except residential mobility had skewness and kurtosis values between -2 and +2. \*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$ .

Prior to hypothesis testing, we performed multiple regression analyses and tested whether assumptions for regression analyses including independence, multicollinearity, normality, linearity, and homoscedasticity (Hayes, 2018) were met. Results of the multiple regression analyses showed that paternal sensitivity ( $B = .115$ ,  $SE = .033$ ,  $p = .001$ ) and prosocial behavior ( $B = .259$ ,  $SE = .068$ ,  $p < .001$ ) positively; aggressive behavior ( $B = -.163$ ,  $SE = .051$ ,  $p = .001$ ) negatively predicted psychological well-being. Maternal sensitivity and residential mobility did not significantly predict psychological well-being (all  $ps > .082$ ). We tested the assumption of independence. Durbin-Watson value was 2.209, which suggests that assumption of independence is met. All of the tolerance values for IVs were higher than 0.1, which suggest that multicollinearity does not exist in our data. Next, we tested skewness and kurtosis values to test normality assumption. According to Fidel (2009), skewness and kurtosis scores should be between  $\pm 1.96$  to satisfy the normal distribution assumption. Skewness and kurtosis scores of all variables except residential mobility fell within this range in this study. Residential mobility was transformed to reduce skewness. A scatter plot demonstrated that the assumption of linearity and the assumption of homoscedasticity were met.

### **Mediation Hypothesis**

Our first hypothesis was that the relationship between early parental sensitivity and later psychological well-being is mediated by adjustment. Process Macro Model 4 (Hayes, 2022) results revealed a significant positive indirect effect of both early maternal sensitivity ( $B = .024$ ,  $SE = .009$ , CI [.009, .044]) and early paternal sensitivity ( $B = .017$ ,  $SE = .007$ , CI [.005, .032]) on emerging adults' psychological well-being through prosocial behavior. High maternal sensitivity increased prosocial behavior ( $B = .077$ ,  $SE = .022$ ,  $p < .001$ ) and high prosocial behavior enhanced psychological well-being ( $B = .314$ ,  $SE = .068$ ,  $p < .001$ ). High paternal sensitivity increased prosocial behavior ( $B = .060$ ,  $SE = .019$ ,  $p = .002$ ) and high

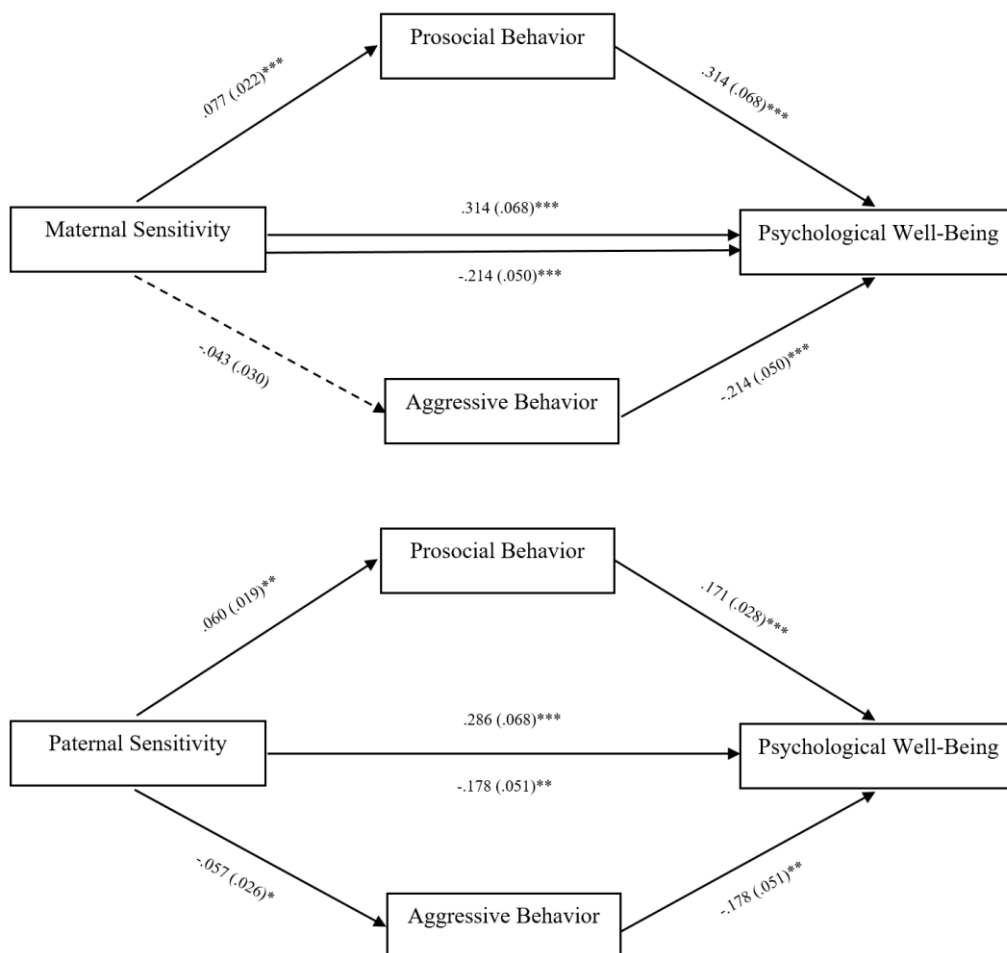
prosocial behavior enhanced psychological well-being ( $B = .171, SE = .028, p < .001$ ). The indirect effect of early maternal sensitivity on emerging adults' psychological well-being through aggressive behavior was not significant,  $B = .009, SE = .007, CI [-.003, .023]$ .

