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Evaluation of Psychometric Indices of the Revised Family Communication Pattern Instrument among Students of Shiraz and Kerman Universities

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ABSTRACT

Objective: The aim of the current study was to examine the validity and reliability metrics of the Revised Family Communication Patterns (RFCP) Instrument among the student populations of Kerman and Shiraz universities in 2022.

Methods: A total of 388 students (comprising 167 males and 221 females) were selected utilizing a multi-stage cluster random sampling technique. The instruments employed in this research included the Revised Family Communication Patterns (RFCP) Instrument developed by Ritchie and Fitzpatrick, along with the Psychological Resilience Scale formulated by Freiburg et al. The validity of the questionnaire was assessed through an analysis of its construct validity via confirmatory factor analysis, as well as through the determination of criterion validity in conjunction with the Psychological Resilience Scale.

Results: Following the execution of confirmatory factor analysis, the factorial configuration of the questionnaire was validated across two dimensions: conversation orientation and conformity orientation. The analysis of criterion validity revealed that conversation orientation exhibits a positive correlation with psychological resilience, whereas conformity orientation demonstrates a negative correlation with psychological resilience. To evaluate the reliability of the questionnaire, both Cronbach's alpha and the halving method were employed, the outcomes of which supported the reliability of this instrument for the student demographic.

Conclusions: Overall, the findings of this study indicated that the Revised Family Communication Patterns Instrument is appropriate for assessing this variable and its respective components among students.

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Introduction

One of the most significant institutions that profoundly impacts human development and behavior is the family, which serves as a fundamental determinant in the construction of human personality. The family environment facilitates the acquisition of culture, norms, values, and roles (Poston et al., 2014) and represents the initial social nucleus and a microcosmic community aimed at fostering social development and growth, wherein individuals can cultivate diverse competencies and manifest their talents. The methodologies of parenting within the family context exert critical influences on psychological maturation and a broad spectrum of behaviors, encompassing well-being, health, organic growth predicated on love and affection, as well as educational outcomes for children (Mendonça & Fontaine, 2014). In this context, empirical evidence suggests that when parents engage with their offspring in a respectful manner, meticulously assess circumstances prior to responding, establish consistent regulations and expectations, and create opportunities that promote autonomy, their children thrive both emotionally and socially, achieving emotional stability (Rawat & Gulati, 2018).

Watzlawick et al. (2011) assert that the family functions as a legislative system wherein its members perpetually delineate and amend the nature of their interpersonal relationships predicated on their communicative practices. To comprehend the multifaceted dimensions of family dynamics, it is imperative to analyze family communication patterns and styles. Family communication encompasses the processes through which verbal and nonverbal information is exchanged among family members, facilitating children's acquisition of interpersonal communication skills and their interpretation of behaviors within their relationships, thereby influencing their emotional experiences (Epstein et al., 2003). Family communication patterns denote the methodologies by which families interact with their offspring (Dong, 2005). The construct of family communication patterns embodies the observable dynamics of the family unit, defined by the qualitative nature of interactions among family members, the substance of communication, the types of activities undertaken, and the spatial context of interactions within the family (Koerner & Fitzpatrick, 2002). Chaffee (1973) were pioneers in the examination of family communication. In their foundational model of family communication patterns, they introduced two dimensions: social orientation and concept orientation, thereby establishing a corresponding scale (Chaffee, 1973). The social orientation dimension accentuates the exertion of

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parental pressure and authority to align their children's beliefs with their own and to regulate their conduct. Conversely, the concept orientation dimension advocates for parental encouragement of children's free expression of beliefs (Hsieh et al., 2006). Subsequently, Chaffee (1973) scale was refined by Ritchie and Fitzpatrick in 1994, resulting in the development of the revised Family Communication Model. In this updated framework, concept orientation was reclassified as conversational orientation, while social orientation was redefined as conformity orientation (Kagawa, 2008).

Conversational orientation denotes the degree to which familial units cultivate environments wherein all members are motivated to engage openly and comfortably in discourse and deliberation across a diverse array of subjects. Individuals within families characterized by elevated communication levels engage with one another freely, consistently, and spontaneously (Fitzpatrick, 2004). These family members articulate their thoughts and emotions towards one another, candidly convey their viewpoints, and collaboratively arrive at decisions (Koerner & Fitzpatrick, 2002). Conversely, familial members exhibiting diminished communication levels experience limited interactions and partake in reduced discourse and debate. In such familial structures, there exists a minimal exchange of thoughts, emotions, and personal pursuits among members, while parental figures do not assign significant value to the unimpeded expression of opinions, deeming it unnecessary (Kagawa, 2008). Consequently, it is evident that a heightened level of communication orientation is imperative for the vitality of family life (Koerner & Fitzpatrick, 2002).

