

Family Communication Patterns and Academic Identity in Adolescent Girls: The Mediating Role of Basic Psychological Needs

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Abstract

Background: Family interactions and psychological resources play critical roles in adolescent development. This study examined the relationship between family communication patterns (conversation and conformity orientations) and academic identity among female adolescents, focusing on the mediating role of basic psychological need satisfaction.

Methods: In this cross-sectional correlational study, partial least squares structural equation modeling (PLS-SEM) was conducted. The sample comprised 384 female secondary school students in Zanjan, Iran, selected by multistage cluster random sampling during the 2023–2024 academic year. Participants completed the Persian versions of the Academic Identity Questionnaire, the Revised Family Communication Patterns Instrument, and the Basic Psychological Needs Scale. Data were analyzed using SmartPLS version 4 and SPSS version 25. Also, bootstrapping with 5,000 resamples was used to evaluate direct and indirect effects.

Results: Conversation orientation had a significant positive direct effect on basic psychological need satisfaction ($\beta=0.47$, $t=6.12$, $P<0.001$) and positive academic identity ($\beta=0.28$, $t=3.83$, $P<0.001$), while negatively predicting negative academic identity ($\beta=-0.25$, $t=4.05$, $P<0.001$). Conversely, conformity orientation was negatively associated with basic psychological needs ($\beta=-0.33$, $t=4.31$, $P<0.001$) and positive academic identity ($\beta=-0.22$, $t=5.17$, $P<0.001$), and positively associated with negative academic identity ($\beta=0.26$, $t=3.88$, $P<0.001$). Basic psychological needs significantly mediated the relationships between both family communication orientations and academic identity dimensions ($P<0.01$).

Conclusions: This study demonstrated that basic psychological need satisfaction is associated with the pathway through which family communication patterns relate to academic identity among adolescent girls. Conversation-oriented family communication was linked to more adaptive academic identity by greater autonomy, competence, and relatedness, whereas conformity orientation was associated with impaired positive identity formation through lower need satisfaction.

Keywords: Adolescent, Family Relations, Basic Psychological Needs, Personal Autonomy, Students

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1. Introduction

Adolescence is a period of rapid cognitive, emotional, and social change (1). Because adolescents spend much of their time at school, school is one of the main settings in which they develop their sense of self (2). At the same time, academic demands can strongly affect their well-being (3). An important part of this developmental process is the formation of academic identity, which refers to the extent to which students have explored and committed to educational values, goals, and roles (4, 5).

The concept of academic identity (5) is based on Marcia's identity status model (4). This model describes identity development in terms of two processes: exploration, or the active consideration of different options, and commitment, or making

a firm choice among them (4, 5). Combining these two processes yields four identity statuses: (1) Students with an achieved identity have explored different options and made a firm commitment; (2) Students in moratorium are still exploring and have not yet made a commitment; (3) Students with a foreclosed identity have made a commitment without exploration, often by adopting the values of their parents or other authority figures; (4) Finally, students with a diffused identity have neither explored nor committed (4, 5). Among these statuses, identity achievement is generally regarded as the most adaptive, whereas the other three statuses reflect less complete identity development (5, 6).

In Iran, academic success is highly valued, and adolescents often face high educational expectations from their parents (7). When students

feel academically inadequate or have little control over their educational choices, they may experience psychological distress and use maladaptive strategies such as academic self-handicapping and disengagement from school (8, 9). Therefore, identifying the family and psychological factors that foster a healthy academic identity in adolescent girls is important for both their educational development and mental health.

Self-Determination Theory (SDT) provides a useful framework for identifying these factors. According to SDT, healthy psychological development depends on the satisfaction of three basic psychological needs: (1) autonomy (the feeling that one's actions are self-chosen); (2) competence (the feeling of being capable and effective); (3) and relatedness (the feeling of being close to and cared for by others) (10, 11). When parents, teachers, and other important people support these needs, adolescents show greater intrinsic motivation and are more likely to make firm identity commitments (12, 13). In contrast, when these needs are frustrated, adolescents are more likely to show low motivation, maladaptive engagement, and alienation from school (8, 9, 14).

