

THE ROLE OF ETHNIC IDENTITY, PARENTING, AND PSYCHOLOGICAL NEEDS
SATISFACTION IN ASIAN AMERICAN EMERGING ADULTS' EXPOSURE TO RISKS
FOR DISORDERED EATING

By

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ABSTRACT

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The present study examined how individual (satisfaction of basic psychological needs), relational (parenting), and cultural (ethnic identity) factors may contribute to Asian American emerging adults' (18–25 years of age) disordered eating. A characteristic of eating disorders, introjected regulation of eating is a regulatory style in which individuals' shame/guilt related to the amount of food eaten or body weight/shape motivates regulation of eating. This study examined whether satisfaction of psychological needs mediated the relations between perceived parental psychological control (achievement- and dependency-oriented) and introjected regulation of eating, and whether Asian American emerging adults' ethnic identity moderated the association between parental control and psychological needs satisfaction. Asian American emerging adults ($N = 127$) completed a cross-sectional survey study. Psychological needs satisfaction mediated the positive relationship between both types of psychological control and introjected regulation of eating. Participants with higher, compared to lower, ethnic identity had stronger relations between perceived achievement-oriented, but not dependency-oriented, parental psychological control and psychological needs satisfaction. Results of this study highlighted the importance of parenting and ethnic identity among Asian American emerging adults, particularly in clarifying their risk and resilience for disordered eating. These results will help refine current models of eating disorders for Asian Americans and inform the development of culturally-sensitive intervention and prevention programs attending to the needs of Asian American emerging adults.

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INTRODUCTION

At some point in their lives, over 40% of the adult population worldwide engages in some form of eating regulation to control weight and address appearance and health concerns (Santos et al., 2017; Sares-Jäske et al., 2019). However, the regulation of eating is not always associated with positive physical and mental health outcomes (Brown et al., 2020; Chin et al., 2018). In fact, some forms of regulated eating can pose risks for disordered eating symptoms, such as binge eating (i.e., consuming an objectively large amount of food in a short period of time accompanied by a sense of loss of control; American Psychiatric Association, 2013) and compensatory behaviors (e.g., self-induced vomiting) to eliminate the food consumed. In severe cases, these symptoms (e.g., binge eating, compensatory behaviors) constitute eating disorders, which are debilitating illnesses that can result in serious medical consequences, including electrolyte disturbances and cardiac arrhythmias (Mehler et al., 2010; Papadopoulos et al., 2009). Asian Americans are exposed to similar or higher risk for developing eating disorders than White individuals (Nicdao et al., 2007; Smart et al., 2011; Talleyrand, 2012); yet, there is a dearth of research examining risk and protective factors in this population, in part because Asian Americans are stereotypically viewed as unfeeling, not experiencing psychological challenges, or immune to body dissatisfaction due to their smaller body sizes (Phan & Tylka, 2006).

During emerging adulthood (the developmental period between 18 and 25 years of age) individuals face numerous changes in interpersonal relationships, career development, and worldviews (Arnett, 2007), which can challenge psychological adjustment and well-being later in life (Arnett, 2007). During adolescence and emerging adulthood, individuals are also at the highest risk for developing eating disorders compared to other developmental periods of life (Hudson et al., 2007; Stice et al., 2013). Notably, parents continue to play an important role in

emerging adults' development, as changes in Western societies in the past decades have led to extended parental involvement in children's lives among middle-class families (Arnett, 2007; Nelson et al., 2007); emerging adults navigate both changes in their lives and in their own sense of independence from their parents (Nelson et al., 2011). The current study focused on parenting practices as one of the factors that could contribute to Asian American emerging adults exposed risk for disordered eating.

Self-Determination Theory (SDT; Deci & Ryan, 1985, 2000) is a general framework that identifies important constructs impacting the development of regulatory behaviors, including regulation of eating. SDT posits that different types of motivational processes influence regulatory behaviors. Some types of motivation for regulating eating are more closely associated with disordered eating than other types (Pelletier et al., 2004). In particular, introjected regulation, a sub-type of extrinsic motivation, motivates behaviors by internalizing external sources of control so that one feels guilty or anxious when the behaviors are not performed (Ryan & Connell, 1989). As such, when introjected motivation is formed, the original external motivators (e.g., demands from others) are no longer needed to motivate the behaviors. For instance, individuals motivated by introjected regulation of eating regulate their eating behaviors because they would feel proud or ashamed about the amount of food they eat, or about their body shape or weight. In fact, such regulatory style of eating behaviors is reflected in the diagnostic criteria of eating disorders: Placing an excessive emphasis on body shape or weight in the determination of self-esteem and feeling guilt or shame while altering eating behaviors are core symptoms of eating disorders (American Psychiatric Association, 2013).

According to SDT, the motivations for various human behaviors are determined by the satisfaction of one's basic psychological needs for: (1) competence, feeling effective and skillful

in the performed activities; (2) relatedness, feeling cared for by others and wanting to care for others; and (3) autonomy, feeling that one's behaviors are volitional (Deci & Ryan, 2000). While previous research has shown that genetic predispositions may increase risk for disordered eating (Bulik, 2005; Ma, Mikhail, Fowler, et al., 2019; Wade & Bulik, 2018), SDT serves as a reminder that psychosocial factors are also important in understanding how behaviors are shaped.

Socialization forces can influence, positively or negatively, psychological needs for competence, relatedness, and autonomy. In particular, parenting practices are important psychosocial factors that have the potential to thwart or satisfy emerging adults' basic needs in these areas, which in turn may impact the development of motivational behaviors, emotional adjustment, and emerging adults' risk for introjected regulation of eating. Despite the importance of these potential relations, to date, no studies have empirically tested whether psychological needs satisfaction mediates the association between parenting practices and the introjected regulation of eating in any sample.

The association between psychological needs satisfaction and well-being is evident across cultures (Chirkov et al., 2003; Deci & Ryan, 2000), but how psychological needs can be met may vary across cultures (B. Chen et al., 2015), with interpersonal factors such as parenting being a central piece to these cultural differences. For example, in Western, more independence-oriented cultures, both behavioral and psychological forms of parental control are consistently linked to poorer psychological functioning in children, adolescents, and emerging adults (e.g., Luyckx et al., 2007; Nelson et al., 2011; Urry et al., 2011). However, findings on the effects of parental control on psychological well-being in Asian cultures are less conclusive than those in Western contexts, because the concept of control may be more socially acceptable in Asian cultures (Fung & Lau, 2012). Because ethnic identity is often reflective of the degree of

acceptance and maintenance of cultural practices or characteristics (Cokley, 2005; Iwamoto & Liu, 2010), stronger identification with their ethnic culture in Asian Americans emerging adults may play a protective role against the negative effects of parental control on their psychological needs satisfaction.

The current study used survey responses from Asian American emerging adults to examine (1) whether psychological needs satisfaction mediates the association between perceived parental psychological control and their introjected regulation of eating; and (2) whether ethnic identity moderates the association between perceived parental psychological control and their basic psychological needs satisfaction (see Figure 1 for the proposed theoretical model).

Social Environments and Psychological Needs Satisfaction

SDT posits that the social environment is essential for satisfying or frustrating individuals' ability to achieve their psychological needs, and can therefore foster more or less optimal (i.e., autonomous versus controlled) regulation of behaviors (Deci et al., 1994; Grolnick et al., 1997). Social environments that are autonomy-supportive (Deci et al., 1994; Grolnick et al., 1997; Reeve, 2002) support individuals' volitional will and psychological freedom. Such environments provide individuals with respect for their perspectives, choices and meaningful rationale for constrained choice (Deci et al., 1994). At the other end of the spectrum, a controlling environment pressures individuals to think, feel, or behave in a particular manner without providing space for volitional choice. While an autonomy-supportive environment fosters satisfaction of psychological needs and leads to intrinsically motivated behaviors (Vansteenkiste et al., 2004), a controlling environment likely leads to less internalized regulatory styles. Notably, a controlling environment may be externally or internally controlling.

While external control makes a person feel that the pressure is imposed from outside the person (e.g., through using deadlines for projects or monetary rewards for completing tasks), internal control is psychological control that prompts one to engage in a behavior by inducing pride, shame or guilt (Ryan, 1982; Vansteenkiste et al., 2005). Although both internal and external control frustrate psychological needs and can lead to controlled motivation, internal/psychological control, due to its appeal to self-conscious emotions, is more likely to result in introjected regulation of behaviors (Soenens & Vansteenkiste, 2010), including behaviors related to disordered eating (e.g., Goss & Allan, 2009; Ma & Kelly, 2020).