However, the indirect effect of early paternal sensitivity on emerging adults' psychological well-being through aggressive behavior was significant,  $B = .010, SE = .006, CI [.001, .023]$ .

High paternal sensitivity reduced aggressive behavior ( $B = -.057, SE = .026, p = .028$ ) and low aggressive behavior increased psychological well-being ( $B = -.178, SE = .051, p = .001$ ).

**Figure 4**

*Indirect Effects of Parental Sensitivity on Psychological Well-Being through Adjustment*



*Note.* Model estimates and their standard errors (in parentheses) are reported. The dashed lines indicate non-significant effects.

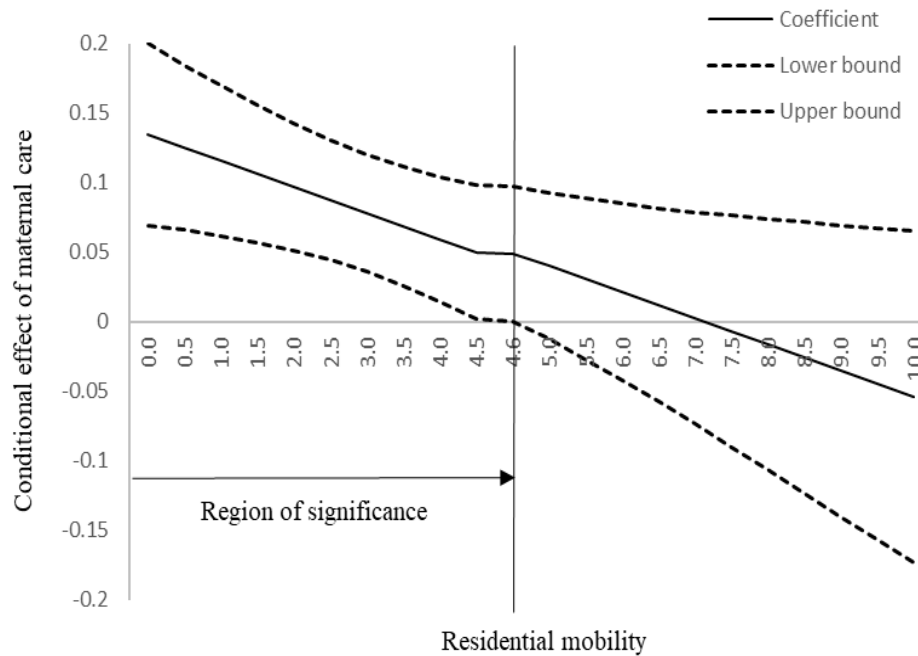
\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$ .