Conformity orientation pertains to the degree to which familial communication underscores the alignment of attitudes, values, and beliefs; families with high conformity primarily depend on the congruence of beliefs, interdependence among family members, and the avoidance of conflict within their interactions. Intergenerational communication in such familial settings is characterized by attentiveness towards parents and other adult figures (Fitzpatrick, 2004). A high degree of congruity is typically correlated with traditional family configurations. Specifically, these families exhibit cohesiveness and hierarchical structures, prioritizing intra-family relationships over individual interests. Members are expected to subordinate their personal interests in favor of those of the family (Fitzpatrick, 2004; Scruggs & Schrodt, 2021). Conversely, families with a low conformity orientation reject traditional structures, assign lesser significance

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to customs, rituals, and hierarchies, and champion the independence and individuality of their members. In this context, decision-making necessitates that all family members articulate their perspectives on the matter at hand, thus facilitating an exchange of ideas among family members. The interplay and interrelation between dialogue and conformity orientations culminate in the establishment of four distinct family communication patterns as delineated in Figure 1 (Koerner & Fitzpatrick, 2002).

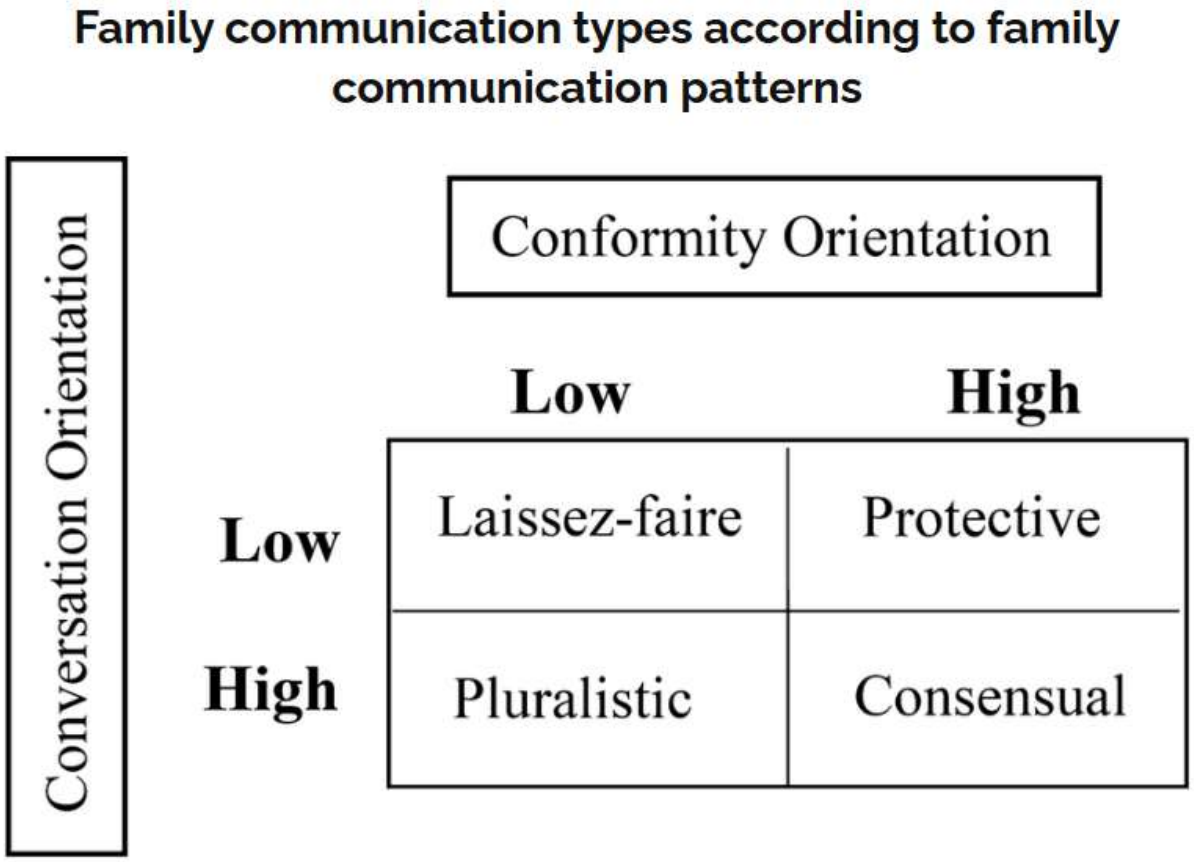

Figure 1. Four Family Communication Patterns (Koerner & Fitzpatrick, 2002)

