

Educational identity and maternal helicopter parenting: Moderation by the perceptions of environmental threat

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Abstract

This four-wave study examined longitudinal associations between maternal helicopter parenting and college students' educational identity processes over 1 year, as well as the moderating effects of mothers' perceived environmental threats (i.e., uncertainty and competition). Participants were 349 first-year university students (39.8% male, $M_{\text{age}} = 18.20$) and their mothers ($M_{\text{age}} = 49.10$) in Hong Kong. Latent class growth analysis identified two subgroups based on levels of mothers' threat perceptions (i.e., lower vs. higher). Multi-group random-intercept cross-lagged models found that, at the within-person level, students' reconsideration of educational commitments positively predicted helicopter parenting only for mothers with higher threat perceptions. These findings mainly support youth-driven effects on overbearing parenting behaviors. Mothers' threat perceptions might exacerbate these excessive responses to youth's academic turbulence.

KEYWORDS

educational identity, environmental threat, helicopter parenting

INTRODUCTION

In an uncertain and competitive environment, parents might struggle to simultaneously provide support and promote their emerging adult children's autonomy as they adapt to university life. Failure to navigate these competing interests can manifest as “helicopter parenting” or well-intentioned but developmentally inappropriate involvement such as anticipatory problem-solving and providing excessive instrumental assistance (Odenweller et al., 2014; Padilla-Walker & Nelson, 2012). Cross-sectional studies on helicopter parenting in both Western contexts and Asian contexts have shown that these practices are positively linked with social and emotional difficulties (Jung et al., 2020; Leung & Shek, 2017; Luebbe et al., 2018; Reed et al., 2016; van Ingen et al., 2015; Wang et al., 2021). However, such research cannot provide information about the direction of these effects over time, nor whether they occur at the between-person or within-person level. This study will add to this knowledge by employing a longitudinal design in an Asian context (i.e., Hong Kong) to disentangle the temporal order of associations between helicopter parenting and youth adjustment.

Previous cross-sectional research has often emphasized how helicopter parenting might lead to youth's increased adjustment problems, whereas recent longitudinal studies in China and Hong Kong have shown that youth difficulties

might actually motivate parental over-involvement (Gao et al., 2022; Leung, 2021). Considering that Chinese parents often base their self-worth on children's academic performance (Ng et al., 2014), and invest heavily in children's educational and professional success (Braya, 2013), youth-driven, academic-related factors may contribute to overbearing practices. Students' difficulties in forming or maintaining educational commitments during the adjustment to university, as well as their reevaluation or modification of those commitments, might trigger parents' concerns and contribute to over-involvement. Furthermore, parents who consider the economic climate to be uncertain, and who perceive intense competition for educational and occupational opportunities, might make overbearing attempts to ensure their children move in the “right direction.” Thus, parents' generally high perceptions of these environmental threats can potentially exacerbate the effects of educational identity on helicopter parenting.

To our knowledge, few studies have examined the potential youth-driven predictors of helicopter parenting, and parental perspectives that might moderate these relationships. This research examined the over-time associations between maternal helicopter parenting and educational identity processes (i.e., commitment, in-depth exploration, and reconsideration) during students' first year of university. We further examined whether mothers' perceptions of

environmental threats (i.e., uncertainty and competition) moderated these patterns.

HELICOPTER PARENTING AND YOUTH ADJUSTMENT

Helicopter parenting, also called overparenting, is a form of excessive parental engagement predominantly examined in late adolescence and emerging adulthood (Padilla-Walker & Nelson, 2012; Schiffrin et al., 2019). As youth mature, parents should adjust their behavior to reduce levels of overt supervision and guidance, so as to support increasing self-reliance. Helicopter parents continue to be highly involved in their children's lives, however, trying to remove potential obstacles before youth encounter them and attempting to shield them from adversity (LeMoyné & Buchanan, 2011; Padilla-Walker & Nelson, 2012). These “well-intentioned” behaviors might stem from parents' regret, anxiety, prevention focus, and a failure-is-debilitating mindset (Brenning et al., 2017; Rousseau & Scharf, 2017; Schiffrin et al., 2019; Segrin et al., 2013). Driven by their own pursuit of security and risk avoidance, helicopter parents attempt to promote immediate positive outcomes rather than letting youth experience the discomfort of trial-and-error learning. Parents might see these actions as supportive, but the focus on alleviating their own anxieties actually suggests that these actions have a self-centered component. Indeed, researchers have suggested that emerging adults suffer when they are deprived of opportunities to develop feelings of competence and personal agency in their increasingly demanding educational, occupational, and social endeavors (Arnett, 2007).

Although some prior studies have found helicopter parenting to predict beneficial psychological outcomes like life satisfaction (Fingerman et al., 2012), most research has implied that helicopter parenting promotes internalizing problems (Luebbe et al., 2018; Reed et al., 2016), social alienation (van Ingen et al., 2015), academic difficulties (Nelson et al., 2015; Padilla-Walker & Nelson, 2012), and maladaptive coping (Odenweller et al., 2014). Consistent with research conducted among Western youth, studies in Korea, Hong Kong, and mainland China have found helicopter parenting to predict youth's self-control, emotional, and self-efficacy difficulties (Jung et al., 2020; Leung & Shek, 2017; Wang et al., 2021), suggesting that these practices might have universally negative connotations across different cultural contexts.

Prior research has primarily treated helicopter parenting as the predictor of youth difficulties (Arslan et al., 2023; Ching et al., 2022; Jung et al., 2020; Wang et al., 2021), without actually examining the temporal order of these constructs. As opposed to the “conventional wisdom” that helicopter parenting leads to increased youth difficulties, it is also possible that parental over-involvement is a response to actual, perceived, or anticipated youth challenges. Indeed, a recent longitudinal study in Hong Kong provided support for the existence of bidirectional associations between early

adolescents' reports of maternal helicopter parenting and mother-child conflict (Leung, 2021). In addition, another longitudinal study revealed that Chinese emerging adults' emotional problems predicted their later reports of helicopter parenting, whereas the reverse association was not observed (Gao et al., 2022).

