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Warm fathering and adolescents' intrinsic learning motivation: the mediating role of basic psychological needs among Vietnamese high school students

BACKGROUND

Fathers' warmth is an important yet underexplored factor in adolescents' motivational development, especially in Asian contexts such as Vietnam, where fathers may be traditionally viewed as disciplinarians rather than sources of emotional support. Drawing on self-determination theory, this study examined the direct and indirect associations between warm fathering and high school students' intrinsic motivation, with autonomy, relatedness, and competence as mediators.

PARTICIPANTS AND PROCEDURE

Data were analyzed from 302 high school students using the Academic Motivation Scale, the adapted Basic Psychological Need Satisfaction and Frustration Scale, and a parenting styles questionnaire based on the Perceptions of Parents Scale. The mediation model was tested using partial least-squares structural equation modeling.

RESULTS

In the father-only model, warm fathering was positively associated with intrinsic motivation and was indirectly

associated with motivation through students' sense of choice and emotional connection. With maternal warmth included, the indirect associations of paternal warmth with intrinsic motivation via autonomy and relatedness remained significant, but the direct association became non-significant. Competence was not a significant mediator, suggesting that paternal warmth may support relational and volitional aspects of motivation, rather than perceived academic ability.

CONCLUSIONS

These findings emphasize the importance of father's emotional support, which is linked to autonomy and relatedness, both of which are associated with self-determined learning. They extend prior research by clarifying the pathways through which paternal warmth is associated with motivation and offer practical implications for fostering supportive family environments.

KEY WORDS

warmth; autonomy; relatedness; self-determination theory; adolescents

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AUTHORS' CONTRIBUTIONS – A: Study design · B: Data collection · C: Statistical analysis · D: Data interpretation ·

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BACKGROUND

Supporting students' intrinsic motivation has become a central concern in educational and developmental psychology. Intrinsic motivation, defined as engaging in learning activities for their inherent interest and enjoyment, has been consistently associated with greater academic engagement, persistence, and psychological well-being (Ryan & Deci, 2017). Hence, understanding the conditions that facilitate intrinsic motivation is increasingly relevant not only for educational outcomes but also for adolescent mental health. Motivation does not arise solely from individual characteristics, but is deeply embedded within social contexts, particularly close family relationships (Eccles & Wigfield, 2020). Among these, parenting practices play a crucial role in shaping how students perceive themselves in learning contexts and regulate their academic behaviors (Grolnick, 2009). Research indicates that parenting styles characterized by emotional and autonomy support are associated with more self-determined forms of motivation (Grolnick & Ryan, 1989).

Within this literature, maternal practices have received substantial attention. Maternal support and encouragement have been associated with children's learning motivation (Cheung & McBride-Chang, 2008), while maternal warmth has been shown to be associated with the links between parental guidance, school engagement, and intrinsic motivation (Lowe & Dotterer, 2013). Maternal autonomy support has also been linked to adolescents' satisfaction of basic psychological needs and subsequent psychological adjustment (Tanaka et al., 2023). These findings established maternal support as an important component of children's and adolescents' motivational and psychological environments. Although the mother's role in adolescent learning motivation and psychological development has been affirmed in numerous studies, the father's role has been less explored. Fathers have often been omitted, insufficiently represented, or assessed using measures originally developed for maternal behaviors, limiting our understanding of fathering as a distinct component of the family system (Cabrera et al., 2018; Lamb, 2010). Therefore, the present study focuses on paternal warmth to clarify its association with adolescents' intrinsic learning motivation, supplementing existing studies of parental influence on child development.

This gap is particularly salient in Asian cultural contexts, where fathers are traditionally associated with authority, discipline, and behavioral control rather than emotional expressiveness (Chao, 1994; Roopnarine, 2015). However, contemporary research increasingly recognizes that fathers contribute to children's development not only through economic provision but also through emotional support, caregiving involvement, and the quality of father-child

relationships (Cabrera et al., 2018). Paternal warmth may therefore represent a particularly meaningful yet underexamined form of paternal involvement in cultural contexts where emotional responsiveness has not traditionally been viewed as central to fatherhood. These gaps point to the need for a theoretical account of how paternal warmth may be related to adolescents' intrinsic motivation.