### **Moderation Hypothesis**

Prior to testing the moderated mediation model, we examined the moderator role of residential mobility on the relationship between parental sensitivity and adjustment. Results showed a significant interaction effect between residential mobility and maternal sensitivity on prosocial behavior,  $B = -.019$ ,  $SE = .008$ ,  $p = .022$ , (see Figure 5). According to Johnson-Neyman Region of Significance Analysis (1936), moderation was found to be significant for any value of residential mobility below 4.6 moves. There was a significant negative correlation between maternal sensitivity and prosocial behavior only when the number of past moves was lower than 4.6. The interaction effect between residential mobility and paternal sensitivity on prosocial behavior and the interaction effect of residential mobility and maternal/paternal sensitivity on aggressive behavior were not significant (all  $ps > .207$ ).

### **Figure 5**

*Johnson-Neyman Plot of the Simple Slope of Maternal Sensitivity Across the Range of Residential Mobility on Prosocial Behavior.*



### Moderated Mediation Hypothesis

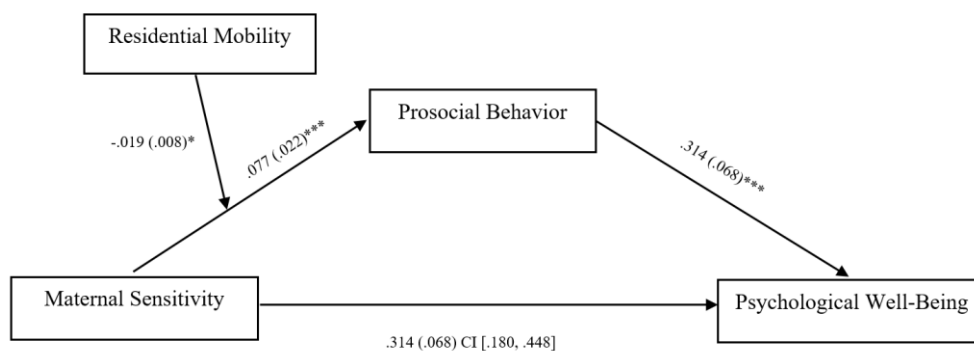
Our third hypothesis was that residential mobility would moderate the indirect relationship between parental sensitivity and psychological well-being through adjustment. Results of Process Macro Model 7 (Hayes, 2022) revealed a conditional indirect effect of early maternal sensitivity on emerging adults' psychological well-being through prosocial behavior. Results of the moderated mediation model revealed a significant mediation effect of prosocial behavior on the relationship between maternal care and psychological well-being which is moderated by residential mobility (see Figure 6;  $B = -.006$ ,  $SE = .003$ ,  $CI [-.012, -.001]$ ,  $R^2 = .11$ )<sup>1</sup>. The indirect effect of maternal sensitivity on psychological well-being through prosocial behavior was significant only for low levels of residential mobility ( $B = .042$ ,  $SE = .014$ ,  $CI [.017, .074]$ ) and average levels of residential mobility ( $B = .025$ ,  $SE = .009$ ,  $CI [.010, .044]$ ). The moderated mediation model remained significant when participants' gender, age, education level, monthly income, and relationship status were controlled,  $B = -$

<sup>1</sup> The same model was tested with the untransformed residential mobility variable. Results were statistically significant,  $B = -.006$ ,  $SE = .003$ ,  $CI [-.012, -.001]$ ,  $R^2 = .11$ .

.006,  $SE = .003$ ,  $CI [-.014, -.000]$ ,  $R^2 = .16$ . The conditional indirect effect of paternal sensitivity on psychological well-being through prosocial behavior ( $B = .002$ ,  $SE = .003$ ,  $CI [-.002, .008]$ ). The conditional indirect effect of maternal sensitivity ( $B = .001$ ,  $SE = .002$ ,  $CI [-.004, .005]$ ) and paternal sensitivity ( $B = .002$ ,  $SE = .002$ ,  $CI [-.001, .006]$ ) on psychological well-being through aggressive behavior were not significant.