The Role of Parental Psychological Control

Parenting practices are the key component of children's socialization experiences within the family and play an important role in the social environment. Parents' engagement in psychologically controlling practices may influence their offspring's psychological needs satisfaction, and in turn, the types of motivation that regulates their behaviors. The impact of parenting may be particularly important to examine during emerging adulthood. While emerging adults navigate numerous role changes through a period that calls for great amounts of autonomy (Arnett, 2000), parents' extended time of involvement in their lives in contemporary Western societies may have unique implications in their development. In particular, previous research has shown that a majority of emerging adults in the U.S. do not consider themselves as adults (Nelson & Barry, 2005), and their parents tend not to view the children in this age range as adults and feel the need to be involved in their development (Nelson et al., 2007). Since emerging adults may have growing psychological needs such as autonomy, controlling parenting practices that may limit the satisfaction of these needs may be particularly detrimental to their adjustment.

Parental psychological control is defined as, “socialization pressure that is non-responsive to the child’s emotional and psychological needs (but instead) stifles their independent expression and autonomy” (Barber, 1996). This pressure is often expressed through insidious manipulation that appeals to the child’s self-conscious emotions (i.e., pride, shame, guilt), which the parents may or may not be consciously aware of (Barber, 1996; Grolnick, 2003). Among adolescents and emerging adults, two forms of parental psychological control have been proposed: (1) achievement-oriented psychological control (APC), and (2) dependency-oriented psychological control (DPC) (Soenens et al., 2010). APC occurs when the parents’ love is contingent upon the child meeting strict achievement demands. The recipients of achievement-oriented controlling parenting, as they internalize the parental criticism, tend to become self-critical and perfectionistic regarding their own performance (Blatt, 1974; Blatt & Homann, 1992). DPC is defined as parenting that manipulates the parent’s attachment bond with the child, sometimes due to parents’ own separate anxiety (Kins et al., 2011). In DPC, because parental love and acceptance are contingent on the child’s dependence on the parents, the instability of the relationship tends to result in the child’s insecurity about the parent’s care, which may generalize to strong concerns about interpersonal relations in other contexts (Blatt, 1974; Blatt & Homann, 1992). Both self-critical perfectionism and dependency frustrate basic psychological needs and create vulnerabilities in individuals’ well-being (Blatt, 1974, 2004).

Parents who frequently engage in psychological control create an internally controlling familial environment. Parental psychological control is an external force that functions through activating a child’s self-conscious emotions and making the child feel pressured from within so that the child would be motivated to engage in behaviors to avoid feelings of guilt and shame. Individuals socialized in such families are at higher risk for developing introjected regulation of

behaviors (Kins et al., 2009; Soenens & Vansteenkiste, 2010; Williams & Ciarrochi, 2020). Introjected regulation of eating is motivated by feelings of pride, shame and guilt, which are self-conscious emotions closely associated with disordered eating in general (Goss & Gilbert, 2002; Ma & Kelly, 2020; Troop & Redshaw, 2012). Therefore, individuals whose parents tend to be psychologically controlling could be more likely to engage in introjected regulation of eating. Notably, introjected regulation of eating that has also been shown to be associated with low satisfaction of basic psychological needs in emerging adults (LaCaille et al., 2020).

The first aim of the present study was to examine whether achievement-oriented and dependency-oriented parental psychological control are each associated with introjected regulation of eating in Asian Americans emerging adults. We hypothesized that APC and DPC would each be associated with greater introjected regulation of eating in Asian American emerging adults through undermining the satisfaction of their psychological needs. Both APC and DPC may create risks for introjected regulation of eating through undermining the general satisfaction of basic psychological needs. Specifically, when basic psychological needs are unmet, individuals may look for substitutes to fulfill these; endorsement of a thinner body shape and restricting food intake may be an attempt to set goals that one thinks can compensate for the unmet needs (Bégin et al., 2018; Deci & Ryan, 2000). In fact, unsatisfied psychological needs have been suggested to be related to disordered eating (Kopp & Zimmer-Gembeck, 2011; Schüler & Kuster, 2011; Thøgersen-Ntoumani et al., 2010). However, APC and DPC may also undermine the satisfaction of basic psychological needs through distinct mechanisms. For example, an individual's motivation to control their eating behaviors may result from not feeling competent when comparing one's own body to those seen on the media and believing that body shape or weight is an important factor for maintaining relationships, and this feeling of

incompetence tends to be closely associated with APC and perfectionism, which is closely associated with disordered eating (e.g., Bardone-Cone et al., 2007; Franco-Paredes et al., 2005). On the other hand, the instability of parental love involved in DPC may create distrust in the parent-child relationship, which extends to the child's lack of trust for others, another risk factor for disordered eating (Matusitz & Martin, 2013). Therefore, we hypothesized that APC and DPC would both be related to Asian American emerging adults' introjected regulation of eating through undermining their satisfaction of basic psychological needs, but we examined APC and DPC in separate models.

The Role of Ethnicity and Culture

Although disordered eating was previously conceived as primarily afflicting White Euro-American females, risk factors for eating disorders and the severity of eating disorder symptoms do not differ across ethnic-racial groups (Shaw et al., 2004) or other groups of social identities (e.g., culture, socioeconomic status, gender or sex; (Gard & Freeman, 1996; Reagan & Hersch, 2005; Robinson et al., 2012). However, the clinical stereotype that disordered eating only impact White females creates a disparity in service accessibility for ethnically minoritized individuals. Individuals in ethnically minoritized groups are less likely to be recognized as experiencing disordered eating and be referred for further evaluation or intervention (Becker et al., 2003; Pike & Walsh, 1996; Sonnevile & Lipson, 2018). Moreover, the etiology of eating disorders is multifaceted. Mechanisms of the onset and maintenance of disordered eating in minoritized cultures may differ from those of White individuals (Cummins & Lehman, 2007; White & Grilo, 2005), yet evidence-based treatments for eating disorders have mainly been developed based on White samples. Therefore, it is important to understand factors that contribute to risk for disordered eating among people of color in order to develop more effective prevention and

intervention strategies for these groups. In the current study, we examined whether ethnic identity played a role in the relation between parenting and introjected regulation of eating.

SDT posits that the influence of psychological needs on well-being is universal across cultures (Chirkov et al., 2003; Deci & Ryan, 2000). Notably, even though some theories have suggested that satisfaction of autonomy needs would be more beneficial for people from individualistic cultures that value independence (e.g., Iyengar & DeVoe, 2003; Uchida & Kitayama, 2009), these theories define autonomy as independence/individualism and contrast it with dependence/collectivism (Markus & Schwartz, 2010), whereas autonomy described in SDT is not equivalent to independence as opposed to interdependence. Autonomy, as conceptualized by SDT, refers to a sense of volition and willingness, which contrasts with pressure and coercion. Under this premise, people may act either independently or interdependently from others, based on their volitional will and because acting so is consistent with their values (B. Chen et al., 2015; Chirkov et al., 2003; Ryan & Lynch, 1989). Chen et al. (2015) found that the effects of psychological needs satisfaction on wellbeing were equivalent across individuals from four countries (i.e., Belgium, China, USA, and Peru). It is worth noting that, although the degree of association between psychological needs satisfaction and wellbeing appears to be culturally invariant, the mean levels of psychological needs satisfaction have been found to vary across cultural groups; individuals from Asian countries tend to score lower on both need satisfaction and wellbeing (e.g., Church et al., 2013). For example, individuals from Asian countries score lower on both perceived satisfaction of basic psychological needs and wellbeing compared to individuals from non-Asian countries (Church et al., 2013). Lower basic psychological needs satisfaction in Asian countries is theorized to partly be the result of lower individualism, a

greater tolerance for contradiction and complexity in the world generally, and an expectation that one's own cognition or behaviors may vary (i.e., dialecticism).

In addition, how psychological needs are met may vary across different contexts, depending on the values and accompanying cultural practices within each specific context (B. Chen et al., 2015). For instance, although parental (behavioral and psychological) control has been linked with poor psychological functioning in children from Western cultures (e.g., Luyckx et al., 2007; Nelson & Padilla-Walker, 2013; Urry et al., 2011), parental control does not consistently predict poorer outcomes in Asian children despite being used more frequently in Asian cultures (Chao, 1994; Fung & Lau, 2012; Rudy & Halgunseth, 2005). In fact, previous research has suggested that the concept of control may be more socially acceptable and normative in Asian cultures. For instance, in Chinese cultures, the use of behavioral controlling practices such as physical punishment to achieve child compliance may reflect an emphasis on the value of maintaining hierarchical parent-child relationships rather than parental hostility (Kwok et al., 2017). Dependence-oriented psychological control may also be viewed as more socially appropriate in interdependent cultures because of its consistency with the socialization goals of maintaining interpersonal relationships and interconnectedness among family members (Fung & Lau, 2012; Jackson et al., 2015; Rudy et al., 2014).