SELF-DETERMINATION THEORY

To explain how father's warmth influences motivation, this study adopts self-determination theory (SDT; Deci & Ryan, 2000) as the main theoretical framework. According to SDT, intrinsic motivation arises when three basic psychological needs are satisfied: autonomy, defined as the experience of volition and self-endorsement; relatedness, referring to the feeling of connection and belonging; and competence, reflecting a sense of effectiveness and mastery. Within this framework, social environments, including family contexts, play a central role in either supporting or undermining basic needs. Parenting behaviors, therefore, are not merely background factors but shape motivational processes through their influence on psychological need satisfaction. In this study, father's warmth, characterized by emotional support, responsiveness, and acceptance, is conceptualized as a key contextual factor that may facilitate intrinsic motivation through these underlying psychological mechanisms.

First, father's warmth may foster the satisfaction of adolescents' need for autonomy. Autonomy reflects the extent to which individuals perceive their actions as self-endorsed and volitional (Deci & Ryan, 2000). In educational contexts, this is manifested in students' sense of ownership over their learning processes. Prior research has consistently demonstrated that parental autonomy support is positively associated with intrinsic motivation and self-regulated learning (Feng et al., 2019; Katz et al., 2009; Reeve, 2012). Although warmth and autonomy support are conceptually distinct, emotionally warm parenting can create a psychological climate in which adolescents feel respected and understood, thereby enhancing their sense of volition. When fathers acknowledge their children's perspectives and express support, adolescents are more likely to experience autonomy, which in turn promotes intrinsic engagement in learning (Grolnick & Ryan, 1989; Soenens & Vansteenkiste, 2005).

Second, father's warmth is closely linked to the satisfaction of the need for relatedness. Relatedness refers to individuals' desire to feel connected, valued, and cared for by significant others (Ryan & Deci, 2017). In family contexts, this need is primarily fulfilled through emotionally supportive relationships

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with parents. Empirical evidence indicates that parental warmth is a strong predictor of relatedness satisfaction and adolescent well-being (Bülow et al., 2022). In particular, father's warmth – expressed through emotional availability and understanding – can be associated with adolescents' sense of belonging and foster secure attachment (Bowlby, 2008). When students feel accepted and supported within the family, they are more likely to internalize academic values and engage in learning for intrinsic reasons rather than external pressures (Niemic & Ryan, 2009). Thus, relatedness represents a central pathway through which father's warmth may enhance intrinsic motivation.

Third, father's warmth may also contribute to the satisfaction of the need for competence, although this pathway is expected to be less direct. Competence refers to individuals' sense of effectiveness in interacting with their environment and achieving desired outcomes (Deci & Ryan, 2000). In academic settings, this involves students' confidence in their ability to succeed in learning tasks. While parental support can enhance competence through the provision of structure, guidance, and constructive feedback (Bureau et al., 2022; Grolnick et al., 2014), existing research suggests that emotional warmth alone plays a more limited role in shaping competence compared to autonomy and relatedness. Competence development is more strongly associated with structured parenting practices that provide clear expectations and feedback (Jang et al., 2010). Nevertheless, father's warmth may still indirectly support competence by creating a safe and encouraging environment in which adolescents feel confident to engage with academic challenges.

In general, SDT suggests that father's warmth may be associated with intrinsic motivation primarily through its impact on the satisfaction of autonomy and relatedness, with competence playing a more secondary role. By conceptualizing these psychological needs as mediating mechanisms, this study adopts an integrated approach to understanding how family context is associated with adolescents' intrinsic motivation.

CROSS-CULTURAL EVIDENCE AND THE VIETNAMESE CONTEXT

Research in Western contexts has consistently demonstrated that supportive parenting practices – particularly those aligned with authoritative parenting – are positively associated with intrinsic motivation (Gonzalez & Wolters, 2006). SDT-based studies further highlight the motivational relevance of specific need-supportive parenting practices, particularly autonomy support, rather than relying solely on global classifications of parenting styles (Grolnick & Ryan, 1989; Soenens & Vansteenkiste, 2005). Com-

plementing this autonomy-support literature, Litalien et al. (2019) found that both maternal and paternal warmth predicted membership in academic motivation profiles characterized by high levels of intrinsic motivation.