Accommodative families exhibit elevated scores across both the dimensions of dialogue and conformity. Within these familial structures, there exists, on one hand, a proclivity for open communication and the exploration of novel concepts, while on the other hand, there is a significant emphasis on upholding the prevailing hierarchy. Parents, despite demonstrating

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considerable interest in their children's perspectives and opinions, ultimately retain the authority as the final arbiters in decision-making (Rahimi & Khayyer, 2009). Children reared in such families are predisposed to be swayed by messages that resonate with their parents' beliefs, while simultaneously exhibiting resistance toward messages that diverge from their parents' values and convictions (Koerner & Fitzpatrick, 2002).

Pluralistic families, conversely, display elevated dialogue and diminished conformity. The defining trait of this family type is the encouragement of open discussion and dialogue among its members. Parents in pluralistic families do not perceive a necessity to exert control over their children, and the viewpoints of all family members are regarded as significant. This open disposition of parents towards collaborative interactions engenders discussions wherein individual opinions are endorsed based on their merit and effectiveness (Kagawa, 2008). In such familial contexts, parents are inclined to engage their children in the decision-making processes (Koerner & Fitzpatrick, 2006). Children belonging to these families are more likely to be influenced by rational arguments rather than the identity of the message source when processing information and making decisions (Fatima et al., 2020; Fitzpatrick, 2004).

Restrictive families are characterized by a deficiency in the dialogue dimension while exhibiting a high degree of conformity. The hallmark of these families lies in the imposition of obedience and attentiveness upon children. In this familial framework, the focus is primarily on listening and evading open confrontation. Parents assume the role of decision-makers for their children, often dismissing the necessity to elucidate the rationale behind their decisions. Consequently, children from these families are conditioned to undervalue communication and to develop pessimistic and distrustful attitudes toward their own individual decision-making capabilities (Koerner & Fitzpatrick, 2002). The final category of family is the loose family. This type is characterized by minimal conformity and communication. Families of this nature are defined by restricted interactions, monotony, and a lack of vitality. Members of such families engage in communication only under limited circumstances, and parents advocate for the notion that individual family members should independently make decisions (Koerner & Fitzpatrick, 2002). Overall, these families exhibit a disinterest in engaging in discussions and in valuing their children's opinions. Children raised in this environment consequently learn to disregard the significance of familial

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communication and to adopt the belief that each individual is responsible for their own decision-making (Kagawa, 2008).

In summary, it can be posited that children who are nurtured in families characterized by a communicative orientation engage in extensive dialogue; through discussions on a variety of issues, they acquire the capacity for logical decision-making. These individuals tend to actively seek out all pertinent information and assess various options. Furthermore, they identify all potential solutions, scrutinize their implications, and ultimately select the most desirable course of action (Kagawa, 2008). In contrast, children from harmonious family structures often lack substantial intellectual and practical autonomy and consequently require external oversight in their endeavors.

In relation to the family communication paradigm, a plethora of investigations have been executed both domestically and internationally, the majority of which have employed the current research instrument for evaluation purposes. The bulk of the aforementioned investigations have sourced their empirical data from student populations. For instance, Adavi and Moltafet (2015) implemented this instrument on adolescents, while Kouroshnia and Latifian (2007) and Rahimi and Khayyer (2009) utilized it on secondary school students, with Jahan et al. (2021) also applying it to high school students. In the present inquiry, the validity and reliability of the modified Family Communication Model instrument among student populations, along with a comparative analysis of its construct validity across genders, were scrutinized. Considering that the psychometric attributes of this instrument were assessed by Iranian scholars (Kouroshnia & Latifian, 2007) over a decade ago and exclusively on students, it became imperative to reevaluate the psychometric characteristics of this instrument on a similar demographic. Consequently, the current study aimed to fulfill three primary objectives:

1- To examine the construct validity of the modified Family Communication Model instrument among students.