The family is a central social setting in which these needs are either supported or frustrated (15). Family Communication Patterns theory describes family communication along two dimensions, including conversation orientation and conformity orientation (16, 17). In families with high conversation orientation, all members are encouraged to express their opinions openly, take part in family decisions, and discuss different points of view. In families with high conformity orientation, the emphasis is on agreement, obedience to parents, and shared beliefs and values among family members (16, 17). Previous studies showed that open family communication is associated with higher self-esteem and more adaptive identity statuses in adolescents (6, 15), whereas a strong conformity orientation is associated with a higher risk of depression (18).

However, previous studies examined these topics separately; that is, they have examined either the relationship between family communication and adolescent adjustment (6, 18) or the link between basic psychological needs and academic outcomes (9, 14). Based on the literature search, only one Iranian study has examined all of these variables in a single

model; Maleki and colleagues (7) found that among 10th- and 11th-grade students, both conversation and conformity orientations were positively related to basic psychological need satisfaction. This result differs from previous research showing negative outcomes of conformity orientation (18). As a result, it is not yet clear how conversation and conformity orientations are related to adolescent girls' positive and negative academic identity through the satisfaction of autonomy, competence, and relatedness. This question is especially relevant to Iranian adolescent girls, whose educational choices may be shaped by strong family ties and high parental educational expectations (7). Therefore, the present study aimed to test a structural model in which basic psychological needs mediate the relationships of conversation and conformity orientations with the positive and negative dimensions of academic identity among female secondary school students in Zanjan, Iran.

2. Methods

2.1. Design

This was a cross-sectional correlational study, with the conceptual model grounded in Self-Determination Theory (10, 11) and Family Communication Patterns Theory (16, 17). In this model, conversation orientation and conformity orientation were the independent (predictor) variables, basic psychological need satisfaction was the mediating variable, and the positive and negative dimensions of academic identity were the dependent (outcome) variables (Figure 1).

2.2. Selection and Description of Participants

The study population consisted of all female secondary school students in public and private schools in Zanjan, Iran, during the 2023–2024 academic year (N=22,158). Participants were selected using multistage cluster random sampling. In the first stage, girls' secondary schools were grouped according to the two educational districts of Zanjan, Iran. In the second stage, 12 schools were randomly selected from the two districts; the number of schools selected from each district was proportional to the number of students enrolled in that district. In the third stage, two classes from grades 10 and 11 were randomly selected in each school. All students in the selected classes were invited to participate. Of the 425 questionnaires

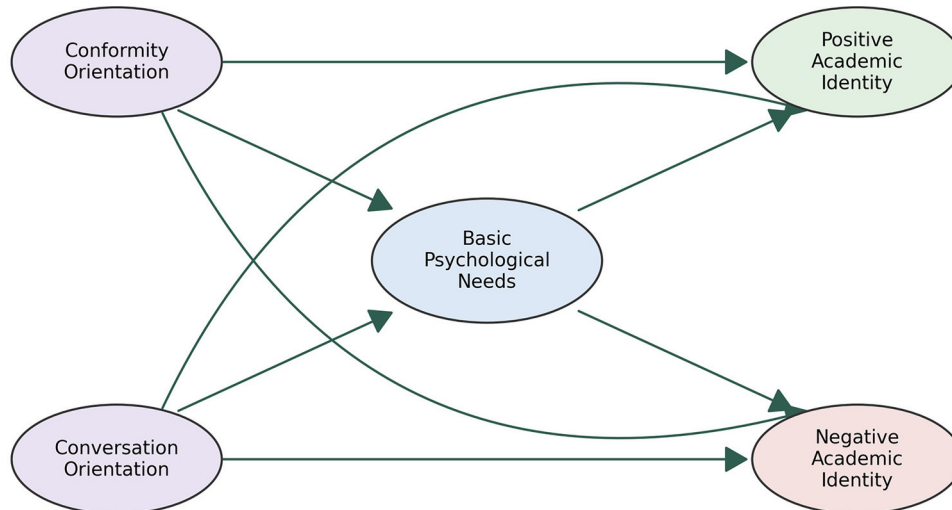


Figure 1: The figure shows the hypothesized conceptual model of the relationships between family communication patterns, basic psychological needs, and academic identity.

distributed, 41 were excluded because of missing or unengaged responses, and 384 questionnaires were included in the final analysis (response rate: 90.3%).