In Asian contexts, findings are more complex and reflect cultural variation in the meaning of parenting behaviors. Controlling behaviors, often viewed negatively in Western contexts, may be interpreted differently within collectivistic cultural frameworks, particularly when they are perceived as expressions of parental care and culturally embedded expectations (Tang et al., 2018). Thus, cultural context may shape how need-supportive and controlling parenting practices are experienced, even when the motivational processes proposed by SDT remain relevant. Within this broader Asian context, evidence from Vietnam has begun to identify a specific SDT-based mechanism linking parenting practices to intrinsic motivation. Loc and Thu (2023) found that autonomy need satisfaction partially mediated the associations of both maternal and paternal autonomy-supportive parenting with lower secondary students' intrinsic motivation. However, their study examined autonomy-supportive parenting rather than paternal warmth and included autonomy as the sole basic psychological need mediator. In Vietnam, amidst socio-economic changes and family structures, the concept of the father's role in the family is undergoing significant transformation. Beyond the traditional role of providing for the family's finances and maintaining discipline, fathers are increasingly expected to participate more in the care, education, and co-parenting of their children (Jayakody & Pham, 2013). This trend aligns with international studies, which view fathers as independent developmental collaborators, making dedicated contributions to children's cognitive, emotional, and social development through active participation in parenting (Lamb, 2010). However, evidence regarding the father's role in Vietnamese contexts remains relatively limited.

PRESENT STUDY

Addressing these gaps, the present study examines the relationship between father's warmth and intrinsic motivation among Vietnamese high school students, with particular emphasis on the mediating role of the three basic psychological needs proposed by self-determination theory. It therefore extends previous research from autonomy-supportive parenting to paternal warmth and from a single need-based mechanism to an integrated model of all three basic psychological needs. By testing both direct and indirect pathways within an integrated model, this study aims to clarify the psychological mechanisms linking family context and academic motivation,

while providing culturally relevant empirical evidence from Vietnam.

Based on the theoretical framework outlined above, we test the following hypotheses:

(1) Autonomy mediates the relationship between father's warmth and intrinsic motivation.

(2) Relatedness mediates the relationship between father's warmth and intrinsic motivation.

(3) Competence mediates the relationship between father's warmth and intrinsic motivation, but to a lesser extent than either autonomy or relatedness.

PARTICIPANTS AND PROCEDURE

PARTICIPANTS

Participants were recruited using convenience sampling from two high schools in Hanoi, Vietnam. The initial sample consisted of 311 high school students. After excluding 9 questionnaires due to incomplete responses, inconsistent answers, or patterned responding, data from 302 students were retained for analysis. Of these, 44.4% attended a suburban high school and 55.6% attended an urban high school. The suburban school was located in a rapidly urbanizing area on the outskirts of Hanoi, representing a transitional context between rural and urban settings. In contrast, the urban school was located in the inner city, where students generally had greater access to educational resources and school facilities. The inclusion of both schools helped capture variation in students' educational and social contexts within Hanoi.

Regarding grade level, Grade 10 students accounted for the largest proportion of the sample (57.0%), followed by Grade 11 students (28.5%) and Grade 12 students (14.6%). The gender distribution was relatively balanced, with 44.4% male students, 53.3% female students, and 2.3% identifying with another gender. A majority of students were classified as having good or excellent academic performance (70.5%). Most participants lived in households where both parents resided together, and most reported their family socioeconomic status as average or above average.