**Figure 6**

*Moderated Mediation Model for Conditional Indirect Effects*



*Note.* The figure demonstrates conditional indirect effects of maternal sensitivity on psychological well-being through prosocial behavior at various values of residential mobility. Model estimates and their standard errors (in parentheses) are reported.

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

## Discussion

This study examined the association between parental sensitivity and psychological well-being in emerging adulthood, as well as the mechanisms and boundary conditions that might explain these relations. We found that high maternal sensitivity positively predicted psychological well-being through increased prosocial behavior, and this indirect relationship was significant only for individuals with lower levels of residential mobility. That is, individuals who were raised by sensitive mothers in a more predictable environment (i.e.,

lower residential instability) tend to help others more, and in turn, their psychological well-being is enhanced. This finding corroborates the adaptive calibration model (ACM; Del Giudice et al., 2011) suggesting that adopting a slow life-history strategy in an unpredictable environment has more fitness benefits. In an environment where environmental predictability is low and risk is high, investing in other people, such as helping them, may not be a priority. On the other hand, displaying prosocial behavior, as a correlate of slow life-history strategy (Zhu et al., 2020), would be more likely in a more predictable environment where parental investment in children is higher, and stressful childhood experiences, such as residential moves, are observed relatively less. Additionally, social capital theory (Coleman, 1988) suggests that residential mobility reduces the well-being of children through disrupting social relationships with family members and other social network members, such as neighbors and teachers. Thus, the tendency of residentially more stable children with sensitive parents, and particularly sensitive mothers, to engage in more prosocial behavior may indicate that these children are able to preserve their social ties and support exchanges in their social network. Consequently, they are more likely to grow into adults with higher psychological well-being.

It is important to highlight that the hypothesized moderated mediation model for prosocial behavior was only supported for maternal sensitivity, not paternal sensitivity. This finding aligns with prior research, which also exclusively demonstrated the positive impacts of maternal sensitivity (e.g., Davidov & Grusec, 2006; Newton et al., 2014). One possible explanation for the lack of significance for paternal sensitivity could be attributed to the substantial difference in the level of sensitivity between mothers and fathers in non-western cultures. This study was conducted in Turkey. In Turkey, and the Middle East more generally, mothers are being seen as much more sensitive than fathers (Deneault et al., 2022), parenting roles tend to place a heavy emphasis on mothers as the primary caregivers (Gurmen & Kilic, 2022), and mothers often perceive their parenting roles more strongly than fathers (Karacan &



Berument, 2012). Such cultural norms contribute to the dominant role of mothers in caregiving and heighten expectations for their sensitivity in these societies. Additionally, according to the parental socialization perspective of Hastings et al. (2007), sensitive parents are good role models for their children to exhibit prosocial behavior. Considering that parents with high sensitivity are predominantly mothers, the result of our study showing that high maternal sensitivity positively predicts psychological well-being through increased prosocial behavior is consistent with the literature. Lastly, governmental policies further exacerbate the sensitivity gap between parents. For example, maternity leave in Turkey can extend up to 18 weeks for mothers, while fathers are only entitled to a maximum of 10 days (Turkish Labor Code No. 4857, 2003). This disparity means that mothers have more opportunities to spend time with and provide care for their children in Turkey. Unlike Turkey, in some countries (such as Denmark and Sweden) parental leave is longer after birth (Karu & Tremblay, 2018). Fathers' longer leave after birth may allow them to be more involved in child care. For example, Gracia and Esping-Andersen (2015) showed that Danish fathers are more gender egalitarian and active in parenting than Spanish and British fathers. In such countries, fathers' involvement in child care can make a more effective and meaningful contribution to children's development. Consequently, these cultural values might help explain why paternal sensitivity did not emerge as a strong predictor of prosocial behavior and psychological well-being, unlike maternal sensitivity, in Turkey.