These findings offer preliminary evidence that youth and family difficulties can also precede helicopter parenting in Chinese contexts. However, both of these studies were based on youth self-reports of helicopter parenting, which might contribute to a stronger association than when using parent reports (Gao et al., 2022; Leung, 2021). Additionally, both studies used cross-lagged panel model (CLPM) analysis, which has been criticized for conflating between-family and within-family effects (for more details, see Hamaker et al., 2015). Since between-family effects may differ from the underlying processes within families (Dietvorst et al., 2018), this multi-informant study adopted random-intercept cross-lagged panel modeling (RI-CLPM) to explore potential bidirectional associations at the within-family level. That is, this study examined whether changes in helicopter parenting within the parent-adolescent dyad were bidirectionally related to within-person changes in adolescents' educational identity.

HELICOPTER PARENTING AND EDUCATIONAL IDENTITY

For adolescents and emerging adults, identity synthesis is a crucial task (Crocetti et al., 2016; Erikson, 1968). Identity development involves exploring and establishing personal values, beliefs, and goals in multiple domains such as religion, gender, sexuality, relationships, and education (Schwartz et al., 2013). Global identity processes cannot fully explain the complexity of emerging adults' domain-specific identity processes (Vosylis et al., 2017), highlighting the need to differentiate between various identity domains (Branje, 2022). Within the educational domain, identity development is the process of individuals forming, exploring, and questioning choices regarding school, curriculum, and academic track (Christiaens et al., 2021; Crocetti et al., 2010). Prior research has characterized educational identity in terms of three processes (Crocetti et al., 2010): (1) Commitment refers to the self-confidence individuals derive from the enduring choices they have made; (2) In-depth exploration involves the active monitoring of, and reflection upon, present educational commitments; and (3) Reconsideration of commitment reflects uncertainty about the choices one has made, and comparing unsatisfactory existing commitments to possible alternatives. Within the dynamic of identity synthesis versus identity confusion, three identity processes have been conceptualized as two opposing forces, with commitment and in-depth exploration implying attempts to develop and maintain identity coherence, and reconsideration reflecting questioning and potential confusion of one's sense of self (Crocetti et al., 2017).

Individuals' identity develops through interaction with their contexts, especially during certain life transitions (Crocetti et al., 2016; Erikson, 1968). The adaptation to higher education is one of the important contextual factors that might elicit young adults' identity development (Christiaens et al., 2021). Under the current academic system, young people in Hong Kong continue their educational path immediately after secondary school. When individuals begin their course of study at university, some may initially feel engaged and motivated, while others may realize that the realities of their choices differ from their expectations, leading to a potential reconsideration of these commitments. Thus, whether or not youth adapt well to this new environment could strengthen or weaken their present educational commitments (Branje, 2022; Erikson, 1968).

During this process, parents also play an important role in stimulating adolescent identity development (Beyers & Goossens, 2008; Christiaens et al., 2021). For instance, a nine-year longitudinal study showed that, following the transition to higher education, adolescents who experienced increased educational commitment reported significantly more autonomy support than adolescents who experienced a decrease in their commitment (Christiaens et al., 2021). Mothers' supportive behaviors also negatively predict adolescents' reconsideration of commitments in education and friendship domains (Crocetti et al., 2017). In contrast, over-involved practices such as helicopter parenting might violate young people's aspirations for increased responsibility and independence, which, in turn, could impede emerging adults' ability to establish a stable educational identity. Indeed, helicopter parenting is negatively associated with emerging adults' academic achievement and sense of academic connection (Luebbe et al., 2018). Studies linking helicopter parenting to impairments in emerging adults' self-efficacy (van Ingen et al., 2015), decision-making (Luebbe et al., 2018), and school engagement (Nelson et al., 2015; Padilla-Walker & Nelson, 2012) also provide indirect evidence for this suggestion; such deficits might undermine confidence in making particular educational choices (i.e., commitment) or attempting to develop deeper expertise in those areas (i.e., in-depth exploration). These findings suggest that overbearing parenting practices could possibly interfere with student's adjustment to college (e.g., achievement, connection), leading them to question their commitments and search for new alternatives (i.e., reconsideration of commitment).

First-year college students' educational identity processes might also precede parents' over-involvement. A six-year longitudinal study found that adolescents' commitment and in-depth exploration of educational and friendship domains predicted higher levels of maternal support (Crocetti et al., 2017). First-year college students' commitment and in-depth exploration also predicts higher levels of parental warmth and autonomy support 1 year later (Beyers & Goossens, 2008). That is to say, identity processes related to the consolidation of commitments might promote parental beliefs that children are "on the right track" and that additional involvement is unnecessary. In contrast, parents may assume

that youth's reconsideration of current commitments reflects academic difficulties (Pop et al., 2016), resulting in parents' beliefs that they should lend additional help. Despite the fact that reconsideration might serve positive long-term goals by replacing inadequate commitments with appropriate ones, its negative short-term effects on youth's emotional and academic outcomes (Crocetti et al., 2008; Pop et al., 2016) might stimulate parents' over-involvement. Moreover, parents might experience anxiety when they perceive risks around children making "wrong decisions" or lagging behind peers. These negative emotions might provoke compensatory actions, like helicopter parenting, to avoid possible losses and to meet their own anxiety-reduction needs, rather than the needs of their children (Grolnick, 2003).

MODERATING EFFECTS OF PERCEIVED ENVIRONMENTAL THREAT

The social environment, children's behavior, and parents' own traits and experiences are sources of pressure contributing to overbearing parenting practices (Grolnick, 2003). From an evolutionary perspective, parents might be predisposed to over-function for offspring in times of danger or threats to children's survival (Gurland & Grolnick, 2005). Although individuals in industrialized countries live in much safer environments than those in which humans first evolved, environmental threats such as economic or societal indicators that children's future well-being is at risk might still trigger overbearing parenting.

In this study, we focus on parents' perceptions of competition and uncertainty as two meaningful aspects of environmental threats. Recent studies have found that social environments characterized by high social competition and high uncertainty promote self-oriented moral reasoning and inhibit other-oriented empathy, prosocial behavior, and long-term future planning (Zhu et al., 2018, 2019). Past research has also shown that mothers' worldviews of competition and uncertainty predict controlling behaviors toward younger children (Gurland & Grolnick, 2005). Another experimental study found that parents who were primed with worldviews of resource scarcity and environmental instability before an increasingly challenging guided learning task exhibited more overbearing behaviors toward children, such as intrusive instruction and judgmental feedback (Robichaud et al., 2020).