Ethnic identity is defined as an individual's sense of identification with or belonging to their own ethnic group (Roberts et al., 1999). Asian Americans who have stronger ethnic identity are more likely to hold the values of their heritage Asian cultures. Since psychological control may be more accepted in Asian cultures, ethnic identity in Asian American emerging adults may moderate (i.e., buffer against or decrease) the negative effects of psychologically controlling parenting on emerging adults' psychological needs satisfaction. Specifically, in a culture where

controlling practices are relatively normative versus non-normative, the practices may be more likely to be motivated by care for the child and more likely to be perceived by the child as well-meaning. For example, instead of being viewed as overly critical, APC may be viewed as sincere concern for the child's future opportunities, especially among families with immigrant backgrounds for whom educational opportunities in the host culture are seen as the only opportunity for upward mobility (Louie, 2004; Sue & Okazaki, 1990). Also, DPC, may be viewed as an acceptable way to foster parent-child relationships, rather than being viewed as a manipulation of the attachment-bond to fulfill the parent's own relationship needs. Therefore, for Asian American emerging adults who have stronger ethnic identities, parental psychological control may be less detrimental to their psychological needs satisfaction.

The Current Study

The overall goal of the proposed study was to examine individual (satisfaction of psychological needs), relational (parenting), and cultural (ethnic identity) contributors to eating disorder risks in Asian American emerging adults. The first aim of the current study was to examine whether basic psychological needs satisfaction mediated the association between parental psychological control and introjected regulation of eating in Asian American emerging adults. We first examined the correlation between perceived parental psychological control and introjected regulation of eating, expecting that individuals who perceived their parents as more psychologically controlling, either in the achievement (Hypothesis 1) or dependency (Hypothesis 2) orientation, would be more likely to engage in introjected regulation of eating. We then examined the mediating role of basic psychological needs satisfaction, hypothesizing that individuals who perceived their parents as more psychologically controlling would experience lower basic psychological needs satisfaction, which would in turn be associated with a higher

tendency for introjected regulation of eating (Hypotheses 3 and 4 for APC and DPC, respectively). The second aim was to examine whether Asian American emerging adults' ethnic identity moderated the association between their perceptions of their parents' psychologically controlling practices and their basic psychological needs satisfaction. Specifically, we expected that, among Asian Americans with stronger ethnic identification, achievement-oriented (Hypothesis 5) and dependency-oriented (Hypothesis 6), parental psychological control would each be less strongly associated with psychological needs satisfaction, compared to those who have weaker ethnic identification.

Participants' age, sex, body mass index (BMI), and nativity (i.e., born in the U.S. or not) were explored as potential covariates to be included in the analyses. The onset of eating disorders peaks between 16 and 20 years of age, depending on the type of eating disorder (Stice et al., 2013). Thus, emerging adults at different ages may be at differential risk for introjected regulation of eating. Gender is robustly and substantially associated with eating disorders. The female to male ratio for disordered eating symptoms ranges from 2:1 to 10:1 (American Psychiatric Association, 2013), and the difference has been posited to be partially due to differential gender expectations (Fornari & Dancyger, 2003; Hsu, 1989). Higher BMI tends to be associated with more body concerns and increased risk for disordered eating (Bucchianeri et al., 2013; Stice et al., 2017). Finally, past research has found that acculturative stress is positively associated with disordered eating in female Asian American emerging adults (Akoury et al., 2019), suggesting that nativity may play a role in eating disorder risk. Given that age, gender, BMI, and nativity are factors that could potentially influence eating disorder risk, we tested whether these variables were significantly associated with the outcome variable, introjected regulation of eating, and included them as covariates if they were.

METHODS

Participants

Participants ($N = 127$) were self-identified as ethnically Asian students attending a mid-size state university in the mid-Atlantic U.S.A between 18 and 25 years of age ($M = 19.94$ years, $SD = 1.77$). The participants also self-identified as Indian ($n = 29$), Korean ($n = 21$), Chinese/Taiwanese ($n = 18$), Vietnamese ($n = 13$), Pakistani ($n = 10$), Filipino ($n = 8$), Nepali ($n = 3$), Bangladeshi ($n = 3$), Burmese ($n = 1$), Punjabi ($n = 1$), Cambodian ($n = 1$), and Sri Lankan ($n = 1$). Five participants self-identified with multiple Asian groups, and 11 did not specify an Asian group that they identified with. One participant identified as South Asian and did not clarify further. These individuals participated in a larger study examining the psychological (e.g. mental health), social (e.g., parenting) and cultural (e.g., ethnic identity, discrimination experiences) processes that contribute to young adults' healthy development.

Participants were recruited through a psychology department participant pool (SONA) and postings of flyers around campus. They indicated their informed consent and responded to an online survey via Qualtrics. Upon completion of the study, participants received either one extra credit in a psychology class (if recruited from the Psychology Department participant pool), or one entry into a drawing to win one of five \$20, four \$50 and two \$100 cash prizes. Data collection started in Fall 2018 and ended in Spring 2020. Study procedures were approved by the Institutional Review Board of University of Maryland, Baltimore County (Understanding Healthy Development in Young Adults, protocol #: Y19CC20012). The Institutional Review Board of Michigan State University approved the analyses of this data set for the current thesis study (STUDY00004974).

Measures

Perceived Parental Psychological Control

The Dependency-oriented and Achievement-oriented Psychological Control Scales (DAPCS; Soenens et al., 2010) were used to measure participants' perceived psychological control from their parents. Nine items were used to measure APC (e.g., "My [father/mother] is less friendly with me if I perform less than perfectly.") and eight items were used to measure DPC (e.g., "My [father/mother] is only friendly with me if I rely on them instead of on my friends."). Each item was administered twice, once to measure perceived psychological control from the mother and once to measure perceptions of the father, resulting in 18 and 16 items in total that indicate APC and DPC, respectively. Items were rated on 5-point Likert scales ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). In the present study, Cronbach's alphas were .96 and .94 for the APC and DPC subscales, respectively.

Basic Psychological Needs Satisfaction

The Basic Psychological Need Satisfaction and Frustration Scale (BPNSF; Chen et al., 2015) is a 24-item scale used to measure satisfaction and frustration of needs for autonomy (e.g., "I feel a sense of choice and freedom in the things I undertake", competence (e.g., "I feel confident that I can do things well"), and relatedness (e.g., "I feel that the people I care about also care about me"). The items were rated on 5-point scales ranging from 1 (*not true at all*) to 5 (*completely true*). In the current study, satisfaction and frustration of each type of psychological needs were combined to form an overall score for psychological needs satisfaction, because the existing literature provides a theoretical mechanism for how the combined satisfaction of basic psychological needs, not necessarily each separate type of need, may mediate between parenting and introjected regulation of eating. Cronbach's alpha in the current sample was .91.

Introjected Regulation of Eating

The introjected regulation subscale of the Regulation of Eating Behaviors Scale (REBS; Pelletier et al., 2004) consisting of four Likert-scale items was used to measure introjected motivation of eating regulation. Participants responded to scale items in response to the prompt “Why are you regulating your eating behaviors?” An example item is, “I don’t want to be ashamed of how I look.” The items ranged from 1 (*strongly disagree*) to 7 (*strongly agree*). Cronbach’s alpha in the current sample was .86.

Ethnic Identity

The Multigroup Ethnic Identity Measure (MEIM; Roberts et al., 1999), containing 12 items, was used to measure participants’ ethnic identity. The MEIM was originally developed by Phinney (1992) and contained 14 items that formed a unidimensional scale. Akoury et al. (2019) used the original 14-item MEIM as a one-factor scale in a sample of Asian American college women and found no direct association between ethnic identity and disordered eating. However, several studies have found a two-factor structure of the 14-item MEIM (Feitosa et al., 2017; Spencer et al., 2000; Yancey et al., 2001), and others have found a three-factor structure (Gaines et al., 2010), including studies using the scale in Asian American (R. M. Lee & Yoo, 2004) and Chinese American (Juang & Nguyen, 2010) college students. Therefore, disagreement about the factor structure of the 14-item MEIM remains. Roberts et al. (1999) modified the scale and reduced the number of items to 12, and reported a two-factor structure of the scale. Several other studies confirmed the two-dimensional structure of ethnic identity using this 12-item MEIM (Dandy et al., 2008; Pegg & Plybon, 2005). We used the 12-item scale (e.g., “I have a clear sense of my ethnic background and what it means for me”) and each item was rated on 4-point Likert scales, ranging from 1 (*strongly disagree*) to 4 (*strongly agree*). Given the inconsistency of the

factor structure of the MEIM in the literature, especially in the Asian American emerging adults population, we conducted an exploratory factor analysis using the current dataset. Factor analysis using maximum likelihood estimation and direct oblimin rotation revealed a single factor in the current sample that explains 57.26% of the scale variance. Cronbach's alpha of the scale in the present sample was .94.

Planned Analyses

SPSS version 25 was used to perform the data analyses. Preliminary analyses showed that missing data (1.6%) were primarily due to participants' failing to complete entire scales in the questionnaire, and these missing data were excluded listwise during analyses. After excluding missing data due to incompleteness of entire scales, 0.9% of data were still missing and were determined to be missing completely at random. For all the partly completed scales, at least 80% items were available to calculate the variable value for each participant. Therefore, scales completed in part were retained and the associated variables were calculated with the missing data excluded. Initial bivariate correlational analyses were conducted to examine associations between all the study variables and covariates (i.e., age and BMI). Sex and nativity were measured as categorical variables and group differences in the outcome variable were examined using ANOVA. Mediation and moderated mediation analyses were conducted using the (Hayes, 2012) PROCESS macro, with 5,000 bootstrap resamples to estimate direct and indirect effects.