In contrast to prosocial behavior, the results regarding aggressive behavior did not confirm our hypothesis that low parental sensitivity would predict low levels of psychological well-being through more aggressive behavior for individuals with higher residential mobility history. This could provide support for the argument that environmental factors alone are not sufficient to explain the tendency for aggressive behavior, but that biological predispositions for aggression should also be considered (see Raine, 2002 for a review). Biological Sensitivity

to Context Theory (BSCT; Boyce & Ellis, 2005; Ellis et al., 2005) and Differential Susceptibility Theory (DST; Belsky, 1997; 2005; Belsky et al., 2007) suggest that early environmental experiences (e.g., parenting) interact with the child's characteristics (e.g., child neurobiology) to predict developmental outcomes. Past work showed that the effects of parental sensitivity on the behaviors of children and adolescents depends on individual factors such as child temperament (Bradley & Corwyn, 2008), child neurobiology (Miller & Hastings, 2019), and child demographics (Gryczkowski et al., 2018). Based on BSCT and DST, it may be more likely that low parental support combined with genetic predisposition may increase the inclination for aggressive behavior than environmental harshness. Adopting a biosocial perspective could help explain why the moderated mediation model yielded non-significant results for aggressive behavior in the current study.

### **Strengths, Limitations, and Future Directions**

The current study has several strengths that extend previous research in multiple ways. Most notably, we measured both maternal and paternal sensitivity, while previous studies mostly focused on maternal sensitivity only. Measuring the sensitivity of both parents can help to increase the generalizability of our results. Secondly, to our knowledge, it is the first study examining the indirect effects of parental sensitivity on psychological well-being through adjustment, moderated by residential mobility within a moderated mediation model in emerging adults. The utilization of moderated mediation modeling may offer a better illustration of the mechanisms underlying the relationship between parental sensitivity and psychological well-being in emerging adulthood. Relationships with romantic partners gain importance during the emerging adulthood years. For this reason, future studies could examine the role of the characteristics of the relationship with the romantic partner in the relationship between parental sensitivity and psychological well-being.

Despite the strengths of the present study, there are some limitations that should be addressed when interpreting the results. Firstly, this study had a cross-sectional design which does not allow us to make causal inferences. Longitudinal studies, where participants are observed at multiple time points would enable exploration of the relations over time and should be used in the future research. Secondly, regarding parental care assessment, we relied on retrospective reports from the participants. Given potential recall biases, the accuracy of the retrospective reports of emerging adults regarding parental care during their childhood may have constrained the effects of the relations between variables. It is noteworthy that retrospective reports are valuable as they tend to accurately reflect the worst and the best times of the life, despite recalling limitations (LeBaron et al., 2018). Additionally, future research on parental sensitivity during childhood could benefit from a multi-informant approach. Measuring parental sensitivity with emerging adult and parental reports would also allow us to compare parents' and emerging adults' perceptions of parental sensitivity. Thirdly, we used self-reported questionnaires in this study. Although the measures employed in the current study demonstrated reliability and validity, it is essential to acknowledge the possibility of socially desirable responses among participants when using self-reported questionnaires. This represents another limitation of the current study. Future research may utilize real life experience of emerging adults to measure perceived parental sensitivity, aggressive behavior, and prosocial behavior. Lastly, since we used convenience sampling in this study, our sample is unlikely to be representative of the Turkish population. Therefore, there is a limitation in generalizing the results. Besides this limitation, it would be interesting to test the same models in different cultures in future research. Doing so would allow us to see how cultural (e.g., individualism or collectivism) influence the link between parental sensitivity, residential mobility, adjustment, and psychological well-being in emerging adults.

## **Conclusions**

The current study offers valuable insights into understanding the relations among parental sensitivity, residential mobility, adjustment, and psychological well-being in emerging adults, utilizing a moderated mediation model. To sum up, the current study highlights the importance of childhood experiences with parents for the adjustment and psychological well-being of emerging adults. Specifically, high maternal sensitivity and low residential mobility during childhood appear to play crucial roles for the positive adjustment and high psychological well-being in emerging adulthood. In settings characterized by frequent changes in residence, focusing on interventions aimed at enhancing maternal sensitivity may be beneficial for promoting well-being in the future.

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