Inclusion criteria were enrollment in secondary education in Zanjan, Iran, willingness to participate, and provision of informed parental consent. Exclusion criteria included submission of questionnaires with substantial incomplete data (>10%) and self-reported acute somatic or psychological distress during data collection that could compromise accurate survey completion.

2.3. Sample Size Determination

The sample size was determined using two methods. First, Cochran's formula (95% confidence level and 5% margin of error) indicated that at least 384 participants were needed. Second, the sample size was checked against the minimum requirements for PLS-SEM (19). According to the inverse square root method, about 155 participants are needed to detect path coefficients of 0.11 to 0.20 with 80% power at a significance level of 0.05. According to the ten-time rule, the minimum sample size is ten times the largest number of paths pointing to any variable in the model. Because the largest number of paths pointing to a variable in this model was three, at least 30 participants were needed. Therefore, the final sample of 384 participants was sufficient for estimating the model.

2.4. Data Collection and Measurements

Data were gathered via validated Persian

versions of three self-report instruments. The content validity of the instruments was verified prior to administration by a panel of educational psychologists, yielding Content Validity Index (CVI) values ≥ 0.88 and Content Validity Ratio (CVR) values exceeding Lawshe's criteria (20, 21).

2.4.1. Academic Identity Questionnaire

Academic identity was assessed using the 40-item Academic Identity Questionnaire developed by Was and colleagues (5). The questionnaire has four subscales, each corresponding to one academic identity status: achieved, foreclosed, moratorium, and diffused (10 items per subscale). Items are rated on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Based on the identity status model, the achieved subscale was used as the positive dimension of academic identity, and the diffused, moratorium, and foreclosed subscales were combined to form the negative dimension (5, 6). A previous study confirmed the psychometric properties of the Persian version (22). In the present study, Cronbach's alpha coefficients for the diffused, moratorium, foreclosed, and achieved subscales were 0.74, 0.76, 0.82, and 0.93, respectively.

2.4.2. Revised Family Communication Patterns (RFCP)

Family communication was evaluated using the 26-item RFCP developed by Ritchie and Fitzpatrick (16). The instrument measures Conversation Orientation (15 items) and Conformity Orientation (11 items) on a 5-point Likert scale (1=strongly

disagree to 5=strongly agree). A previous Iranian study reported acceptable reliability and construct validity for the Persian version (23). In this study, Cronbach's alpha was 0.87 for conversation orientation and 0.81 for conformity orientation.

2.4.3. Basic Psychological Needs Scale

Satisfaction of basic psychological needs was measured using the 21-item Basic Need Satisfaction in General Scale, which is based on Self-Determination Theory (10) and evaluates autonomy (7 items), competence (6 items), and relatedness (8 items) on a 6-point Likert scale ranging from 1 (not at all true) to 6 (very true). The structural validity and reliability of the Persian translation have been supported in a previous study (24). In the present study, Cronbach's alpha values for autonomy, competence, relatedness, and the overall scale were 0.74, 0.82, 0.76, and 0.83, respectively.

2.5. Procedure

Before data collection, written informed consent was obtained from the students' parents or legal guardians. The students were informed about the aims of the study and were assured that participation was voluntary and they could withdraw at any time. Their answers would remain anonymous and confidential and would be used only for research purposes. The questionnaires were completed in the classroom during school hours under the supervision of the first author, who was present to answer the students' questions. After collection, the questionnaires were checked for completeness, and the data were entered into SPSS for analysis.