2- To assess the criterion validity of the revised family communication model instrument among students.

3- To evaluate the reliability of the modified family communication model instrument among students.

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Material and Methods

The statistical population under investigation for this study encompassed the entirety of students enrolled at Shiraz and Kerman universities during the academic years 2022. A multi-stage cluster random sampling methodology was employed to ascertain the study participants. Initially, the Faculty of Psychology and Educational Sciences alongside the Faculty of Basic Sciences were randomly selected from the array of faculties at Shiraz University, while the Faculty of Engineering and the Faculty of Literature were randomly chosen from the faculties at Kerman University. Subsequently, in the following stage, the departments of psychology, educational sciences, education and upbringing of exceptional children, and educational management were randomly selected from the Faculty of Psychology and Educational Sciences at Shiraz University; concurrently, the departments of mathematics, chemistry, physics, and biology were randomly chosen from the Faculty of Basic Sciences at Shiraz University, further complemented by the random selection of the departments of computer engineering, civil engineering, electrical engineering, and chemical engineering from the Faculty of Engineering at Kerman University, as well as the departments of history, Persian language and literature, Arabic language and literature, and English language from the Faculty of Literature at Kerman University. One class was randomly selected from each identified department, and all students within those classes were included in the study. It is imperative to note that, considering the temporal context of the research and the ongoing coronavirus pandemic, the dissemination of questionnaire links to students was facilitated through professors via online platforms. Additionally, it is pertinent to mention that during the data collection phase, the number of invalid questionnaires totaled 12, resulting in a sample size of 388 participants (comprising 221 females and 167 males, of which 163 were students from Shiraz University and 225 were students from Kerman University).

Revised Family Communication Pattern Instrument: This instrument was conceived by Ritchie and Fitzpatrick (1990) and quantifies the extent of agreement and disagreement among respondents regarding 26 items that pertain to their family communication dynamics, utilizing a 5-point Likert scale ranging from strongly disagree (1) to strongly agree (5). The instrument is comprised of two subscales: conversational orientation and conformity orientation. Specifically, 15 items are allocated to the measurement of conversational orientation, while 11 items are dedicated to conformity orientation. Koerner and Fitzpatrick (1997) demonstrated that this tool

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possesses commendable criterion, content, and construct validity. They employed Cronbach's alpha coefficient to evaluate the reliability of the scale, reporting coefficients of 0.89 for the conversational orientation and 0.79 for the conformity orientation. Within the Iranian context, Kouroshnia and Latifian (2007) assessed the validity of this instrument for student populations, reporting favorable construct validity through exploratory factor analysis. Furthermore, they indicated that the criterion validity and internal consistency of this instrument were robust. Kouroshnia and Latifian (2007) documented that the reliability coefficients for this instrument stood at 0.87 for the conversational dimension and 0.81 for the conformity dimension.

Adult Resilience Scale: In the current investigation, the Psychological Resilience Scale was employed to assess criterion validity. The Adult Resilience Scale is a comprehensive 33-item assessment tool formulated by Hilbig et al. (2015), comprising five distinct subscales: personal competence, social competence, family cohesion, social supports, and personal structure, with respective item allocations of 4, 6, 7, 6, and 10. A 5-point Likert scale, ranging from strongly disagree (1) to strongly agree (5), was utilized for participant responses to this instrument. Consequently, the possible score range extends from 33 to 165. Jowkar et al. (2010) have rigorously evaluated its validity and reliability within the Iranian context. These scholars substantiated its validity through confirmatory factor analysis and second-order factor analysis methodologies. In terms of reliability, the assessment yielded a Cronbach's alpha coefficient of 0.90, with subscale reliabilities ranging from 0.76 to 0.83. Specifically, the Cronbach's alpha coefficients for personal competence, social competence, social cohesion, social support, and personal structure were 0.80, 0.76, 0.83, 0.84, and 0.77, respectively.

In the current investigation, SPSS and Amos software were employed to conduct a comprehensive analysis of the research data, with statistical evaluations performed at both descriptive and inferential levels. Within the descriptive statistics segment, metrics such as mean, standard deviation, skewness, kurtosis, as well as the highest and lowest scores were computed. In the inferential statistics segment, to ascertain the validity of the instrument, the collected data were scrutinized for construct validity through the application of confirmatory factor analysis, criterion validity through the Pearson correlation coefficient, and reliability through the Cronbach's alpha methodology.