RESULTS

Descriptive Statistics and Bivariate Correlations

Descriptive statistics and bivariate correlations between the variables and potential covariates are summarized in Table 1. Age and BMI were z-transformed before they were included for the calculation of correlations. Neither age ($r = -.007, p = .937$) nor BMI ($r = .125, p = .162$) were significantly correlated with introjected regulation of eating, and therefore were not included as covariates. Introjected regulation of eating was compared across groups of nativity and gender using one-way ANOVA. Introjected regulation of eating did not differ between participants who were ($n = 77$) or were not ($n = 50$) born in the U.S. ($F(1,125) = .475, p = .492$), nor across genders ($F(4,122) = 2.018, p = .096$), including cisgender male ($n = 41$), cisgender female ($n = 81$), gender queer ($n = 1$), gender nonconforming ($n = 1$) and other ($n = 3$). Therefore, nativity and gender were not included as covariates. Consistent with Hypotheses 1 and 2, higher perceived parental APC ($r = .33, p < .01$) and DPC ($r = .32, p < .01$) both significantly predicted higher introjected regulation of eating.

Mediation Analyses

The mediation analyses were conducted on 125 participants using Model 4 of the PROCESS macro (Hayes, 2012). The results supported Hypotheses 3 and 4, which predicted that basic psychological needs satisfaction would mediate the association between perceived APC (Hypothesis 3) or DPC (Hypothesis 4) and introjected regulation of eating. As Figures 2 and 3 illustrate, APC ($b = -.21, SE = .05, p < .001, 95\% CI = [-.31, -.12]$) and DPC ($b = -.24, SE = .05, p < .001, 95\% CI = [-.34, -.13]$) were each significantly related to basic need satisfaction, and basic need satisfaction was significantly related to introjected regulation of eating ($b = -.60, SE = .21, p = .005, 95\% CI = [-1.02, -.18]$). APC ($b = .34, SE = .13, p = .009, 95\% CI = [.09, .59]$)

and DPC ($b = .34$, $SE = .13$, $p = .013$, 95% $CI = [.07, .60]$) were also each significantly related to introjected regulation of eating after controlling for basic needs satisfaction. Overall, APC had .46 (95% $CI = [.23, .70]$) total effect on introjected regulation of eating, with .34 (95% $CI = [.09, .59]$) direct effect and .13 (95% $CI = [.03, .23]$) indirect effect via basic psychological needs satisfaction; DPC had .48 (95% $CI = [.23, .73]$) total effect on introjected regulation of eating, with .34 (95% $CI = [.07, .60]$) direct effect and .14 (95% $CI = [.03, .20]$) indirect effect via basic psychological needs satisfaction.

Moderated Mediation Analyses

After listwise deletion, data from 118 participants were available for the moderated mediation analyses. Analyses were done using Model 7 of the PROCESS macro (Hayes, 2012). In the moderated mediation model (see Figure 4), APC was not significantly associated with basic psychological needs satisfaction ($b = .34$, $SE = .21$, $p = .11$, 95% $CI = [-.08, .76]$), and basic psychological needs satisfaction was negatively associated with introjected regulation of eating ($b = -.60$, $SE = .22$, $p = .007$, 95% $CI = [-1.03, -.17]$). Strength of ethnic identity moderated the association between APC and basic psychological needs satisfaction ($b = -.19$, $SE = .07$, $p = .007$, 95% $CI = [-.32, -.05]$).

As shown in Figure 5, in the moderated mediation model, DPC was not significantly associated with basic psychological needs satisfaction ($b = .16$, $SE = .24$, $p = .51$, 95% $CI = [-.32, .64]$), and basic psychological needs satisfaction was negatively associated with introjected regulation of eating ($b = -.60$, $SE = .22$, $p = .007$, 95% $CI = [-1.03, -.17]$). Unlike the moderated mediation model using APC as the predictor variable, strength of ethnic identity did not moderate the association between DPC and basic psychological needs satisfaction ($b = -.13$, $SE = .08$, $p = .093$, 95% $CI = [-.29, .023]$).

Simple Slopes of Significant Interaction

Significant interaction in the moderated mediation model using APC as the predictor variable was probed at the mean, 1 SD below the mean, and 1 SD above the mean of ethnic identity. Table 2 shows a summary of conditional indirect effects of perceived parental achievement oriented psychological control on introjected regulation of eating via ethnic identity and pairwise contrast between conditional indirect effects. Higher APC was significantly related to lower basic psychological needs satisfaction at the mean ($b = -.2, SE = .05, p < .001, 95\% CI = [-.30, -.10]$) and high ($b = -.32, SE = .06, p < .001, 95\% CI = [-.43, -.20]$) levels of Asian American emerging adults' ethnic identity, but was not significant at low levels of ethnic identity ($b = -.08, SE = .07, p = .23, 95\% CI = [-.22, .05]$). Countering our expectations, APC and basic psychological needs satisfaction were more strongly related in Asian American emerging adults with higher levels of ethnic identity, compared to those with lower ethnic identity. Figure 6 illustrates the association between APC and basic need satisfaction at the three levels of ethnic identity.

Indirect Effects of Significant Interaction

The direct effect of APC on introjected regulation of eating was significant ($b = .35, SE = .13, p = .007, 95\% CI = [.10, .61]$), as shown in Figure 4. The conditional indirect effect of APC on introjected regulation of eating via basic psychological needs satisfaction was probed at the mean, 1 SD below the mean, and 1 SD above the mean of ethnic identity. Effect of APC on introjected regulation of eating via basic psychological needs satisfaction was positive and significant at the mean ($Effect = .12, Bootstrap SE = .05, 95\% CI = [.02, .23]$) and high ($Effect = .19, Bootstrap SE = .08, CI = [.03, .36]$) levels of ethnic identity in Asian American emerging adults, but was not significant at the low level of ethnic identity ($Effect = .05, Bootstrap SE = .06,$

$CI = [-.06, .17]$). Pairwise contrasts between the conditional indirect effects showed that the indirect effects were significantly different from each other at the three levels of ethnic identity (see Table 2).

Overall, ethnic identity moderated the relation between APC and introjected regulation of eating via its moderation on the relation between APC and satisfaction of basic psychological needs, such that participants with higher levels of ethnic identity had a stronger relation between APC and needs satisfaction than those with lower levels of ethnic identity. At low levels of ethnic identity, the relation between APC and basic needs satisfaction is not statistically significant. Further, ethnic identity did not significantly affect the relation between DPC and introjected regulation of eating mediated by satisfaction of basic psychological needs.

DISCUSSION

This study examined the contributions of individual (satisfaction of basic psychological needs), relational (perceived parental psychological control), and cultural (ethnic identity) factors in Asian American emerging adults' risk and resilience for disordered eating, as indicated by introjected regulation of eating. Our findings revealed that perceived parental psychological control, basic psychological needs satisfaction, and ethnic identity all played a role in introjected regulation of eating within our sample of Asian American emerging adults. Ethnic identity interacted differently with the two types of perceived psychological control (APC and DPC) to influence the association between parental psychological control and basic psychological needs satisfaction, which was in turn associated with introjected regulation of eating.

Parental Psychological Control and Introjected Regulation of Eating

As expected, higher perceived parental psychological control (both APC and DPC) in Asian American emerging adults was significantly associated with a higher tendency to engage in introjected regulation of eating. These findings are consistent with previous research, which found a positive association between parental control (measured by perceived parental overprotection) and risk for disordered eating in Asian female adolescents living in the United Kingdom (Ahmad et al., 1994; McCourt & Waller, 1995; Mumford et al., 1991), particularly when the adolescent girls were older (i.e., 14-16 versus 12-13 years of age) (McCourt & Waller, 1995). The current study extended the literature by examining relationships between parental psychological control and risk for disordered eating beyond the period of childhood and adolescence, and into emerging adulthood, reinforcing the continued importance of parenting in emerging adults' development (e.g., Arnett, 2000; Nelson et al., 2007; Zong et al., 2019). It is important to note, however, that one previous study found no association between perceived

parental control (measured as overprotection) and disordered eating attitudes or behaviors in either Asian or Asian American adolescents and emerging adults (Tsai et al., 2003). An important difference between these studies is that Tsai and colleagues operationalized parental control as overprotection, which involves behavioral control (e.g., “[My parent] tried to control everything I did; Parker et al., 1979). In contrast, the current study examined psychological control, which has been less well understood in Asian Americans. Future studies could further clarify relations between perceived parental control and risks for disordered eating risks by examining distinctions between different types of parental control with different operationalizations.