We reasoned that, when faced with children's difficulties, parents who perceive the environment to be threatening might be more likely to opt for the short-term, self-centered thinking and coping styles that characterize helicopter parenting. For example, Wuyts et al. (2017) found that children's earlier failure (vs. success) led parents to utilize more outcome-oriented practices (e.g., guide every step of the process) when assisting children. Moreover, parents reported feeling more tension only when this failure became more threatening. Parents' negative evaluations of failure,

accompanied by perceptions of threat regarding children's future well-being, might exacerbate reactions aimed at satisfying parents' own short-term needs for tension reduction and self-concept maintenance. Accordingly, we reasoned that parents' threat-related worldviews might amplify their responses to children's difficulties. Therefore, we expected that parental perceptions of environmental threats might strengthen the associations from students' reconsideration of commitments to later helicopter parenting.

OVERVIEW AND HYPOTHESES

This longitudinal, multi-informant study examined potential reciprocal associations between first-year college students' educational identity processes and helicopter parenting. Furthermore, we examined whether parents' perceptions of environmental threats moderated these associations. The present study was conducted in Hong Kong, where helicopter parenting has been suggested to hold two “culturally-specific” features, namely emphasis on academic achievement and frequent comparisons of children's performance with peers' (Leung & Shek, 2017). These differences might stem from cultural beliefs regarding education as a moral imperative and an essential means of social and economic advancement (Salili et al., 2003), as well as parents' greater tendencies to base their self-worth on children's achievements (Ng et al., 2014). Considering these high investment in academic achievement, parents might be overly involved in youth's experiences of academic difficulty. Moreover, intense competition for educational and career opportunities, combined with relatively narrow definitions of professional success in Hong Kong, might tempt otherwise supportive parents toward excessive involvement (Braya, 2013; Leung & Busiol, 2016). Considering that mothers in Hong Kong take a more active role in parenting in terms of both their demandingness and their warmth (Shek, 2008), this study examined the proposed models among mother-youth dyads.

First, we examined whether maternal helicopter parenting predicted students' educational identity processes. Based on previous findings, we hypothesized that helicopter parenting would negatively predict commitment and in-depth exploration (Hypothesis 1a), and positively predict reconsideration of commitments (Hypothesis 1b). Next, we examined whether students' educational identity processes predicted maternal helicopter parenting. We hypothesized that commitment and in-depth exploration would negatively predict later helicopter parenting (Hypothesis 2a), while reconsideration of commitments would positively predict helicopter parenting (Hypothesis 2b). Lastly, we tested the moderating role of mothers' environmental threat perceptions. We hypothesized that reconsideration, which might indicate difficulties in developing a stable educational identity, would predict helicopter parenting more strongly among mothers who perceived a more threatening environment (Hypothesis 3).

METHOD

Participants

The sample included 349 dyads of first-year university students (39.8% boys, $T1 M_{age} = 18.20$, $SD = 1.10$) and their mothers ($T1 M_{age} = 49.10$, $SD = 4.82$) in Hong Kong. Students reported a variety of major study areas (i.e., 16.9% Arts, 12.6% Business, 9.7% Engineering, 20.6% Medicine, 11.5% Science, 16.0% Social Science, and 12.7% “Other”). Most students were of Chinese ethnicity (99.1%) and lived in Hong Kong (100%) with their mothers (97.1%). According to the demographic information obtained from mothers, most were married (82.2%), 12.3% had primary school education or below, 61.6% had secondary school (high school) education, 14.3% had a high-diploma or associate degree, 7.7% had a bachelor's degree, and 4.0% had a master's degree. Almost half (49.9%) had a full-time job, 12.9% had a part-time job, 4.9% were unemployed, and 32.4% were homemakers. Family socioeconomic status was indicated by household monthly income, with 52.1% of families earning less than HK\$25,000 (US\$3186), suggesting a relatively low level of household monthly income.

The survey completion rate was high, with 95.70% of student reports and 96.06% of mother reports completed across the various measurement points (see Table S1 for completion rate). To further examine the missingness of the study variables and demographic variables, we compared those who did versus did not report at T2, T3, and T4, respectively. Students who reported (vs. not reported) did not differ regarding gender, $\chi^2(1) \leq 1.946$, $p \geq .163$, or students' major, $\chi^2(8) \leq 11.195$, $p \geq .191$. Moreover, a series of *t* tests found that monthly family income and educational identity processes did not differ significantly ($ps \geq .066$) between those who reported and did not report at each time point. Results were similar for mothers regarding mothers' age, educational level, helicopter parenting, and perception of threat ($ps \geq .121$).

Procedure

The current research utilized data from the “Competitive Advantages in a Threatening World” project, a larger longitudinal study of first-year college students' and parents' wellness conducted at a major university in Hong Kong. Data collection began in September 2020 and ended in April 2021, encompassing two semesters. Students lived off-campus during this period, due to the COVID-19 epidemic. Before the first measurement, the research assistants invited incoming university students and their mothers via orientation activities, college social media and websites, and the university mass mail system to join a project on *Family and Adjustment to University Life*. A total of 354 mother-student dyads volunteered and provided signed informed consent. Over the project period, four dyads formally withdrew from the project and one mother did not provide any information, resulting in

the final sample of 349 dyads. During the project, online surveys that took roughly 30 min to complete were administered at the beginning and the end of each semester (4 times in total). Thus, there was a 12-week interval from the beginning to the end of each semester (i.e., Time 1 to Time 2, Time 3 to Time 4), and a 6-week interval between two semesters (i.e., Time 2 to Time 3). At each time point, participants received an e-mail and/or text message with a link to the survey. The project representative provided text message and telephone call reminders to those who failed to complete the survey within 72 h and deactivated the survey 1 week after it had been made available. All respondents received HK\$50 as a reward for participation at each measurement wave, and a HK\$100 bonus at project completion. The study was approved by the Ethics Review Board of the first authors' university.

Measures

Helicopter parenting

We used a short version of the Helicopter Parenting Instrument (HPI; Odenweller et al., 2014) to assess mothers' self-reports of helicopter parenting. The original HPI was developed for use with English-speaking adolescents and young adults to assess their perception of parents' helicopter parenting behaviors (Odenweller et al., 2014), which we revised for mother reports. For example, the original item "My parent voices his or her opinion about my personal relationships" was revised into "I voice my opinion about my child's personal relationships." The HPI was translated into Chinese and then back-translated by two fluent bilingual speakers of English and Chinese, and any discrepancies were discussed to ensure accuracy. We examined the reliability and validity of this revised scale in an online pilot test with a separate sample of Chinese-speaking mothers, and retained nine items that showed adequate loadings on a single factor, >0.40 .¹ The retained items are available in the supplementary materials. Each item was endorsed using a 6-point Likert scale from 1 = *Strongly disagree* to 6 = *Strongly agree*. The nine items were averaged to calculate a scale score at each assessment wave. The observed alphas were acceptable, ranging from 0.76 to 0.84.