2.6. Data Analysis

Data were analyzed using SPSS version 25 and SmartPLS version 4. Descriptive statistics and Pearson correlation coefficients were calculated in

SPSS. The research model was tested using PLS-SEM in two steps (25, 26). First, the measurement model was evaluated using factor loadings, Cronbach's alpha, composite reliability (CR), average variance extracted (AVE), and the heterotrait-monotrait ratio (HTMT). Second, the structural model was evaluated using the variance inflation factor (VIF), the coefficient of determination (R^2), Stone-Geisser's Q^2 , the standardized root mean square residual (SRMR), and the normed fit index (NFI). Covariance-based fit indices were not used because they are not appropriate for PLS-SEM (25–27). The significance of the direct and indirect effects was tested using bootstrapping with 5,000 resamples and 95% bias-corrected confidence interval.

3. Results

Of the 384 female students, 200 (52.1%) attended public schools and 184 (47.9%) attended private schools; 199 (51.8%) were in the 10th grade and 185 (48.2%) were in the 11th grade. As shown in Table 1, conversation orientation and basic psychological needs were positively correlated with positive academic identity and negatively correlated with negative academic identity. Conformity orientation was negatively correlated with basic psychological needs and positive academic identity and positively correlated with negative academic identity.

3.1. Measurement Model

All factor loadings (0.70–0.90), Cronbach's alpha and CR values (>0.70), and AVE values (>0.50) met the recommended criteria; therefore, the reliability and convergent validity of the measurement model were confirmed (Table 2). All heterotrait-monotrait ratio (HTMT) values were below 0.85 (range: 0.21–0.60), which confirmed discriminant validity (26). A separate covariance-based confirmatory factor analysis was not performed, because the evaluation of the measurement model in PLS-SEM serves the same purpose (25, 26).

Table 1: Descriptive statistics and correlations among study variables (N=384)

Variable	Mean	SD	CFO	CVO	BPN	PAI	NAI
1. Conformity Orientation	3.05	0.66	1				
2. Conversation Orientation	3.49	0.64	–0.18*	1			
3. Basic Psychological Needs	4.01	0.71	–0.34*	0.49*	1		
4. Positive Academic Identity	3.62	0.64	–0.32*	0.45*	0.51*	1	
5. Negative Academic Identity	2.58	0.69	0.36*	–0.39*	–0.44*	–0.42*	1

CFO = Conformity Orientation; CVO = Conversation Orientation; BPN = Basic Psychological Needs; PAI = Positive Academic Identity; NAI = Negative Academic Identity; SD: Standard Deviation; * $P < 0.05$

Table 2: Reliability and convergent validity of the measurement model

Construct	Loadings Range	Cronbach's alpha	CR	AVE
Conversation Orientation	0.72–0.86	0.87	0.90	0.59
Conformity Orientation	0.70–0.82	0.81	0.86	0.55
Basic Psychological Needs	0.71–0.85	0.83	0.88	0.57
Positive Academic Identity	0.78–0.90	0.93	0.95	0.69
Negative Academic Identity	0.72–0.86	0.86	0.90	0.60

CR: Composite Reliability; AVE: Average Variance Extracted

Table 3: Model quality and predictive-relevance criteria for the PLS-SEM model

Criterion	Recommended Value	Obtained Value
SRMR	<0.08	0.052
NFI	>0.90	0.91
R ² (Basic Psychological Needs)	0.25–0.50	0.39
R ² (Positive Academic Identity)	0.25–0.50	0.34
R ² (Negative Academic Identity)	0.25–0.50	0.31
Q ² (Basic Psychological Needs)	>0	0.24
Q ² (Positive Academic Identity)	>0	0.26
Q ² (Negative Academic Identity)	>0	0.23

SRMR: Standardized Root Mean Square Residual; NFI: Normed Fit Index; R²: Coefficient of Determination; Q²: Stone–Geisser's Predictive Relevance

3.2. Structural Model

The variance inflation factor (VIF) values of the predictor variables ranged from 1.12 to 1.58 and were below the cut-off of 3; therefore, multicollinearity was not a problem (25, 28). The SRMR and NFI values met the recommended cut-offs, indicating an acceptable model fit (Table 3). The R² values of the three dependent variables fell between the weak (0.25) and moderate (0.50) levels, which are considered meaningful in behavioral research (25, 28). All Q² values were above zero, indicating the predictive relevance of the model.