Role of Perceived Achievement-Oriented Parental Psychological Control

In line with our hypotheses, Asian American emerging adults’ basic psychological needs satisfaction explained the relation between APC and introjected regulation of eating. Asian American emerging adults who perceived their parents as making them feel guilty or not loved unless they were high achieving (APC) tended to feel that their basic psychological needs were less fulfilled, and in turn, more likely to engage in introjected regulation of eating.

Moderating Role of Ethnic Identity

We examined ethnic identity as a moderator between parental APC and satisfaction of basic psychological needs in the mediation model discussed above. In Asian American emerging adults, depending on their level of identification with their ethnic group, the strength of the relation between their perceptions of their parents’ engagement in practices that induced shame or guilt for underperformance (APC) and their basic needs satisfaction (i.e., feelings of effectiveness or skillfulness, being cared for, and autonomy) varied. In turn, their levels of

satisfaction in these basic needs were associated with their tendency to regulate eating due to feelings of shame or guilt.

Although the significant moderation effect in the APC model was in line with our hypothesis, the mechanism of moderation appeared to counter our theoretical prediction. Specifically, we predicted that stronger ethnic identity in Asian American emerging adults would buffer against the negative impact of perceived parental psychological pressure for high achievement, due to the greater cultural fit between ethnic values and achievement-oriented psychologically controlling parenting (Louie, 2004; Sue & Okazaki, 1990), and this buffering effect would be evidenced by a weakened association between APC and basic needs satisfaction. In contrast, our findings revealed that perceived APC was more strongly and negatively related to basic psychological needs satisfaction for emerging adults who reported a stronger ethnic identity. This finding suggests that Asian American emerging adults with stronger ethnic identity were more susceptible of the negative impact of achievement-oriented parental psychological controlling practices on basic needs satisfaction, and in turn, introjected regulation of eating.

Several reasons may explain why high ethnic identity in Asian Americans might exacerbate the negative impact of APC on their basic psychological needs satisfaction. First, ethnically minoritized emerging adults living in mainstream American culture likely learn about their heritage culture from their parents (B. Y. Lee, 2013; Phinney et al., 2001; Schüpbach, 2009), which may be particularly relevant in the current sample, of whom 39.4% were first-generation immigrants. Therefore, higher ethnic identity in emerging adults of ethnically/racially minoritized groups may reflect a closer relationship with the parents (Okagaki & Moore, 2000; Wilson & Constantine, 1999), especially in Asian interdependent-focused cultures, with a high sense of responsibility to the family (Kiang & Fuligni, 2009). Consequently, Asian American

emerging adults with stronger ethnic identity may be more sensitive to parents' expectations. As such, this type of psychological control may be particularly salient to them and create significant negative pressure for achievement, resulting in a stronger impact on psychological wellbeing.

Moreover, the role of ethnic identity in Asian American emerging adults may be further complicated by its associations with racial consciousness, a sense of oppression shared with one's own racial/ethnic group and a commitment to use collective social strategies in resistance to racial inequities (Gurin et al., 1980; Hall & Allen, 1989). Emerging adults' ethnic identity may grow along with increasing racial consciousness (Smith, 1991), especially for Asian Americans who are marginalized based on both physical characteristics and cultural distinctiveness (Sodowsky et al., 1995). During the years of college, Asian Americans become more aware of collective issues faced by their racial group (Min & Kim, 2000). In particular, they may become more aware that their parents' achievement demands reflect historical challenges faced by Asian Americans, such that educational achievement is one of the few opportunities for Asian Americans to gain upward mobility in the mainstream American culture (Louie, 2004; Sue & Okazaki, 1990) and that Asian Americans are pressured to achieve the model minority stereotype. This awareness could prompt emerging adults to become more conscious of the internalized racism reflected in their parents' use high levels of psychological control to pressure them to be high achievers, and thus feel that their basic psychological needs have been undermined. Further studies are warranted to explore how experiences and perceptions of racial consciousness may impact Asian American emerging adults' psychological wellbeing in interaction with ethnic identity and parenting practices.

Role of Perceived Dependence-Oriented Parental Psychological Control

In line with our hypothesis, satisfaction of basic psychological needs explained the association between DPC and Asian American emerging adults' tendency to regulate their eating due to shame or guilt. However, our results did not provide evidence that the relations between DPC and psychological needs satisfaction, and in turn, introjected regulation of eating, would vary depending on the emerging adults' strength of ethnic identity. Parental engagement in DPC, which focuses on manipulating the parent-child attachment bond so that the child remains close to them (Kins et al., 2011), appears to be equally impactful for Asian American emerging adults, regardless of their level of ethnic identity. While demands for achievement are closely tied to Asian Americans' struggles as a group in the United States (Sue & Okazaki, 1990), potentially resulting in the complex interactions between achievement demands and Asian Americans' ethnic identity, pressure from parents to ensure close parent-child relationships using DPC may not result in such complexity in Asian American emerging adults' developing ethnic and racial identities. However, the detrimental impact of DPC on Asian American emerging adults' regulation of eating, partially via frustrating basic psychological needs, is particularly worth highlighting, because the influence persists regardless their strength of ethnic identification.

Limitations and Future Directions

Several limitations should be noted when interpreting the findings of the current study. First, this study used a cross-sectional design and the data do not provide direct evidence for directional relations among the variables. However, the impact of parenting on children's psychological needs satisfaction (Blatt, 1974, 2004), and in turn, introjected regulation of eating behaviors (LaCaille et al., 2020; Soenens & Vansteenkiste, 2010), is theoretically sound and

supported by previous research. However, future studies should utilize longitudinal designs to further confirm the proposed directional findings of the current study.

Second, the current study utilized a single report (i.e., emerging adults) for all of the constructs, but self-reported perceptions and behaviors may differ from information gleaned from other informants (Verhulst & van der Ende, 1992; Youngstrom et al., 2000). For example, we assessed emerging adults' perceptions of their parents' psychological control, rather than parents' reports of controlling practices or more objective observations of parenting behaviors. Thus, the results of the study may not reflect the impact of actual controlling practices, and future research is warranted to explore differential effects that actual versus perceived psychological control may have on Asian American emerging adults. However, self-reports about how children perceive their parents' behaviors are not necessarily less ideal than using objective measures (C. Chen et al., 1998; Cook & Goldstein, 1993). This study has the strength of highlighting the importance of emerging adults' perceptions of parenting, and the continued impact that perceived parenting has on children even during the period of emerging adulthood. Self-reported perceptions, compared to information from other sources, have been proposed to be more important for understanding potential effects of internal states such as satisfaction of basic needs and introjected eating (Reitz et al., 2006; Verhulst & van der Ende, 1992).

Third, this study used a relatively small sample consisting only emerging adults who were attending college at the time of the survey. The results may not be generalizable to non-college attending emerging adults, especially in Asian Americans, a group in which educational attainment has historically played an important role in the group's occupational, social, and residential integration into the mainstream White culture (Junn & Masuoka, 2008). Future

studies should confirm the results among Asian Americans with more diverse educational and socioeconomic backgrounds.

Fourth, the current study did not examine gender/sex differences in the mechanisms of disordered eating risks. Previous research has provided extensive evidence that women may be exposed to higher risks for disordered eating due to both gender expectations and biological mechanisms of the female sex (Fornari & Dancyger, 2003; Ma, Mikhail, Culbert, et al., 2019). Studies using predominantly White samples also found a higher tendency to engage in introjected regulation of eating in females than males (Hamilton et al., 2018), and within Asian Americans, females may be exposed to more disordered eating risks than males due to the unique gendered racial stereotypes that subject them to heightened sexism and racism (Yokoyama, 2007). We did not find statistically significant gender differences in introjected regulation of eating, and future research is warranted to examine potential differences across gender groups within Asian American emerging adults. It is worth noting, however, that there is evidence showing that Asian American parents' educational and achievement demands are unlikely to vary depending on the child's gender, despite the existence of other gendered expectations (e.g., social activities) (Louie, 2004); therefore, the important role of family expectations in Asian American's gender identity development and wellbeing should continue to be attended.

Fifth, due to the small sample size, the within-group variability within the broader category of Asian Americans could not be captured and examined directly in the current study. Within the broader group that identify as Asian Americans, individuals may also identify with different cultures such as Chinese, Japanese, Indian, between which variations exist (Lowe, 2005; Shrikant, 2018). Unfortunately, the current study was not adequately powered to examine differences between these Asian groups and therefore grouped them together based on their

shared Asian cultural heritage. Future studies should examine the generalizability of the current study results to different Asian sub-cultures.

Last, the present study used ethnicity as a proxy for cultural values and did not directly assess participants' endorsement of Asian cultural values, which could have clarified some of the unexpected findings regarding the moderating role of ethnic identity. Although this study presents important evidence that ethnic identity plays an essential role in Asian American emerging adults' development, future studies are warranted to further explore the complex construct of ethnic identity to provide deeper understanding of its role in these processes.