Educational identity

We used the revised Utrecht-Management of Identity Commitments Scale (U-MICS; Crocetti et al., 2010) to assess students' educational identity processes. The original version of U-MICS consists of 13 items assessing three processes of education identity: Commitment (five items, e.g., "My area of study gives me security in life"), In-Depth

Exploration (five items, e.g., "I often reflect on my area of study."), and Reconsideration (three items, e.g., "I often think it would be better to try to find a different area of study."). We eliminated two items from the Commitment and In-Depth Exploration subscales, respectively, to shorten our online survey. The items we retained were selected with the aim of preserving face validity (the retained and omitted items are available in the supplemental materials). Items were rated on a 6-point Likert scale from 1 = *Very untrue of me* to 6 = *Very true of me*. The obtained alphas across the four measurement waves were 0.77–.81 for Commitment, 0.81–.88 for In-Depth Exploration, and 0.78–0.83 for Reconsideration.

Maternal perceptions of threat

We used two subscales from the World Out There scale (Gurland & Grolnick, 2005) to assess mothers' perceptions of threats in their children's current environment. Specifically, the Instability subscale was used to assess mothers' perceptions of uncertainty (three items, e.g., "It's getting harder and harder all the time to make a decent living."); the Scarcity subscale was used to measure mothers' perceptions of competition, with one original item being divided into two items to avoid misunderstanding (four items, e.g., "It's competitive out there. Only some young people can make it."). Participants responded on a 6-point scale from 1 = *Strongly disagree* to 6 = *Strongly agree*. Items in each subscale were averaged to calculate a score at each assessment. The obtained alphas across the four measurement waves were 0.70–0.78 for Instability and 0.80–0.87 for Scarcity.

STATISTICAL ANALYSES

We conducted RI-CLPM to examine our Hypotheses. RI-CLPM extends (CLPM) by using latent factors (i.e., random intercepts) to capture stable between-person differences (Hamaker et al., 2015; Keijsers, 2015). In contrast to CLPM, RI-CLPM is effective for examining associations based on intra-individual variation in scores over time (Orth et al., 2021). This allowed us to test the reciprocal effects between educational identity processes and helicopter parenting at the within-person level, where causal processes actually take place. Thus, we used this model to examine whether deviations from an individual students' usual levels of identity processes could predict subsequent deviations from their mothers' usual levels of helicopter parenting, and vice versa. In addition, we also used multi-group approach to examine whether mothers' threat perceptions moderated these associations. All models were examined using *Mplus* 8.4 (Muthén & Muthén, 1998–2017). A Missing Completely At Random test (Little, 1988) yielded a normed chi-square (χ^2/df) of 0.83 for students and 1.40 for mother reports, suggesting a good fit between sample scores with and without imputation (Bollen, 1989). Students and parents with missing

¹These results are available upon request.

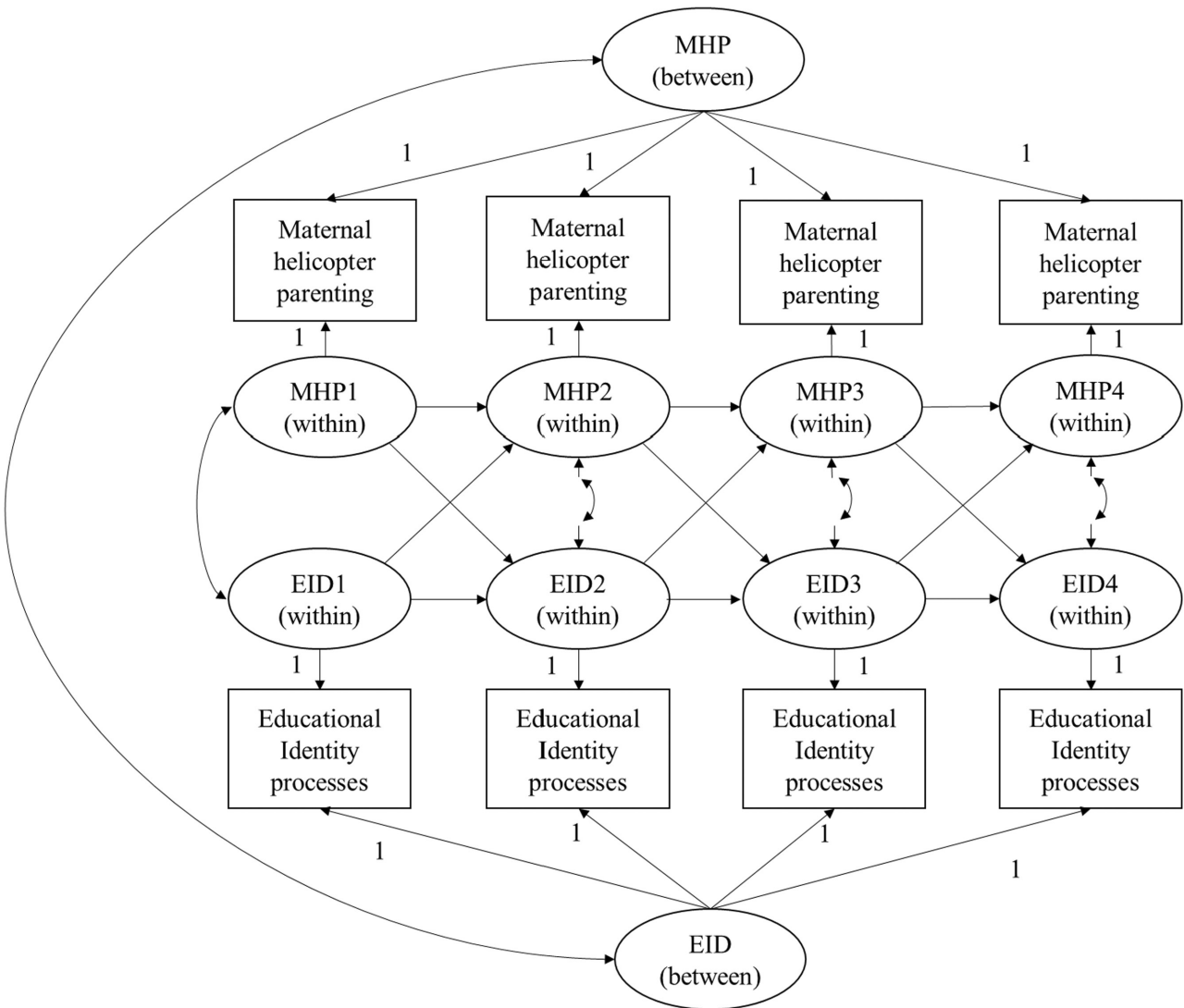


FIGURE 1 Conceptual model of the random-intercept cross-lagged panel analysis. For the sake of clarity, paths from control variable (i.e., students' gender, mother's age, mothers' educational level, and family monthly income) are not displayed. EID, educational identity; MHP, maternal helicopter parenting.