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Results

Descriptive indices related to respondents' scores are presented in Table 1.

Table 1. Descriptive indices related to respondents' scores

Variable	Min.	Max.	Mean	SD	Skewness	Kurtosis	S-W	P
Conversation orientation	18	71	76.44	13.17	0.81	0.59	0.956	0.076
Conformity orientation	11	54	34.67	78.90	0.63	0.72	0.981	0.082

Based on the results of Table 1, the Shapiro-Wilk statistic was not at a significant level, so there is not enough reason to reject the null hypothesis (based on the indifference of the distribution obtained with the theoretical distribution), and as a result, the distribution of the subjects' scores is estimated as normal. Confirmatory factor analysis was used to measure the validity of the revised Family Communication Model tool (table 2).

Table 2. Factor structure of the revised Family Communication Model tool

Factor	Item	Factor loading
Conversation	1	0.73
	2	0.75
	3	0.80
	4	0.81
	5	0.72
	6	0.82
	7	0.75
	8	0.80
	9	0.81
	10	0.64
	11	0.71
	12	0.60
	13	0.68
	14	0.50
	15	0.54
Conformity	16	0.68
	17	0.82
	18	0.82
	19	0.80
	20	0.61
	21	0.82
	22	0.60
	23	0.53
	24	0.53
	25	0.53
	26	0.78

As can be seen from table 2, in the confirmatory factor analysis of the revised Family Communication Model tool, all items had appropriate factor loading. In this analysis, all standard

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coefficients were above 0.50. Thus, it can be said that the items loaded significantly on their respective factors. The fit indices of the confirmatory factor analysis model for the revised Family Communication Model Instrument are reported in Table 3.

Table 3. Fit indices of the confirmatory factor analysis of the revised Family Communication Model Instrument

Fitness indices	Obtained value	Favorable value	Result
X^2/DF	1.32	1-5	Favorable
GFI	0.93	> 0.90	Favorable
AGFI	0.91	> 0.90	Favorable
TLI	0.92	> 0.90	Favorable
IFI	0.94	0-1	Favorable
RAMSEA	0.06	< 0.05	Moderate

As Table 3 shows, the ratio of the chi-square to the degree of freedom is at a desirable level. The chi-square statistic is the first indicator used to measure the fit of the model. The chi-square test shows the similarity of a theoretical model with the actual model. In this test, the null hypothesis is that there is no difference between the actual model and the theoretical model. If the test statistic is greater than the critical value of X^2 at the desired error level (0.05), the null hypothesis will be rejected. The chi-square index is not suitable for modeling. For this method, the chi-square must be normalized. One of the general indices for taking into account free parameters in calculating the fit indices is the Normed Chi-square index, which is calculated by simply dividing the Chi-square by the degree of freedom of the model. If this value is less than 2, it is desirable, and if it is less than 5, it is acceptable with negligence. Based on the present material and the calculated value, it can be estimated that this statistic is at a desirable level. Another important index in determining the fate of the model is the root mean square error of estimation RMSEA index. If the value of this index is less than 0.05, the model fit is good, and if it is between 0.05 and 0.08, the model fit is average. Based on the value reported in Table 2, the fit index of the present model is assessed as moderate. Another fit index proposed in this study is the adjusted goodness of fit index or AGFI. The GFI and AGFI indices do not depend on the sample size. The range of GFI and AGFI changes is between zero and one. The acceptable value of these two indices should be equal to or greater than 0.90. Table 3 reports the desired values for the latter two indices. The incremental fit index or IFI is another adaptive fit index. This index is acceptable for values above 0.90 and is an indication of model fit. Table 3 reports the desired value for this index. The last index proposed

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for the model of this study was the Tucker-Lewis Index (TLI), which is evaluated as desirable based on the values obtained in Table 3. According to the information presented about the types of model fit indices and factor loadings in the model, in a general conclusion, it can be said that the revised family communication model instrument had a desirable construct validity. In other words, the existing items were able to support their factors well. In addition, for a detailed and deeper examination of this instrument, confirmatory factor analysis based on gender was conducted. This comparison is made in tables 4 and 5.