Implications

Findings from this study present important evidence regarding the relations among parenting, ethnic identity, satisfaction of basic psychological needs, and risk for disordered eating in Asian American emerging adults. Parental psychological control tended to undermine emerging adults' needs for autonomy, competence and relatedness, which in turn, was associated with increased risk for regulating eating behaviors due to shame or guilt. The salience of these relations varied depending on the strength of the emerging adults' ethnic identity. In particular, compared to those with lower ethnic identity, when Asian American emerging adults identified more strongly with their ethnic culture, their parents' attempts to pressure them to be high achieving by inducing feelings of shame or insecurity (APC) had more negative impact on their satisfaction of basic psychological needs, and in turn, created higher risks for disordered eating. In contrast, regardless of their level of ethnic identity, Asian American emerging adults' tendency to engage in introjected regulation of eating was associated with DPC, the type of parental psychological control that focused on manipulating the parent-child attachment bond for the child remains close to the parents.

The findings from this study can inform theories regarding psychosocial risks for eating disorders in Asian American emerging adults by highlighting the important roles of both psychologically controlling parenting and ethnic identity. For example, perfectionism and appearance contingent self-worth have both been shown to be associated with disordered eating (Bardone-Cone et al., 2007, 2017; Stice, 2002). When parents' psychological control is achievement-oriented, it imposes perfectionism demands through having parental love and attention contingent on high performance (Blatt, 1974; Blatt & Homann, 1992). Therefore, parental psychological control may be a potential source of emerging adults' perfectionism and contingent self-worth, which may be particularly salient in Asian Americans who identify strongly with their ethnic culture.

Clinical Implications

The current study has important implications for clinical scientists and practitioners when working with Asian American emerging adults and when future family-oriented and culturally-sensitive prevention and intervention strategies are developed. In particular, it is important to assess Asian American's ethnic identity in both research and practice, as etiological mechanisms and conceptualizations of their disordered eating varied depending on their ethnic identification. For Asian American emerging adult clients who seek treatment for eating disorders and express strong ethnic identification, it may be worth paying additional attention to the client's sense of perfectionism and exploring whether it is associated with family interactions. Specifically, parents' expression of strict achievement demands through psychological controlling practices (APC) often leads to the child's feelings of incompetence, excessive self-criticism and perfectionism (Blatt, 1974; Blatt & Homann, 1992), which are closely associated with disordered eating (e.g., Bardone-Cone et al., 2007; Franco-Paredes et al., 2005). Some established eating

disorder interventions, such as the Cognitive Behavior Theory-Enhanced (CBT-E; Fairburn, 2008), include modules that specifically address perfectionism as a maintenance factor for eating disorders, and may be helpful for clients who are exposed to higher risks for maladaptive perfectionism in their social and family environments. Compassion-focused therapy (CFT; Gilbert, 2009; Kelly et al., 2014), focusing on building self-compassion and reducing shame, may also be suited for clients who have been exposed to environments that tend to define their self-worth contingent on external factors such as achievement. However, manualized treatments of eating disorders designed or adapted for Asian Americans are currently lacking, and future development of interventions is warranted with consideration of factors such as culture, ethnic identity, and family contexts.

In addition, Asian American emerging adults and their parents may benefit from education about the connections between achievement demands in Asian Americans and the historically oppressive role of the model minority stereotype. Instead of following a deficit model that emphasizes clients' maladaptive cognitions or behaviors, it may be beneficial to take an affirmative and empowering approach by supporting Asian American families to resist societal oppression, while collaboratively finding alternative methods to communicating achievement demands. Specifically, parents' use of psychologically and emotionally manipulative strategies to demand high performance can undermine children's healthy development, and alternative ways of parental communications, such as presenting demands appropriate to the child's age with explained rationales while providing the child with warmth, emotional responsiveness, and autonomy (i.e., an authoritative style of parenting; Baumrind, 1971), may be more conducive to the emerging adults' well-being.

Notably, we caution clinicians against overgeneralizing the applicability of the results of the current study when working with Asian American clients. While it is important to attend to cultural factors that may contribute to the conceptualization of a client's case, assuming the influence or meaning of ethnic identity to a particular client without sufficient exploration with them would be stereotyping and potentially harmful. Some assessment tools, such as the Cultural Formulation Interview (CFI; Lewis-Fernández et al., 2016), may provide a helpful structure for clinicians to obtain clients' qualitative perspectives on their culture and how they perceive their culture as impacting their presenting concerns. Clinicians should also keep in mind that, regardless whether they as clinicians identify with a mainstream or a minoritized culture, they are also cultural beings whose values, perspectives, and biases would affect a therapeutic relationship (Yokoyama, 2007). While clinicians continuously work to gain understanding of a client's cultural context, clinicians' self-reflection of own biases and power pertaining to the therapeutic setting is as important as examining the client's culture (Buchanan et al., 2020).

Conclusion

Emerging adulthood is a period during which individuals are at high risk for developing eating disorders (Stice et al., 2013). Ethnically and racially minoritized groups are traditionally underrepresented in eating disorder research, in part due to the stereotype that eating disorders only affect White women (Gordon et al., 2002). Despite being exposed to similar or higher risk for eating disorders (Talleyrand, 2012), Asian Americans have been thought to be immune to the illness, assuming their smaller body sizes protect them from experiencing body dissatisfaction (Phan & Tylka, 2006). As the current study demonstrates, while current etiological conceptualizations and interventions of eating disorders have been developed based on research

from predominantly White samples and may not generalize to racially/ethnically minoritized groups because of their lack of culturally-specific considerations that influence risk.

APPENDICES

APPENDIX A: Tables

Table 1. Descriptive statistics and bivariate correlations between the variables and potential covariates

	1	2	3	4	5	6	7
1. Introjected regulation of eating (REBS)	--						
2. Achievement-oriented psychological control (APC)	.328**	--					
3. Dependency-oriented psychological control (DPC)	.322**	.851**	--				
4. Basic Psychological Needs Satisfaction (BPNSF)	-.337**	-.360**	-.376**	--			
5. Ethnic Identity (MEIM)	-.045	.064	.067	.208*	--		
6. Age (Z-score)	-.007	.034	.080	.078	-.141	--	
7. Body Mass Index (BMI; Z-score)	.125	-.034	-.007	.141	.131	-.039	--
Valid <i>n</i>	127	125	125	127	120	127	127
<i>M</i>	3.78	2.41	2.36	3.41	2.92	19.94	23.15
<i>SD</i>	1.27	.90	.86	.54	.62	1.77	3.92

Notes. Means and standard deviations for age and BMI are calculated from raw scores. * $p < .05$, ** $p < .01$.

Table 2. Conditional indirect effects of perceived achievement-oriented parental psychological control on introjected regulation of eating via ethnic identity and pairwise contrast between conditional indirect effects

Predictor variable	Level of ethnic identity	Indirect effects		Pairwise contrast between conditional indirect effects		
		Effect (SE)	95% Bootstrap CI	Effect 1 – Effect 2	Contrast (Bootstrap SE)	95% Bootstrap CI
Achievement-oriented psychological control	Low (-1 SD)	.05 (.06)	[-.06, .17]	Mean - Low	.07 (.05)	[.0001, .18]
	Mean	.12 (.05)	[.02, .23]	High - Low	.14 (.10)	[.0002, .36]
	High (+1 SD)	.19 (.08)	[.03, .36]	High - Mean	.07 (.05)	[.0001, .18]