MEASURES

In this study, a questionnaire-based survey method was employed to examine the relationship between high school students' psychological need satisfaction and the parenting styles they subjectively perceived in their parents. Father's warmth was assessed using the relevant subscale adapted from Loc and Thu (2023), which was developed based on the Perceptions of Parents Scale (Robbins, 1994). Only the six-item fa-

ther's warmth subscale was included in the present analysis, as it directly matched the theoretical model of the study. Items included "My father accepts and likes me as I am" with reverse-coded items reflecting perceived disappointment or lack of emotional acceptance. Responses were recorded on a 7-point Likert scale ranging from 1 (*not at all true*) to 7 (*very true*). The scale showed good internal consistency, with Cronbach's α of .80. The six-item mother's warmth subscale from the same instrument was used in a supplementary robustness analysis, also showing good internal consistency, with a Cronbach's α of .79. Items from other parenting dimensions, such as parental autonomy support, or parental involvement, were not included in the final analytical model because they were outside the scope of the present study.

Students' intrinsic academic motivation was assessed using selected items adapted from the Academic Motivation Scale (Vallerand et al., 1989). Although the original scale includes several types of academic motivation, the present study used only the 12 intrinsic motivation items, as these were directly aligned with the research model. The selected items captured three aspects of intrinsic motivation: intrinsic motivation to know, intrinsic motivation to accomplish, and intrinsic motivation to experience stimulation. Responses were provided on a 7-point Likert scale ranging from 1 (*does not correspond at all*) to 7 (*corresponds exactly*), with higher scores indicating stronger intrinsic academic motivation. The scale demonstrated good internal consistency, with a Cronbach's α coefficient of .89.

To assess the satisfaction of the three basic psychological needs, autonomy, relatedness, and competence, we used selected satisfaction items adapted from the Basic Psychological Need Satisfaction and Need Frustration Scale (Chen et al., 2015), which was culturally adjusted for Vietnamese adolescents by Loc and Thu (2023). Only items relating to need satisfaction were included in the present analysis, because they directly corresponded to the proposed motivational mechanism linking father's warmth to intrinsic motivation. Need frustration items were therefore excluded, as the present model did not examine need frustration as a separate pathway. Each psychological need was measured with four items, resulting in a 12-item scale. Autonomy was assessed with four items reflecting students' perceived volition and choice in learning activities. Relatedness was assessed with four items reflecting students' sense of connection, care, and belonging. Competence was assessed with four items reflecting students' perceived effectiveness and confidence in school-related activities. Responses were recorded on a 5-point Likert scale ranging from 1 (*not true at all*) to 5 (*completely true*). Higher scores indicated greater satisfaction of the corresponding psychological need. Reliability estimates for the three subscales are reported in Table 1.

The use of these instruments was justified based on prior adaptation and use by Loc and Thu (2023) with lower secondary school students. These instruments have demonstrated satisfactory internal consistency among adolescents, a developmental stage that includes both lower and upper secondary students. Furthermore, the items assessed perceptions of parenting behaviors and psychological need satisfaction, constructs that are shaped more by individual experiences and family environments than by educational level. The clarity and age-appropriate wording of the items also ensured that secondary school students could respond accurately (from age 12). Finally, the use of instruments previously adapted and used in Vietnam enhanced cultural relevance and contextual appropriateness.

STATISTICAL DATA ANALYSES

The SPSS statistics application was used to compile descriptive statistics for the demographic profile of the respondents. To analyze the proposed research model, this study employed partial least squares structural equation modeling (PLS-SEM). This is a variance-based, non-parametric technique that focuses on maximizing the explained variance of latent constructs, which are not directly observable. Compared to covariance-based SEM approaches, PLS-SEM requires fewer assumptions regarding data distribution, measurement scales, and sample size (Hair et al., 2019), thereby offering greater flexibility for empirical research. The use of PLS-SEM in this study was justified because the hypothesized relationships among father’s warmth, basic psychological need satisfaction, and intrinsic motivation have not been extensively tested in the Vietnamese adolescent context. Therefore, PLS-SEM was considered appropriate for examining a predictive mediation model in an under-explored cultural setting.

A two-step analytical procedure was applied, including the assessment of a measurement (outer) model and a structural (inner) model using Smart-

PLS 3.0 (Ringle et al., 2015). The reflective measurement model was evaluated using internal consistency reliability, convergent validity, and discriminant validity. The structural model was then examined using path coefficients, bootstrapping procedures with 5,000 resamples, the coefficient of determination (R^2), effect size (f^2), and predictive relevance (Q^2). Figure 1 presents the estimated structural model.