data were therefore included in all models using full information maximum likelihood estimation. All analyses used the maximum likelihood robust (MLR) estimator (Satorra & Bentler, 2001). Model fit was evaluated based on conventional cutoff criteria for Comparative Fit Index (CFI), root mean square error of approximation (RMSEA), and standardized root mean square residual (SRMR); values of 0.90 or higher for CFI, values of 0.06 and lower for RMSEA, and value of 0.08 lower for SRMR indicate acceptable fit to the data (Hu & Bentler, 1999). To determine whether the model fits were significantly different among nested models, we referred to results of chi-square different tests with MLR correction (Satorra & Bentler, 2001), as well as a change of ≤ 0.010 in CFI, and a change of ≤ 0.015 in RMSEA (Chen, 2007).

We first tested longitudinal measurement invariance including configural, metric, and scalar invariance for each scale used in the study. Next, we tested three RI-CLPMs, one for each identity process. In the RI-CLPM (see Figure 1), we examined

(a) cross-lagged paths (e.g., the prospective path from reconsideration at T1 to helicopter parenting at T2), (b) stability paths (e.g., the autoregressive path between in-depth exploration at T1 and T2), and (c) within-time correlations. Furthermore, the model included students' gender (0 = male, 1 = female) as a covariate of observed scores, based on prior results suggesting that results might vary between different combinations of parent and child gender (Beyers & Goossens, 2008). Mothers' age, educational level, and family monthly income were also included as continuous covariates of maternal helicopter parenting to control for potential confounding of associations. Tables S2 and S3 show means and standard deviations of study variables, as well as results of *t* test for gender differences and bivariate correlation between covariates and helicopter parenting. To enhance parsimony and interpretability, we tested whether cross-lagged paths, stability paths, and T2–T4 within-time correlations (correlated changes) were time-invariant. Thus, we compared the model fit of a baseline unconstrained

model (Model 1) with those of a model with equality constraints upon cross-lagged paths of helicopter parenting (Model 2) or educational identity (Model 3), with equality constraints upon stability paths of helicopter parenting (Model 4) or educational identity (Model 5), and a model fixing all the correlated changes at T2–T4 to be time-invariant (Model 6). Then, we tested Model 7 against the Baseline Model 1 by constraining all time-invariant paths identified from the results of Models 2–6.

Since group differences in lagged regression coefficients can be interpreted as moderation effects (Mulder & Hamaker, 2021), we conducted a multi-group RI-CLPM to investigate how mother's perceptions of environmental threats moderated the relations between reconsideration and helicopter parenting. Rather than using median split, we used a multivariate latent class growth analysis (LCGA) to create subgroups based on the developmental trajectories of maternal threat perceptions (Jung & Wickrama, 2008). As a first step, we conducted linear and quadratic latent growth curve models (LGCs) separately for competition and uncertainty. A linear slope indicates a linear rate of change in mothers' threat perceptions and an additional quadratic slope indicates curvilinear change. After choosing the best-fitting models, a multivariate LCGA including both competition and uncertainty scores was specified for identifying different groups of maternal threat perceptions (8 averaged scores in total). Considering the limited sample size, we tested one- to three-class solutions and compared the model fits with a variety of statistical criteria. In accordance with current guidelines (Jung & Wickrama, 2008), adding a class should result in an improved model fit, as indicated by a decrease in the Akaike Information Criterion, the Bayesian Information Criterion (BIC), and the Sample-Sized Adjusted Bayesian Information Criterion (a-BIC), as well as a significant bootstrap likelihood ratio test (BLRT) and a significant Lo–Mendell–Rubin adjusted likelihood ratio test. In addition, entropy, a measure of qualification certainty, should be higher than 0.75 (Reinecke, 2006).

After determining the number of subgroups, we compared a multiple group version of the RI-CLPM, in which there were no constraints across the groups, with a model in which the paths of interest (from reconsideration to helicopter parenting) were constrained to be identical across the groups (Mulder & Hamaker, 2021). If the chi-square difference test indicated that this constraint could not be imposed, it would suggest that the effects of reconsideration on helicopter parenting differed according to mothers' perceptions of threats (lower vs. higher). In other words, this would imply a moderation effect.

RESULTS

Descriptive statistics and preliminary analyses

We calculated descriptive analyses and bivariate correlations using SPSS version 25. Table 1 shows the means and standard deviation of study variables, as well as the within-time bivariate associations between study variables. Mother-reported

helicopter parenting was positively associated with reconsideration at T1, and with threat measures (i.e., competition and uncertainty) across T1–T3, but not with any of the other identity measures. Results of longitudinal measurement invariance indicated the establishment of partial scalar invariance for helicopter parenting and scalar invariance for the other study variables (see Table S4).

Associations between helicopter parenting and educational identity processes

Utilizing RI-CLPM, we examined prospective, reciprocal, within-person associations between maternal helicopter parenting and students' educational identity. In three separate models, we specified paths between helicopter parenting and one educational identity process (i.e., commitment, in-depth exploration, and reconsideration). Table S5 shows model fit and model comparisons for each of these models. According to the model comparisons, we constrained all cross-lagged paths, stability paths, and T2–T4 correlated change to be time-invariant for reconsideration. Stability paths for commitment and in-depth exploration were freely estimated, but all other paths were constrained to be equal for those models too. As shown in Table S4, the most parsimonious model (Model 7) did not fit significantly worse than the unconstrained model (Model 1).

As shown in Table 2, the between-person component of the models showed that time-invariant individual differences (i.e., random intercept) in maternal helicopter parenting were not correlated with educational identity processes. The within-person component of the models showed that the stability paths of commitment and in-depth exploration from T2 to T3 and from T3 to T4 were significant. The initial correlation between helicopter parenting and reconsideration was significant. Contrary to Hypotheses 1a and 1b, the cross-lagged paths from helicopter parenting to educational identity processes were all nonsignificant, suggesting that helicopter parenting did not predict subsequent educational identity processes at the within-person level. Contrary to Hypotheses 2a and 2b, cross-lagged paths from educational identity processes to helicopter parenting were not significant.