APPENDIX B: Figures

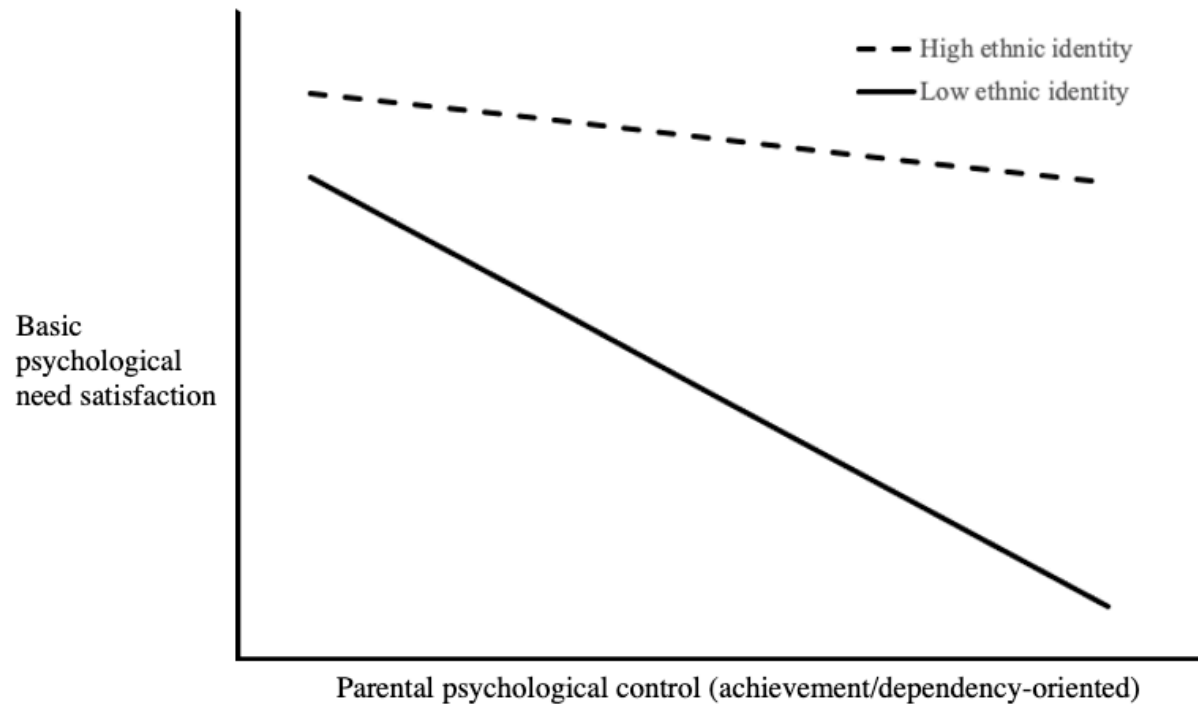


Figure 1. Hypothesized moderation effects. Hypothesized moderation effects of ethnic identity on the association between perceived parental psychological control and Asian American emerging adults' basic psychological needs satisfaction. Hypotheses of moderation effects were the same in both the model using achievement-oriented psychological control and dependency-oriented psychological control.

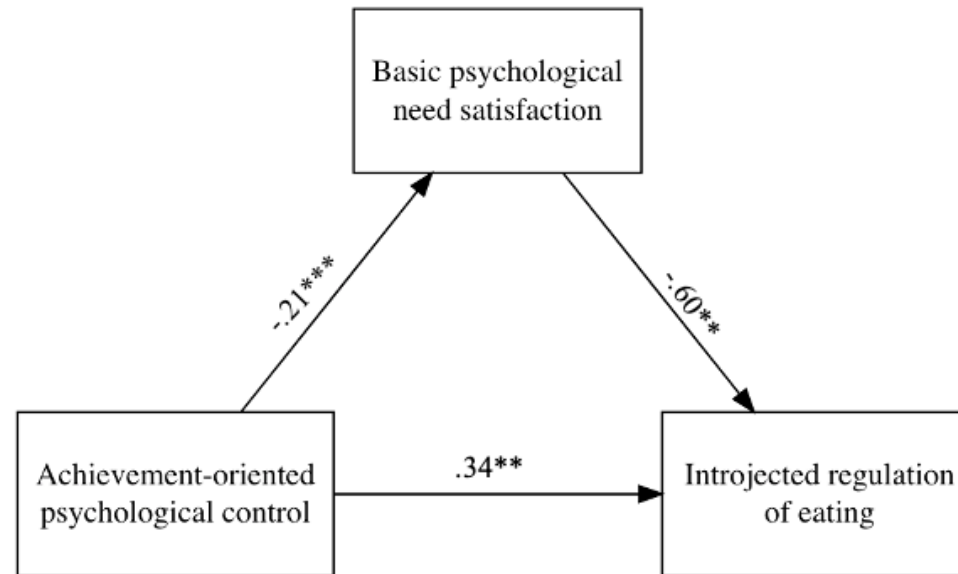


Figure 2. Mediation model with achievement-oriented psychological control. The mediation model with perceived achievement-oriented parental psychological control as the predictor, basic psychological needs satisfaction as the mediator and introjected regulation of eating as the outcome. The numbers are unstandardized regression coefficients. Significant coefficients are indicated in the figure. * $p < .05$. ** $p < .01$. *** $p < .001$.

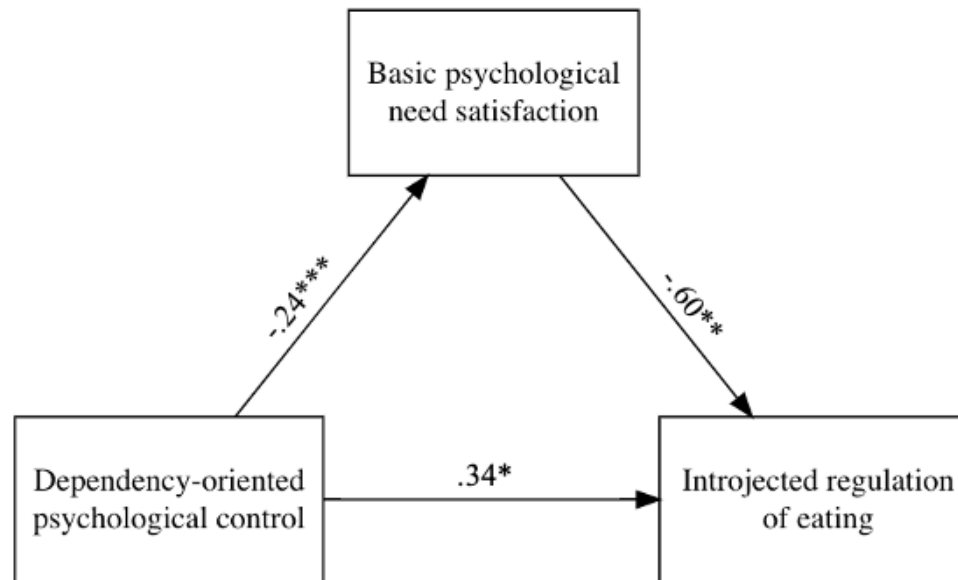


Figure 3. Mediation model with dependency-oriented psychological control. The mediation model with perceived dependency-oriented parental psychological control as the predictor, basic psychological needs satisfaction as the mediator and introjected regulation of eating as the outcome. The numbers are unstandardized regression coefficients. Significant coefficients are indicated in the figure. * $p < .05$. ** $p < .01$. *** $p < .001$.

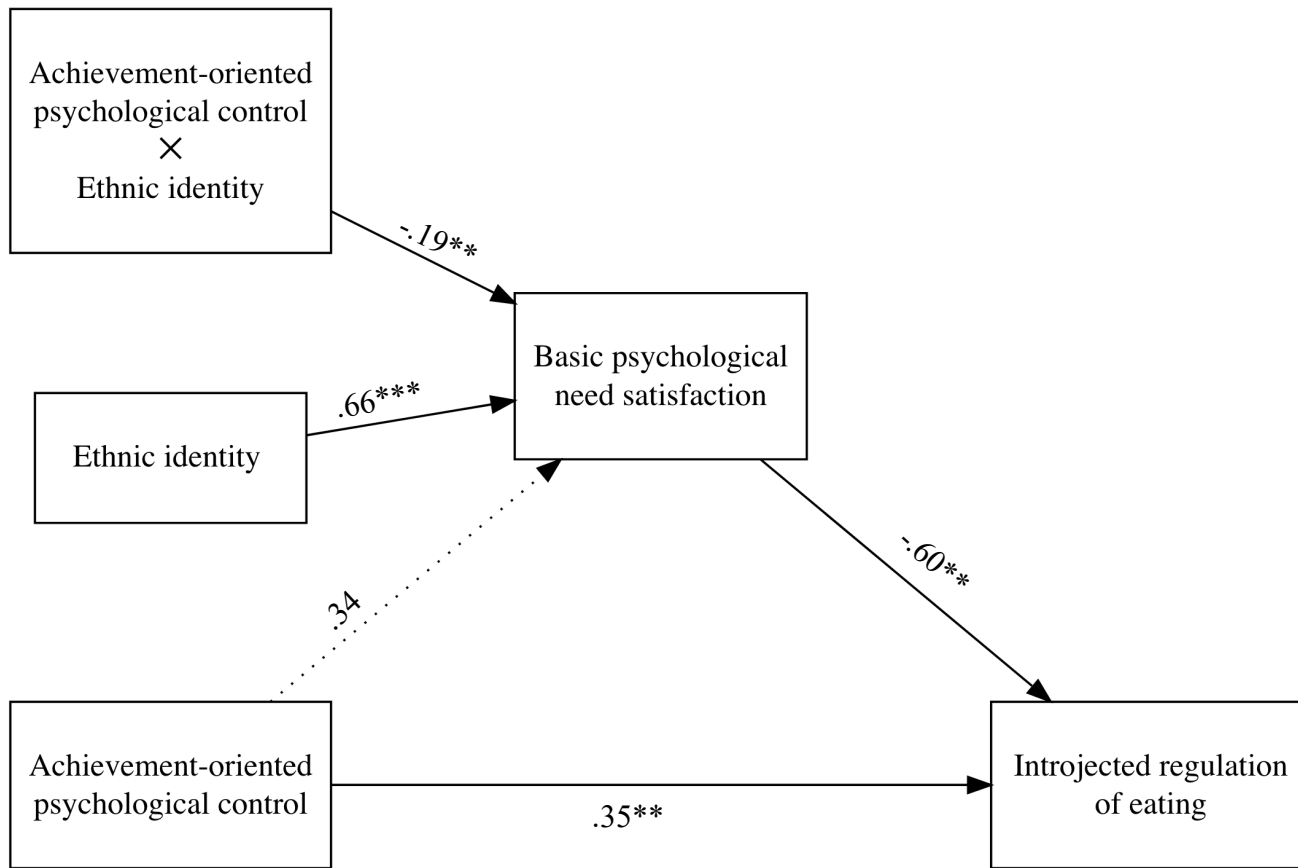


Figure 4. Moderated mediation model with achievement-oriented psychological control. The moderated mediation models with achievement-oriented parental psychological control as the predictor. The numbers are unstandardized regression coefficients. Solid lines represent significant paths and dotted lines represent non-significant path. Significant coefficients are indicated in the figures. * $p < .05$. ** $p < .01$. *** $p < .001$.