Figure 2 shows the standardized path coefficients

and t-values of the structural model.

Table 4 shows the direct effects of family communication patterns and basic psychological needs on academic identity. All eight direct effects were significant. Conversation orientation was positively related to basic psychological needs and positive academic identity and negatively related to negative academic identity. Conformity orientation was negatively related to basic psychological needs and positive academic identity and positively related to negative academic identity. Basic psychological needs were positively related to positive academic identity and negatively related to negative academic identity.

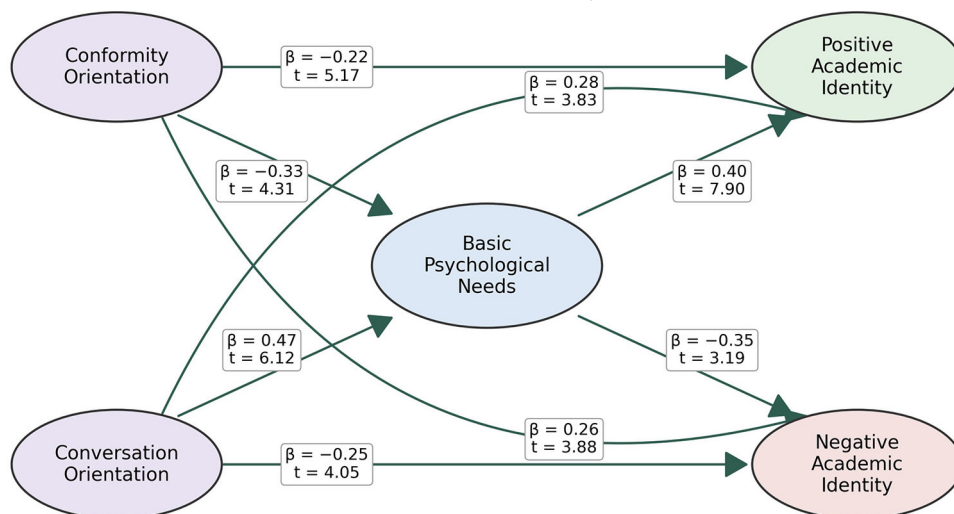


Figure 2: The figure shows the structural model with standardized path coefficients (β) and t-values.

Table 4: Direct effects of family communication patterns and basic psychological needs on academic identity

Path	β	95% CI	t	P	Result
Conformity → Basic Psychological Needs	-0.33	-0.48, -0.18	4.31	<0.001	Supported
Conversation → Basic Psychological Needs	0.47	0.32, 0.62	6.12	<0.001	Supported
Conformity → Positive Academic Identity	-0.22	-0.30, -0.14	5.17	<0.001	Supported
Conformity → Negative Academic Identity	0.26	0.13, 0.39	3.88	<0.001	Supported
Conversation → Positive Academic Identity	0.28	0.14, 0.42	3.83	<0.001	Supported
Conversation → Negative Academic Identity	-0.25	-0.37, -0.13	4.05	<0.001	Supported
Basic Psychological Needs → Positive Academic Identity	0.40	0.30, 0.50	7.90	<0.001	Supported
Basic Psychological Needs → Negative Academic Identity	-0.35	-0.57, -0.14	3.19	0.001	Supported

CI: Confidence Interval

Table 5: Indirect effects through basic psychological needs (BPN)

Indirect Path (via BPN)	Indirect β	t	95% CI	Direct β	Total β	Mediation
Conformity → BPN → Positive Academic Identity	-0.13	3.05	-0.21, -0.05	-0.22	-0.35	Complementary
Conformity → BPN → Negative Academic Identity	0.12	2.78	0.04, 0.20	0.26	0.38	Complementary
Conversation → BPN → Positive Academic Identity	0.19	4.05	0.10, 0.28	0.28	0.47	Complementary
Conversation → BPN → Negative Academic Identity	-0.16	3.42	-0.25, -0.07	-0.25	-0.41	Complementary

BPN: Basic Psychological Needs; CI: Confidence Interval

Table 5 shows the indirect effects of family communication patterns on academic identity through basic psychological needs. All four indirect effects were significant, and the corresponding direct effects also remained significant. Therefore, basic psychological needs partly mediated the relationships between family communication patterns and academic identity (complementary mediation) (25).