Moderation by environmental threat perceptions

Construction of maternal threat perception groups

LGCM revealed that the quadratic models had better model fits for both competition and uncertainty (see Table S7). Although the three-class solution in the multivariate quadratic LCGA had the lowest BIC value and significant BLRT, we regarded the two-class solution as preferable for its equivalent sample sizes and a significantly better model fit than the three-class solution indicated by LMR (see Table S8). The entropy was also acceptable for the two-class

TABLE 1 Descriptive Information and bivariate correlation for study variables.

Variable	Time	M (SD)	2	3	4	5	6
Helicopter parenting	T1	3.64 (0.66)	.01	.03	.13*	.31***	.26***
	T2	3.51 (0.61)	-.05	.04	.03	.32***	.39***
	T3	3.47 (0.58)	.03	.01	.10	.29***	.35***
	T4	3.43 (.068)	.02	-.07	.06	.37***	.31***
Commitment	T1	4.04 (0.95)	-	.43***	-.15**	-.08	-.08
	T2	3.80 (0.91)	-	.45***	-.10	-.05	-.05
	T3	3.74 (0.96)	-	.44***	-.12*	-.08	-.04
	T4	3.75 (0.92)	-	.47***	-.10	-.06	.01
In-depth exploration	T1	4.41 (0.80)	-	-	.07	-.05	-.01
	T2	4.09 (0.82)	-	-	.07	-.02	.002
	T3	4.07 (0.85)	-	-	.09	-.10	-.11*
	T4	4.06 (0.91)	-	-	.17**	-.05	.07
Reconsideration	T1	4.02 (1.03)	-	-	-	.03	.05
	T2	3.90 (0.93)	-	-	-	-.01	-.03
	T3	3.94 (0.96)	-	-	-	.07	.08
	T4	3.99 (0.94)	-	-	-	.02	.04
Uncertainty	T1	3.96 (0.92)	-	-	-	-	.61***
	T2	3.88 (0.87)	-	-	-	-	.73***
	T3	3.89 (0.85)	-	-	-	-	.68***
	T4	3.85 (0.91)	-	-	-	-	.71***
Competition	T1	4.35 (0.82)	-	-	-	-	-
	T2	4.12 (0.79)	-	-	-	-	-
	T3	4.17 (0.78)	-	-	-	-	-
	T4	4.13 (0.80)	-	-	-	-	-

Note: * $p < .05$; ** $p < .01$; *** $p < .01$.

Abbreviation: T, time.

solution. Two subgroups are heretofore referred to as the lower-threat group ($n = 169$) and the higher-threat group ($n = 180$). As shown in Table S9, results suggested that initial levels of maternal perceptions of uncertainty, $\chi^2_{\text{wald}}(1) = 71.380$, $p < .001$, and competition, $\chi^2_{\text{wald}}(1) = 65.235$, $p < .001$, were significantly higher in the higher-threat group. As for the linear slope factor, decreases in mothers' perceptions of uncertainty, $\chi^2_{\text{wald}}(1) = 6.914$, $p = .009$, and competition, $\chi^2_{\text{wald}}(1) = 5.164$, $p = .023$, were significantly steeper in the lower-threat group. No significant difference was found between quadratic slope factors. A depiction of the two-class solution is shown in Figure S1, and the mean score differences of study variables between two groups are shown in Table S10.

Group differences in cross-lagged paths

Finally, we conducted multi-group RI-CLPMs to test for the moderating effect of maternal threat perceptions (lower vs. higher) on the over-time predictions from reconsideration of commitment to maternal helicopter parenting (Mulder & Hamaker, 2021). First, we fitted a multi-group RI-CLPM

without constraints across two groups, $S-B\chi^2(62) = 78.250$, $SCF = 1.010$. Subsequently, we fitted a model in which lagged paths from students' reconsideration to mothers' helicopter parenting were invariant across groups, $S-B\chi^2(63) = 83.384$, $SCF = 1.007$. The chi-square difference test of these two nested models, $\Delta\chi^2(1) = 6.011$, $p = .014$, implied that imposing the constraints was not tenable; the lagged effects from students' reconsideration to mothers' helicopter parenting were different for dyads with different levels of maternal threat perceptions. Thus, maternal threat perceptions moderated the within-person association from students' reconsideration to mothers' helicopter parenting, supporting Hypothesis 3. Cross-lagged paths from reconsideration to helicopter parenting were positive and significant in the higher-threat group, $b = .069$, $p = .040$, but negative and nonsignificant in the lower-threat group $b = -.031$, $p = .334$.

DISCUSSION

As young people enter college, their parents must strike a balance between providing support and encouraging

TABLE 2 Standardized and unstandardized path coefficients for RI-CLPMs linking helicopter parenting and educational identity processes.

	<i>B</i>	<i>p</i>	95% CI	β
Commitment				
HP <i>t</i> → HP <i>t</i> + 1	<.001	.997	[−.092, .092]	<.001
EID-C <i>t</i> → EID-C <i>t</i> + 1	−.002/.402***/.278**	.988/<.001/.001	[−.210, .206]/[.196, .608]/[.117, .440]	−.002/.345***/.318**
HP <i>t</i> → EID-C <i>t</i> + 1	−.065	.266	[−.179, .049]	−.057/−.034/−.040
EID-C <i>t</i> → HP <i>t</i> + 1	.017	.542	[−.038, .071]	.031/.027/.025
Initial correlation at T1	.023	.296	[−.021, .067]	.082
Correlated changes at T2-T4	.003	.733	[−.016, .022]	.019/.016/.014
Between-person correlation	−.017	.482	[−.066, .031]	−.050
In-depth exploration				
HP <i>t</i> → HP <i>t</i> + 1	.001	.978	[−.091, .093]	.002/.001/.001
EID-D <i>t</i> → EID-D <i>t</i> + 1	−.111/.409***/.241*	.307/<.001/.017	[−.325, .102]/[.209, .609]/[.043, .440]	−.125/.318***/.240*
HP <i>t</i> → EID-D <i>t</i> + 1	−.036	.539	[−.151, .079]	−.036/−.019/−.020
EID-D <i>t</i> → HP <i>t</i> + 1	.047	.161	[−.019, .113]	.078/.066/.068
Initial correlation at T1	.023	.258	[−.017, .064]	.089
Correlated changes at T2-T4	.012	.189	[−.006, .029]	.073/.056/.044
Between-person correlation	−.014	.485	[−.054, .025]	−.048
Reconsideration				
HP <i>t</i> → HP <i>t</i> + 1	.001	.975	[−.092, .095]	.002/.001/.001
EID-R <i>t</i> → EID-R <i>t</i> + 1	.014	.826	[−.114, .143]	.019/.014/.015
HP <i>t</i> → EID-R <i>t</i> + 1	−.015	.832	[−.150, .120]	−.011/−.008/−.008
EID-R <i>t</i> → HP <i>t</i> + 1	.022	.367	[−.026, .069]	.054/.040/.032
Initial correlation at T1	.070**	.010	[.017, .123]	.177**
Correlated changes at T2-T4	.009	.364	[−.011, .029]	.043/.041/.033
Between-person correlation	.031	.165	[−.013, .074]	.094