Finally, to address potential omitted variable bias, an extended robustness model was estimated by including maternal warmth as a simultaneous predictor of the mediators and intrinsic motivation.

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RESULTS

Preliminary analyses were conducted to examine the distributional properties of the data. The sample consisted of 302 participants, with skewness values ranging from -1.19 to 0.22 and kurtosis values ranging from -0.81 to 1.67, all of which fell within acceptable thresholds. These results indicated that the data approximated a normal distribution and were suitable for subsequent structural model analyses.

DESCRIPTIVE STATISTICS AND CORRELATIONS AMONG VARIABLES

As shown in Table 2, all variables were significantly positively associated ($p < .01$). Specifically, father’s warmth was moderately correlated with the three psychological needs and intrinsic motivation (r ranging from .31 to .40). The basic psychological needs were also positively interrelated, with the strongest association observed between autonomy and competence ($r = .53, p < .01$). In addition, autonomy ($r = .43$), relatedness ($r = .37$), and competence ($r = .33$) were all positively associated with intrinsic motivation. Overall, the correlation coefficients were within an acceptable range and did not indicate multicollinearity. The significant associations provided preliminary support for proceeding with structural model testing.

Table 1

Construct reliability and convergent validity

Construct	Cronbach’s α	rho_A	Composite reliability (CR)	AVE
M1 – Autonomy	.67	.67	.80	.50
M2 – Relatedness	.73	.74	.83	.56
M3 – Competence	.72	.73	.82	.54
X – Father’s warmth	.81	.86	.86	.50
Y – Intrinsic academic motivation	.89	.89	.91	.45

Note. CR ≥ 0.70 indicates acceptable reliability; AVE ≥ 0.50 indicates adequate convergent validity.

MEASUREMENT MODEL

Reliability and convergent validity

The measurement model was assessed in terms of internal consistency reliability and convergent validity. The results indicated acceptable reliability across all constructs, with Cronbach's α values ranging from .67 to .89 and composite reliability (CR) ranging from .80 to .91, exceeding the recommended threshold of .70. Although Cronbach's α for autonomy was slightly below the conventional cutoff ($\alpha = .67$), its composite reliability remained adequate (CR = .80), suggesting that the construct had satisfactory internal consistency in line with methodological recommendations (Hair et al., 2019).

Convergent validity was evaluated using the average variance extracted (AVE). Most constructs achieved the recommended threshold of $AVE \geq .50$, including autonomy (AVE = .50), relatedness (AVE = .56), competence (AVE = .54), and father's warmth (AVE = .50). Intrinsic motivation showed a slightly lower AVE (.45); however, given its high composite reliability (CR = .91), the construct can still be considered acceptable based on established guidelines (Lam, 2012). Overall, these findings suggest that the measurement model demonstrated adequate reliability and convergent validity.

Discriminant validity

Discriminant validity was primarily assessed using the heterotrait-monotrait ratio (HTMT). The results indicated that most HTMT values were below the recommended threshold of .85, suggesting adequate discriminant validity among the constructs. However, the HTMT value between autonomy (M1) and competence (M3) was .92, slightly exceeding the more conservative threshold of .90. According to Henseler et al. (2015), elevated HTMT values may indicate strong conceptual relatedness between constructs sharing a common theoretical foundation. Within the framework of self-determination theory, the basic psychological needs are inherently in-

terrelated and mutually reinforcing, which may account for the observed overlap between autonomy and competence. To provide additional evidence, the Fornell-Larcker criterion was examined (Fornell & Larcker, 1981). The results showed that the square root of the AVE for each construct exceeded its correlations with other constructs, thereby supporting discriminant validity. Overall, despite the presence of a relatively high HTMT value, the combined evidence from HTMT and the Fornell-Larcker criterion suggests that discriminant validity was acceptable.

STRUCTURAL MODEL

Prior to hypothesis testing, multicollinearity was assessed using the variance inflation factor (VIF). All VIF values ranged from 1.11 to 1.50, well below the recommended threshold (Hair et al., 2019). These findings suggest that multicollinearity is not a concern, and therefore the structural model estimates can be considered reliable.