4. Discussion

This study tested a structural model in which basic psychological need satisfaction mediated the relationships between family communication patterns (conversation and conformity orientations) and academic identity (positive and negative dimensions) among adolescent girls (Figure 1). The results supported this model. The first finding was that conversation orientation was associated with greater satisfaction of basic psychological needs, whereas conformity orientation was associated with lower need satisfaction. This finding is consistent with previous studies (29–31). Liu and colleagues (29) found that among Chinese senior high school students, parental autonomy support was associated with greater satisfaction of basic psychological needs, which in turn was associated with more active planning of their educational future. Similarly, Çelik (30) reported that parental autonomy support was associated with higher need satisfaction, better self-control, and stronger academic motivation in adolescents. These two

studies (29, 30) suggested that when parents respect adolescents' views and choices, adolescents' basic psychological needs are more likely to be satisfied. In addition, Abidin and co-workers (31) found that among Indonesian adolescents, parenting style and friendship quality were stronger predictors of need satisfaction than school climate. A possible explanation for this finding is that, in conversation-oriented families, adolescents can express their opinions and take part in family decisions, which may satisfy their need for autonomy. When parents listen to their children and take their perspectives seriously, adolescents may feel more capable and effective; thereby supporting the satisfaction of their need for competence. Open communication may strengthen adolescents' emotional connection with their parents, thereby supporting their need for relatedness. In contrast, in conformity-oriented families, adolescents are expected to accept their parents' opinions and decisions without questioning them. Consequently, they may have fewer opportunities to make independent choices, which may limit the satisfaction of their basic psychological needs (15, 32).

However, the meaning of conformity may differ across cultures. In collectivist cultures such as Iran, obedience to parents is often regarded as an expression of respect and family unity; therefore, conformity may not necessarily be experienced as pressure by adolescents. Consistent with this view, Maleki and colleagues (7) found that conformity orientation was positively related to

need satisfaction among Iranian 10th- and 11th-grade students, which contrasts with the findings of the present study. Yang and colleagues (32) found that among Chinese adolescents who shared their parents' collectivist values, parental control was still associated with greater frustration of basic psychological needs. Similarly, the present study showed that, even in a collectivist culture such as Iran, conformity orientation was associated with lower need satisfaction among adolescent girls. The discrepancy between the findings of the present study and those reported by Maleki and colleagues (7) may be due to differences in the study sample; for example, the present study included only female students.

The second finding was that family communication patterns were also directly related to academic identity. Conversation orientation was associated with a stronger positive academic identity and a weaker negative academic identity, whereas conformity orientation was associated with a weaker positive academic identity and a stronger negative academic identity. These results are consistent with the study of Sznitman and colleagues (6), who found that adolescents in different identity statuses differed in the quality of their family communication. Some Iranian studies (7, 33) also found that family communication patterns were related to students' academic identity. One explanation for the negative role of conformity orientation is that girls in highly conformity-oriented families may accept the educational goals chosen by their parents without exploring other options. In Marcia's identity status model (4), this pattern corresponds to foreclosure, which was part of the negative dimension of academic identity in this study. This interpretation is supported by the study of Naudé and van Damme (34), who found that South African adolescents reacted to control in different ways, one of which was conforming and submitting to the expectations of others; these reactions had different implications for identity exploration and commitment. However, another study (34) showed that not all adolescents react to control in this way, which suggests that the effect of conformity on identity may depend on how each adolescent responds to it.