Note: Bolded values represent significant coefficients. **p* < .05; ***p* < .01; ****p* < .001.

Abbreviations: C, commitment; D, in-depth exploration; EID, educational identity; HP, helicopter parenting; R, reconsideration; *t*, time.

independence. Many studies have suggested that helicopter parenting, which represents an imbalance in this dynamic, might contribute to emerging adults' social and emotional adjustment difficulties (Luebbe et al., 2018; Reed et al., 2016; van Ingen et al., 2015). Most previous research on helicopter parenting has utilized cross-sectional designs, however, and interpretations of related results have often ignored the possibility that these behaviors might be a response to (perceived) youth challenges instead of an antecedent. We followed first-year college students and their mothers in Hong Kong for the full first year of university and examined the longitudinal associations between maternal helicopter parenting and students' educational identity processes (i.e., commitment, in-depth exploration, and reconsideration) at the between- and within-person levels. Moreover, we investigated whether mothers' perceptions of environmental threats, namely competition and uncertainty, amplified or attenuated these associations. Contrary to our expectations, helicopter parenting and emerging adults' educational identity processes were not significantly related and did not directly predict each other (Hypotheses 1 and 2). In line with predictions, however, within-person changes in students' reconsideration of educational commitments preceded increases in mothers' overbearing practices, but only among mothers who perceived

the environment to be more uncertain and competitive (Hypothesis 3). Altogether, results suggested that helicopter parenting was a response to difficulties in educational identity development when mothers viewed the social environment as more threatening. First-year college students' academic turbulence might trigger over-involved behaviors, particularly when parents hold stronger beliefs that their children's world is an uncertain, competitive place.

Inconsistent with our assumptions, we did not find significant paths from helicopter parenting to students' educational identity processes at the within-person level. That is to say, helicopter parenting did not seem to impair college students' commitment or in-depth exploration, nor did it promote reconsideration of present educational commitments. On the one hand, we used mothers' reports rather than youth reports of helicopter parenting in this study, which could result in relatively small effects on children-report identity processes (Crocetti et al., 2017). On the other hand, the effects of helicopter parenting on youth's identity processes might decline as young adults adapt to new social roles and environments. While parents are willing to provide support in emerging adulthood, most of them are unfamiliar with students' courses and projects in college. Thus, youth's interactions with peers or professors might matter more for their

educational identity changes than parental over-engagement in daily household issues.

Inconsistent with Hypothesis 2a, commitment and in-depth exploration did not predict mothers' reduced helicopter parenting at the within-person level. It is possible that mothers have difficulty perceiving youth's changes in commitment (e.g., confidence and security derived from established commitments) and in-depth exploration (e.g., the frequent reflection on established choices), which in turn would not result in any related changes to their parenting behavior. Moreover, highly invested Chinese parents might focus on short-term but obvious academic outcomes (e.g., scholarship or GPA) rather than long-term outcomes that are less noticeable (e.g., satisfaction with educational choices). Thus, even if some mothers can detect positive changes in commitment and in-depth exploration, they might remain excessively involved unless their children's academic achievements meet their expectations. In addition, based on Chinese parents' belief in effort as the key determinant of academic success (Chen & Stevenson, 1995), parents might never be fully satisfied with youth's achievement and remain over-engaged in students' daily lives. In other words, parents' behaviors might not meaningfully covary with their children's demonstrations of identity synthesis processes. Additionally, the double-edged nature of in-depth exploration (Crocetti, 2017; Crocetti et al., 2010) may explain the nonsignificant effects of in-depth exploration on helicopter parenting. Specifically, our findings supported previous studies indicating a consistent association between in-depth exploration and commitment, as it helps maintain and further strengthen chosen commitments. In some cases, however, positive correlations between in-depth exploration and reconsideration could suggest increased identity uncertainty about their commitments (Crocetti, 2017).

Partly in line with our predictions, reconsideration of commitments positively predicted helicopter parenting for mothers who perceived greater environmental competition and uncertainty. That is to say, some mothers who perceived the social environment to be less competitive and unstable might give their children more space and time to reconsider commitments that they deem unsatisfying. Although reconsideration of commitment is associated with youth maladjustment (Crocetti et al., 2017), replacing commitments that are unsatisfactory with ones that are more appropriate might benefit youth's long-term academic and occupational development. In contrast, mothers who perceive greater environmental threat might exhibit higher levels of self-centered thinking and behaviors (Zhu et al., 2019) in response to children's identity confusion. Specifically, these mothers might view reconsideration of commitments as "wasting time," and feel anxious about the possibility that youth are falling behind their peers. These anxieties could weaken parents' rational judgments and strengthen their self-centered, overbearing behaviors as they prioritize their own immediate stability over children's long-term development (Rousseau & Scharf, 2017; Segrin et al., 2013).