Table 4. Factor structure of the revised Family Communication Pattern instrument in female students

Factor	Item	Factor loading
Conversation	1	0.76
	2	0.76
	3	0.83
	4	0.87
	5	0.69
	6	0.86
	7	0.78
	8	0.84
	9	0.83
	10	0.61
	11	0.64
	12	0.68
	13	0.64
	14	0.67
	15	0.54
Conformity	16	0.75
	17	0.82
	18	0.86
	19	0.84
	20	0.56
	21	0.82
	22	0.65
	23	0.55
	24	0.61
	25	0.52
	26	0.79

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Table 5. Factor structure of the revised Family Communication Pattern instrument in male students

Factor	Item	Factor loading
Conversation	1	0.69
	2	0.74
	3	0.84
	4	0.74
	5	0.77
	6	0.86
	7	0.70
	8	0.83
	9	0.84
	10	0.67
	11	0.74
	12	0.58
	13	0.70
	14	0.45
	15	0.56
Conformity	16	0.58
	17	0.84
	18	0.80
	19	0.72
	20	0.82
	21	0.52
	22	0.49
	23	0.53
	24	0.43
	25	0.54
	26	0.77

Based on what was determined in tables 4 and 5, there was no difference between the confirmatory factor analysis of girls and boys in the revised Family Communication Pattern instrument, and the same items are related to and consistent with their factors. The fit indices of the model in female and male students are shown in Table 6.

Table 6. Fit indices of the confirmatory factor analysis of the revised Family Communication Pattern instrument in female and male students

Fitness indices	Obtained value (female)	Obtained value (male)
X^2/DF	1.40	1.51
GFI	0.92	0.93
AGFI	0.91	0.90
TLI	0.90	0.91
IFI	0.92	0.90
RAMSEA	0.05	0.06

Furthermore, the criterion validity analysis of this instrument was also examined using the Psychological Resilience Scale, the results of which are shown in Table 7.

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Table 7. Criterion Validity Study of the Revised Family Communication Model Instrument Using the Psychological Resilience Scale (n=388)

Variable	Conversation	conformity
Individual competence	0.24*	-0.09
Social competence	0.37*	-0.24*
Family cohesion	0.70*	-0.62*
Social support	0.53*	-0.38*
Personal structure	0.40*	-0.22*
Resilience	0.62*	-0.44*

As shown in Table 7, the conversation orientation has a positive and significant correlation with all dimensions of resilience and the total resilience score (correlation coefficients range from 0.24 to 0.70). It was also found that the conformity orientation also has a negative and significant correlation with the dimensions of social competence, family cohesion, social support, individual structure, and total resilience (correlation coefficients range from -0.22 to -0.62). It should be noted that the conformity orientation does not have a significant correlation with the individual competence dimension. The criterion validity findings of this instrument generally indicated that this instrument has a desirable criterion validity.

Cronbach's alpha method was used to measure the reliability of the questionnaire. The reliability coefficient for the conversational orientation subscale was 0.94 and for the conformity orientation subscale was 0.91. Accordingly, the reliability of this questionnaire is estimated to be quite strong. In addition to the latter method, the reliability of the present scale was also calculated by the split-half method. The reliability split-half coefficient for the conversation subscale was 0.92 and for the conformity subscale was 0.87 (Table 5). As can be seen in this table, in the present study, the Cronbach's alpha coefficients of girls and boys do not differ significantly.

Table 8. Reliability coefficients of the revised instrument of the family communication model (n=388)

Sample	Conversation	Conformity
Total Alpha	0.94	0.91
Female Alpha	0.94	0.92
Male Alpha	0.93	0.90
Split-half coefficient	0.92	0.87
Original scale Cronbach Alpha	0.89	0.79
Kouroshnia & Latifian study Cronbach Alpha	0.87	0.81

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Discussion

The current investigation sought to evaluate the validity and reliability metrics of the revised Family Communication Pattern Instrument among both male and female students, with the objective of determining whether the aforementioned questionnaire serves as an effective instrument for assessing family communication patterns and their constituent elements within the context of Iranian university students. More specifically, this research aimed to assess the construct validity, criterion validity, and reliability of the revised Family Communication Pattern Instrument among male and female participants. As articulated in the results section, the analysis of construct validity for this instrument among the student population indicated that the factor loadings varied from 0.50 to 0.82. Furthermore, in the two distinct models for male and female participants, the factor loadings did not fall below 0.40. In the investigation conducted by Fitzpatrick and Ritchie (1994), factor coefficients were documented to be between 0.35 and 0.53, whereas the study by Kouroshnia and Latifian (2007) reported these coefficients within the range of 0.30 to 0.69. Additionally, it is imperative to note that none of the items were modified or eliminated from the original instrument. This observation signifies that the content pertaining to the factors of dialogue orientation and congruence identified in this investigation aligns with the content of these two subscales as presented in the original version of this instrument (Fitzpatrick & Ritchie, 1994) and the findings concerning Iranian students (Kouroshnia & Latifian, 2007). This alignment suggests that the instrument is capable of effectively assessing the intended constructs within the domain of family communication. Consequently, the factor structure of this instrument received validation in the present study.