The third finding was that the satisfaction of basic psychological needs was associated with a stronger positive academic identity and a weaker

negative academic identity. This finding is consistent with Self-Determination Theory (10), which holds that need satisfaction provides the basis for healthy psychological growth, including the development of the self (8). Christiaens and co-workers (13) similarly found that need satisfaction was related to identity construction among adolescents moving to tertiary education. Other studies indicated that need satisfaction is related to better psychological adaptation in adolescents (35) and greater academic engagement in university students (36); the neuroscientific evidence has linked need satisfaction to brain processes involved in motivation (37). A possible explanation is that when girls experience their studies as self-chosen (autonomy), feel capable of succeeding (competence), and feel supported by others (relatedness), they are more likely to explore their educational options and to make firm commitments to them. However, need satisfaction alone may not be sufficient for a stable academic identity. Self-concept clarity, that is, having a clear and consistent view of oneself, may also play a role. Parise and co-workers (38) found that self-concept clarity was related to better emotion regulation and psychological adjustment in adolescents, and Crocetti and colleagues (39) showed that self-concept clarity develops during adolescence and is transmitted from parents to their adolescent children. Therefore, some adolescents whose basic needs are satisfied may still have a diffused identity if their self-concept is unclear.

The fourth and main finding was that basic psychological needs partly mediated the relationships between family communication patterns and academic identity. In other words, conversation orientation was associated with a more adaptive academic identity partly because it was associated with greater need satisfaction, whereas conformity orientation was associated with a less adaptive academic identity partly because it was associated with lower need satisfaction. This finding is consistent with the results of Cordeiro and colleagues (15), who found that among 12th-grade students, need-supportive parenting was associated with career exploration and commitment through need satisfaction; it also aligns with the study of Houthuys and co-workers (40), who reported that autonomy-supportive parenting fostered adolescent identity across the transition to higher education. Liu and colleagues (29)

also found that need satisfaction mediated the relationship between parental autonomy support and adolescents' future educational planning, which, like academic identity, involves both exploration and commitment. The present study extends these findings by showing this pathway specifically among adolescent girls and for both the positive and negative dimensions of academic identity. Because the mediation was partial, family communication was also related to academic identity through other pathways.

4.1. Limitations

Several methodological limitations should be considered when interpreting these findings. First, the sample was restricted to female secondary school students in an urban area of Iran (Zanjan), which limits the generalizability of the results to male adolescents, other educational stages, and diverse cultural populations. Second, the study employed a cross-sectional design relying solely on self-report questionnaires, precluding definitive causal inferences and carrying potential common-method variance. Third, combining the moratorium status with the negative identity dimension, while methodologically parsimonious, may obscure the developmental nature of moratorium as an active, exploratory phase.

5. Conclusions

This study demonstrated that basic psychological need satisfaction serves as a vital psychological mechanism through which family communication patterns are related to academic identity among adolescent girls. Conversation-oriented family communication was associated with more adaptive academic identity via greater autonomy, competence, and relatedness, whereas conformity orientation was associated with impaired positive identity formation via lower psychological need satisfaction. From an applied perspective, school counselors and educational psychologists may consider family-centered workshops that encourage autonomy-supportive parenting and open conversational communication. Training parents to provide rationales, acknowledge adolescent perspectives, and reduce coercive pressure may help support girls' psychological need satisfaction and academic commitment. Future studies should use longitudinal and multi-informant designs, include both boys and girls, and examine whether the consequences

of conformity orientation differ by gender and by the strength of families' collectivist values. Future studies could also examine other variables, such as self-concept clarity and academic resilience.

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Declaration of AI

The authors acknowledge the use of AI-assisted tools (Claude/Anthropic) for language editing. All content was manually reviewed and edited by the authors to ensure its accuracy and academic integrity; the authors take full responsibility for the final content of the manuscript.

Authors' Contribution

Reza Mohammadi: Contributions to the conception and design of the work; acquisition and collection of data; drafting the work. Fateme Nazari: Contributions to the conception of the study; analysis and interpretation of data; reviewing the work critically for important intellectual content. Qamar Kiani: Contributions to the design of the study; interpretation of data; reviewing the work critically for important intellectual content. All authors reviewed and provided final approval of the version to be published, and agreed to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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Ethical Approval

The Research Ethics Committee of Islamic Azad University, Zanjan Branch, Zanjan, Iran approved the present study with the code of IR.IAU.Z.REC.1403.060. Also, written informed consent was obtained from participants' parents or legal guardians.

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