Direct effects

The results indicated that father's warmth was significantly positively associated with all three basic psychological needs. Specifically, father's warmth was positively associated with autonomy ($\beta = .29, p < .001$), relatedness ($\beta = .34, p < .001$), and competence ($\beta = .15, p = .001$). Regarding the relationships among the psychological needs, autonomy was positively associated with competence ($\beta = .56, p < .001$), whereas relatedness was not significantly associated with competence ($\beta = .09, p = .234$). With respect to the dependent variable, intrinsic motivation was positively associated with autonomy ($\beta = .31, p < .001$) and relatedness ($\beta = .21, p = .001$). In contrast, competence was not significantly associated with intrinsic motivation ($\beta = .09, p = .220$). In addition, father's warmth was positively associated with intrinsic motivation ($\beta = .14, p = .016$), indicating a direct association alongside the indirect (mediated) effects (see Table 3).

Table 2

Descriptive statistics and correlations among variables

Variables	<i>M</i>	<i>SD</i>	1	2	3	4	5
1. Father's warmth	4.83	1.23	–				
2. Autonomy	3.09	0.60	.33**	–			
3. Relatedness	3.62	0.64	.40**	.49**	–		
4. Competence	3.06	0.56	.31**	.53**	.34**	–	
5. Intrinsic motivation	5.27	0.98	.31**	.43**	.37**	.33**	–

Note. $N = 298-302$; ** $p < .01$.

Indirect effects and mediation

Bootstrapping analyses revealed significant indirect associations between father's warmth and intrinsic motivation through basic psychological needs (see Table 4). Specifically, father's warmth showed a positive indirect association with intrinsic motivation via autonomy ($\beta = .09$, $t = 3.35$, $p = .001$) and relatedness ($\beta = .07$, $t = 3.21$, $p = .001$), indicating that both needs served as significant mediators in the model. In contrast, the indirect association through competence was not significant ($\beta = .01$, $t = 1.19$, $p = .237$), suggesting that competence did not mediate the relationship between father's warmth and intrinsic motivation. Regarding sequential mediation, neither the indirect pathways from father's warmth via autonomy and competence ($\beta = .01$, $t = 1.13$, $p = .258$), nor through relatedness and competence ($\beta = .00$, $t = 0.66$, $p = .508$), were significant. These findings indicate that the hypothesized sequential mediation mechanisms were not supported in this study.

Overall, the results indicated that father's warmth was influenced with intrinsic motivation through two pathways: (1) a direct association and (2) indirect associations via autonomy and relatedness. In contrast, competence did not function as a mediator in the proposed model (see Figure 1).

In the extended model (Figure 2), which incorporated mother's warmth as a simultaneous predictor, father's warmth retained significant indirect associations with intrinsic motivation via autonomy ($\beta = .06$, $p = .039$) and relatedness ($\beta = .04$, $p = .016$), while its direct association became non-significant ($\beta = .06$, $p = .336$). Mother's warmth demonstrated a comparable pattern, with a significant indirect association via autonomy ($\beta = .06$, $p = .036$) and a near-significant indirect association via relatedness ($\beta = .04$, $p = .051$), alongside a significant direct association with intrinsic motivation ($\beta = .17$, $p = .008$). These findings confirmed that the core mediation pathways of father's warmth through autonomy and relatedness remained robust after accounting for mother's warmth.

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Table 3

Path coefficients

Path	β	t	p	Decision
X $\rightarrow$ M1 (Autonomy)	.29	4.98	< .001	Supported
X $\rightarrow$ M2 (Relatedness)	.34	6.52	< .001	Supported
X $\rightarrow$ M3 (Competence)	.15	3.24	.001	Supported
M1 $\rightarrow$ M3	.56	10.87	< .001	Supported
M2 $\rightarrow$ M3	.09	1.19	.234	Not supported
M1 $\rightarrow$ Y	.31	4.91	< .001	Supported
M2 $\rightarrow$ Y	.21	3.25	.001	Supported
M3 $\rightarrow$ Y	.09	1.23	.220	Not supported
X $\rightarrow$ Y	.14	2.42	.016	Supported