Overall, our findings suggest that mothers' overbearing practices can at least sometimes be responses to changes in youth's adjustment. These findings are inconsistent with the previous emphasis on the "effects" of helicopter parenting in cross-sectional studies and point to the importance of clarifying the antecedents versus consequences of helicopter parenting by replicating prior findings with longitudinal designs. Our findings might further point to the changing associations between parental over-involvement and youth adjustment at different developmental stages. While previous research found that parents' unnecessary micro-management predicts younger children's (aged 4 to 6) social withdrawal (Nelson et al., 2006), another longitudinal study suggested a bidirectional relationship between maternal overparenting and Hong Kong adolescent's anxiety from Grades 7–10 (Leung, 2021). In contrast, among university students, recent longitudinal research has indicated that emotional difficulties among university students predicted perceived helicopter parenting, while the reverse relationship was not observed (Gao et al., 2022). Combined with our findings, these studies might indicate the predominance of parent-driven effects in earlier childhood, with a gradual shift toward youth-driven effects in the progression toward emerging adulthood. Future studies are needed to further clarify these changing associations. Moreover, our observation of these relationships at the within-person level is consistent with previous research (Boele et al., 2022) in suggesting that youth-driven effects at this level appear to prevail over parent-driven effects for middle to late adolescents. Considering that the majority of studies on helicopter parenting are not capable of differentiating within- and between-person associations, future studies are needed to clarify these differential patterns.

Limitations and future directions

The current study has several methodological strengths over prior research. First, we adopted a dual-informant approach to data collection. We did not rely on students' self-reports of perceived helicopter parenting; rather, we directly related youth's reports of their own identity processes to mothers' own evaluations of their parenting, which could better reflect mothers' thoughts, feelings, and self-beliefs about their own parenting. Second, the sample included non-Western (Chinese) parent-youth dyads, who have been relatively overlooked in research on helicopter parenting. Third, our four-wave longitudinal design covered the entire first year of students' university experience, allowing for an advanced analytic approach (RI-CLPM) that provided potential insights into the within-person associations between helicopter parenting and emerging adults' educational identity processes over time. The adoption of these approaches allows for a more in-depth analysis of associations within families. However, this may also have resulted in smaller effect sizes as compared to studies using single-informant designs.

Despite these strengths, this study has limitations that should be addressed in further research. The within-family associations observed in this study may have been underestimated due to our use of the HPI, a widely used scale that does not necessarily reflect the multidimensional nature of this construct. For example, validated multi-dimensional measurements of Chinese helicopter parenting highlight a strong emphasis on youth achievement outcomes that might be culturally-specific, to some extent (Leung & Shek, 2017; Zong & Hawk, 2022). Future research could benefit from using multidimensional measures to explore how within-family associations between identity and helicopter parenting vary across different identity domains and helicopter parenting dimensions. For instance, it would be interesting to investigate whether there are stronger within-family associations between educational identity and academic-related helicopter parenting dimensions.

Future studies may also benefit from investigating changes in associations between identity processes and helicopter parenting across different educational phases. For example, it is possible that associations between in-depth exploration and helicopter parenting may be more substantial during the final year of high school, when adolescents might benefit from parental guidance and support to make informed decisions about college and major selection. As the present study only examined the first year of university and did not include other crucial educational phases such as the last years of secondary school, conducting longer-term research (e.g., Christiaens et al., 2021) is essential to comprehensively understand how the relations between the three educational identity processes and helicopter parenting may evolve over time.

Another limitation concerns the effects of the COVID-19 epidemic in Hong Kong at the time of data collection. Typically, a majority of students at the university where the study took place live on-campus in their first year, which would lead to less daily, in-person family interaction. The fact that almost all participants were all living with mothers due to the pandemic might have complicated the separation and individuation processes that typically occur during this period. The public health situation at this time might have also exacerbated mothers' threat perceptions and reduced the overall amount of variation in their responses.² Moreover, our participants also reported a fairly low average family income, potentially amplifying the effects of COVID-19 upon perceptions of economic uncertainty. Thus, replication is needed to examine whether these findings generalize to more typical (e.g., postpandemic normalization) circumstances.

Our aim to collect data at the start and end of each academic term resulted in unequal time intervals (as the

academic terms were longer than the break between them); imposing equality constraints in this case might lead to an ambiguous interpretation of the cross-lagged relationship. Although the results of model comparisons supported these equality constraints, future studies should consider collecting data with equal time intervals. Additionally, further research would also benefit from attempts to replicate this study with a larger sample size. Sample sizes for each threat group were under 200, potentially limiting the power to detect smaller effects. Mother and fathers play different roles in the Chinese context (Shek, 2008). Further studies could extend this research using a multi-informant design involving fathers. Comparing the similarities and differences in fathers' and mothers' responses to their children's adjustment could provide a more comprehensive and whole-family understanding of Chinese helicopter parenting. Finally, as previous studies have found that both helicopter parenting and identity processes are closely linked to youth psychosocial adjustment (e.g., emotion problems; Gao et al., 2022; Potterton et al., 2022), future studies might also benefit from investigating the mediating role of helicopter parenting practices in the longitudinal associations between identity processes and youth adjustment.

CONCLUSIONS

The current study extends the research on youth-driven and environmental predictors of helicopter parenting in the Chinese context. We analyzed the associations between educational identity processes and maternal helicopter parenting across the first collegiate year, as well as mothers' perceptions of environmental threats. Although helicopter parenting did not predict emerging adults' educational identity development, we documented that first-year college students' reconsideration of educational commitments precedes maternal helicopter parenting among mothers who perceived the environment to be more uncertain and competitive. To our knowledge, this is the first longitudinal study to unpack how college students' educational identity process and environmental threats interact to shape potentially excessive and overbearing forms of parental support. These findings emphasize that youth are not passive recipients of parenting but active participants in family processes. Mothers' perceptions of uncertainty and competition might amplify their over-involved responses to changes in emerging adults' educational identity formation processes.

This study provides important insights for family researchers and scholars regarding different, especially academic-related, predictors of these behaviors in China. Cultural differences, such as Chinese parents' expectations of their children bringing honor to the family through academic success, should be taken into consideration when conducting relevant research. Practically, parental worldviews and overemphasis on academic performance might be viable targets of intervention aimed at reducing

²As suggested by one Reviewer, we ran sensitivity analyses including both adolescents' and mothers' psychological preoccupation with COVID-19 as time-varying covariates in our models. We observed no significant association between preoccupation variables and our main variables. Results related to moderation analysis remained unchanged. The scale used are provided in the supplemental materials, and related analyses are available upon request.

helicopter parenting. Intervention programs that enhance parental awareness and teach parents appropriate ways to cope with anxiety and pressure might be promising avenues for reducing overreactive behaviors. Long-term treatment based on such insights may improve parents' well-being and family relationships.

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CONFLICT OF INTEREST STATEMENT

We have no known conflict of interests to disclose.

DATA AVAILABILITY STATEMENT

The data and material analyzed for the current report are not publicly available but may be requested from the corresponding author on reasonable request.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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