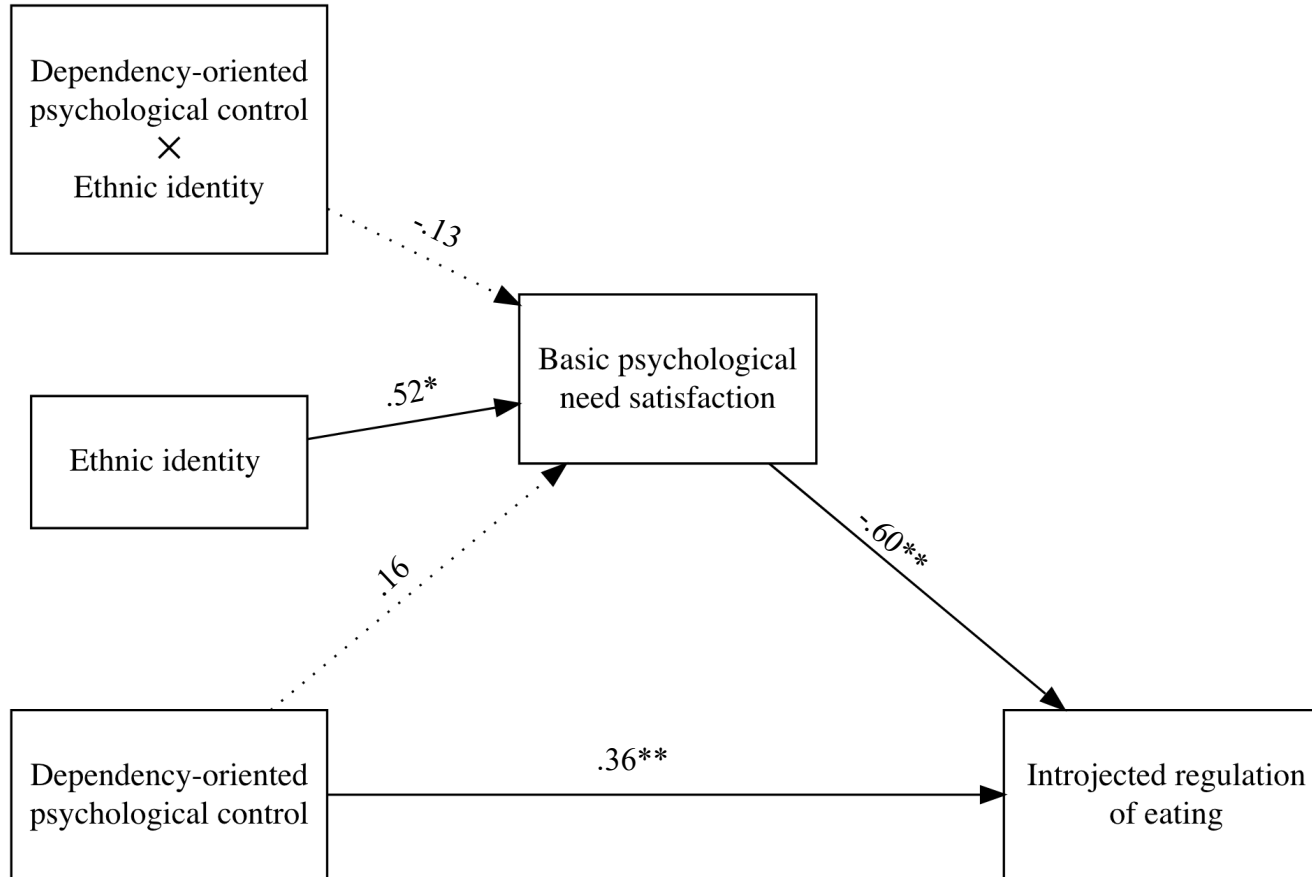


Figure 5. Moderated mediation model with dependency-oriented psychological control. The moderated mediation models with dependency-oriented parental psychological control as the predictor. The numbers are unstandardized regression coefficients. Solid lines represent significant paths and dotted lines represent non-significant path. Significant coefficients are indicated in the figures. * $p < .05$. ** $p < .01$. *** $p < .001$.

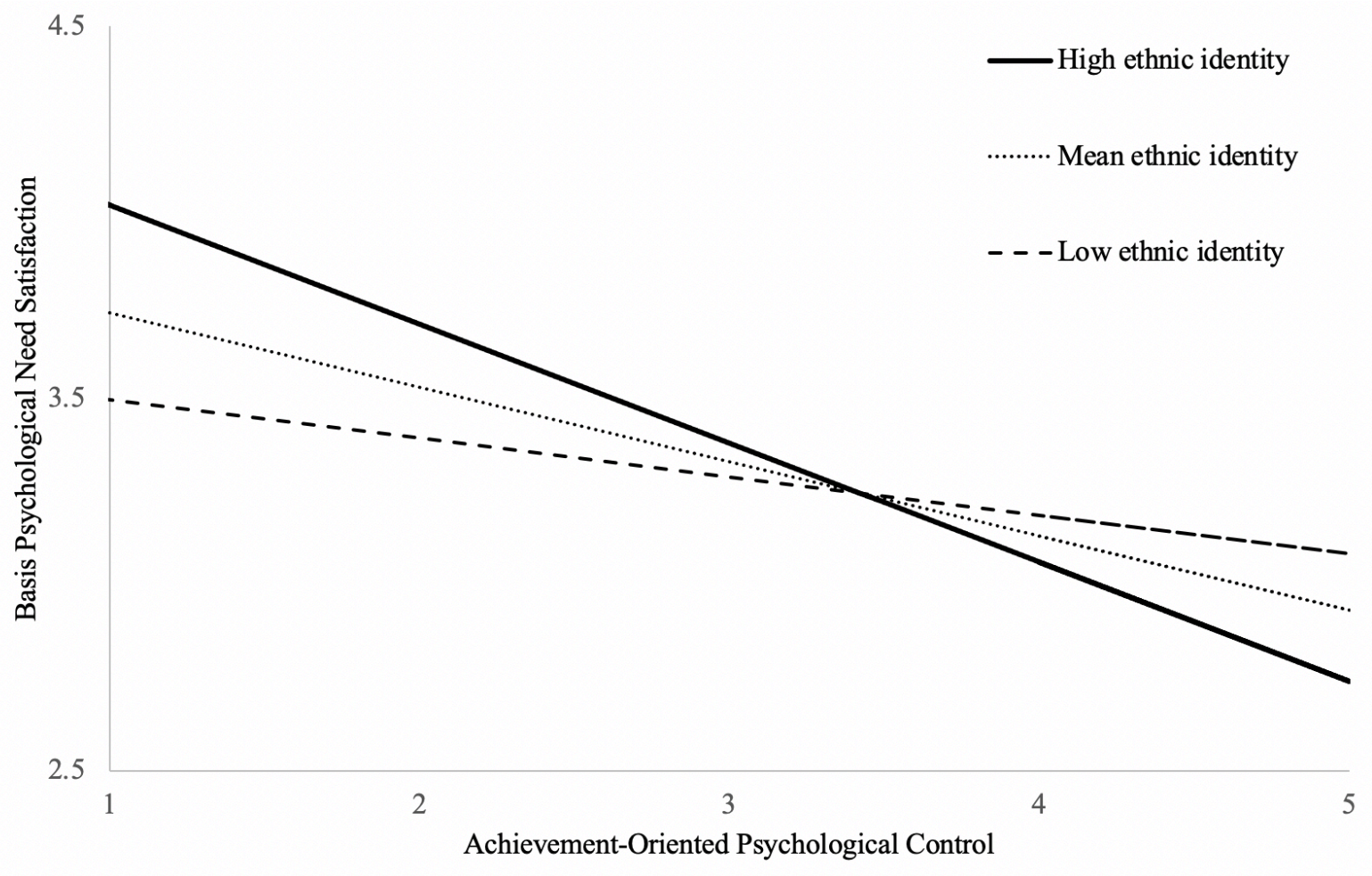


Figure 6. Simple slopes of moderation. The simple slopes of achievement-oriented psychological control predicting basic psychological needs satisfaction, at different levels of ethnic identity

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