In the framework of evaluating criterion validity, the subscales of this instrument were correlated with both the subscales and the overall score of the Adult Resilience Scale. The findings revealed that conversational orientation was correlated with individual social competence, family cohesion, social support, and resilience at coefficients of 0.24, 0.37, 0.70, 0.53, and 0.62, respectively; conversely, conformity orientation was correlated with social competence, family cohesion, social support, and resilience at coefficients of -0.24, -0.38, -0.22, and -0.44, respectively. It is noteworthy that the criterion validity of this instrument was previously examined in the study conducted by Fitzpatrick and Ritchie (1994), utilizing the original scale of the Chaffee (1973) Family Communication Model alongside the scores from the Fitzpatrick Communication

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Questionnaire. Additionally, in the research carried out by Kouroshnia and Latifian (2007), the correlation of this instrument with the Parent-Child Bonding Tool developed by Parker et al. (1988) was assessed. The results from Kouroshnia and Latifian (2007) indicated that conversational orientation was correlated with the attention scale at a coefficient of 0.74, while conformity orientation was correlated with the excessive support or control scale at a coefficient of 0.49. Overall, the collective findings derived from the original study by Fitzpatrick and Ritchie (1994), the study by Kouroshnia and Latifian (2007), and the present investigation suggest that this instrument possesses acceptable and favorable correlations with scales that are pertinent to or influenced by the dynamics of family relationships.

In terms of reliability, the findings of the current investigation revealed that the Cronbach's alpha coefficients for conversational orientation were recorded at 0.94 (0.94 for female participants and 0.93 for male participants), while the coefficients for conformity orientation were noted as 0.91 (0.92 for females and 0.90 for males). It is imperative to highlight that Koerner and Fitzpatrick demonstrated across five separate studies that the Cronbach's alpha values for this assessment tool ranged from 0.84 to 0.92. In the research conducted by Kouroshnia and Latifian (2007), the Cronbach's alpha for the conversational orientation scale was determined to be 0.87, whereas the coefficient for conformity orientation was ascertained to be 0.81. These results suggest that the values derived from this instrument for the student population exhibit stability over time.

In the supplementary analyses performed within the context of this study, it was observed that the outcomes of confirmatory factor analyses (with factor loadings for female participants oscillating between 0.52 and 0.82 and factor loadings for male participants also ranging from 0.52 to 0.82) and the Cronbach's alpha coefficients (0.94 for females and 0.92 for males, and 0.93 for females and 0.90 for males) demonstrated a high degree of consistency across genders, thereby affirming the reliability of this tool for application with students of both genders.

Recognizing the necessity for an objective instrument to evaluate the structure of familial communication patterns, the current tool is capable of addressing the prevailing educational, research, and counseling requirements within this domain. The Family Communication Index serves as a valuable instrument for counselors and researchers aiming to assess the state of family communication. This questionnaire is suitable for evaluating familial communication patterns among students.

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Concerning the limitations associated with this study, it is essential to acknowledge that the proliferation of the coronavirus and the transition to virtual educational modalities in universities imposed restrictions on data collection and sampling. Furthermore, given that the completion of the instruments occurred within a cyberspace environment, the accuracy of the information gathered may have been compromised. Consequently, future research endeavors should consider the administration of questionnaires in person to enhance the accuracy of the data pertaining to the research subject. It is recommended that subsequent studies also investigate the validity of the current instrument employing alternative methodologies, such as criterion-based discriminant validity. Due to the inability to re-engage the students who completed this instrument virtually, the test-retest reliability coefficient could not be computed. Future investigations are encouraged to evaluate the reliability of this instrument utilizing the test-retest methodology.

Data availability statement

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

Ethics statement

The studies involving human participants were reviewed and approved by ethics committee of Islamic Azad University.

Author contributions

All authors contributed to the study conception and design, material preparation, data collection and analysis. All authors contributed to the article and approved the submitted version.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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