Table 4

Specific indirect effects

Indirect path	β	t	p	Decision
X (Father's warmth) $\rightarrow$ M1 (Autonomy) $\rightarrow$ Y (Intrinsic motivation)	.09	3.35	.001	Supported
X (Father's warmth) $\rightarrow$ M2 (Relatedness) $\rightarrow$ Y (Intrinsic motivation)	.07	3.21	.001	Supported
X (Father's warmth) $\rightarrow$ M3 (Competence) $\rightarrow$ Y (Intrinsic motivation)	.01	1.19	.237	Not supported
X (Father's warmth) $\rightarrow$ M1 (Autonomy) $\rightarrow$ M3 (Competence) $\rightarrow$ Y (Intrinsic motivation)	.01	1.13	.258	Not supported
X (Father's warmth) $\rightarrow$ M2 (Relatedness) $\rightarrow$ M3 (Competence) $\rightarrow$ Y (Intrinsic motivation)	.00	0.66	.508	Not supported

Figure 1

Estimated structural model

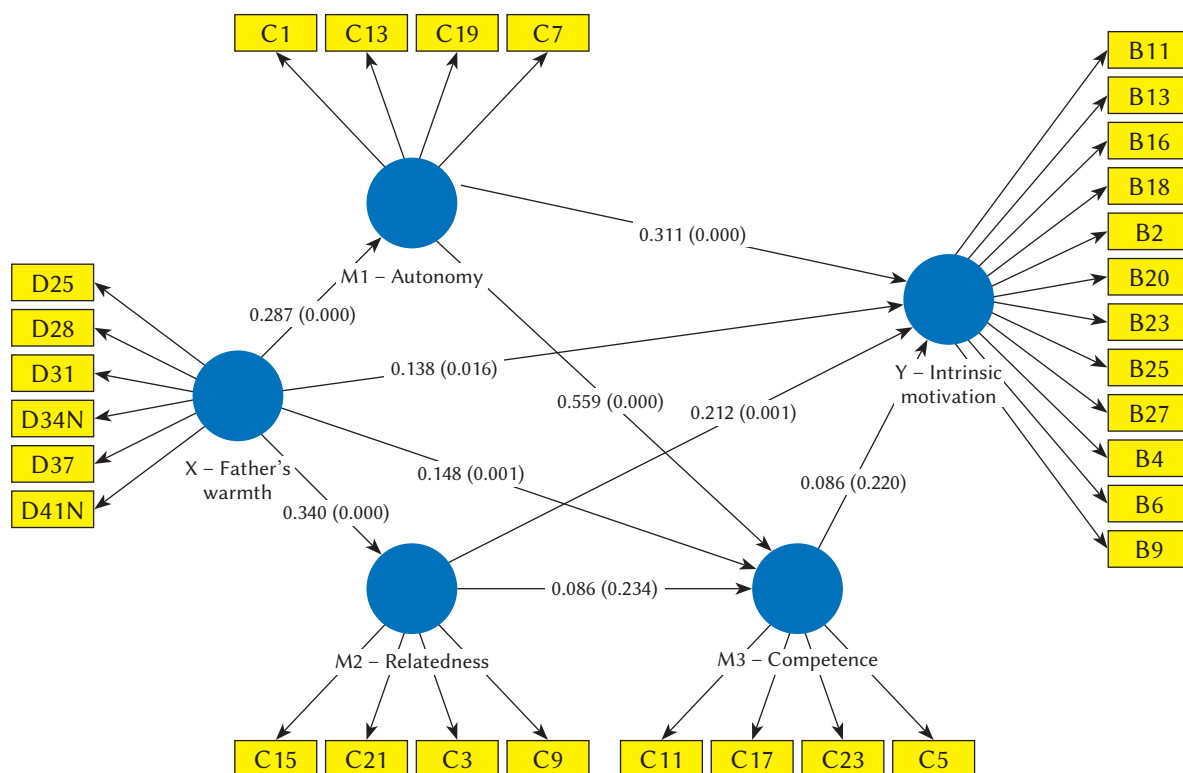


Figure 2

Extended model

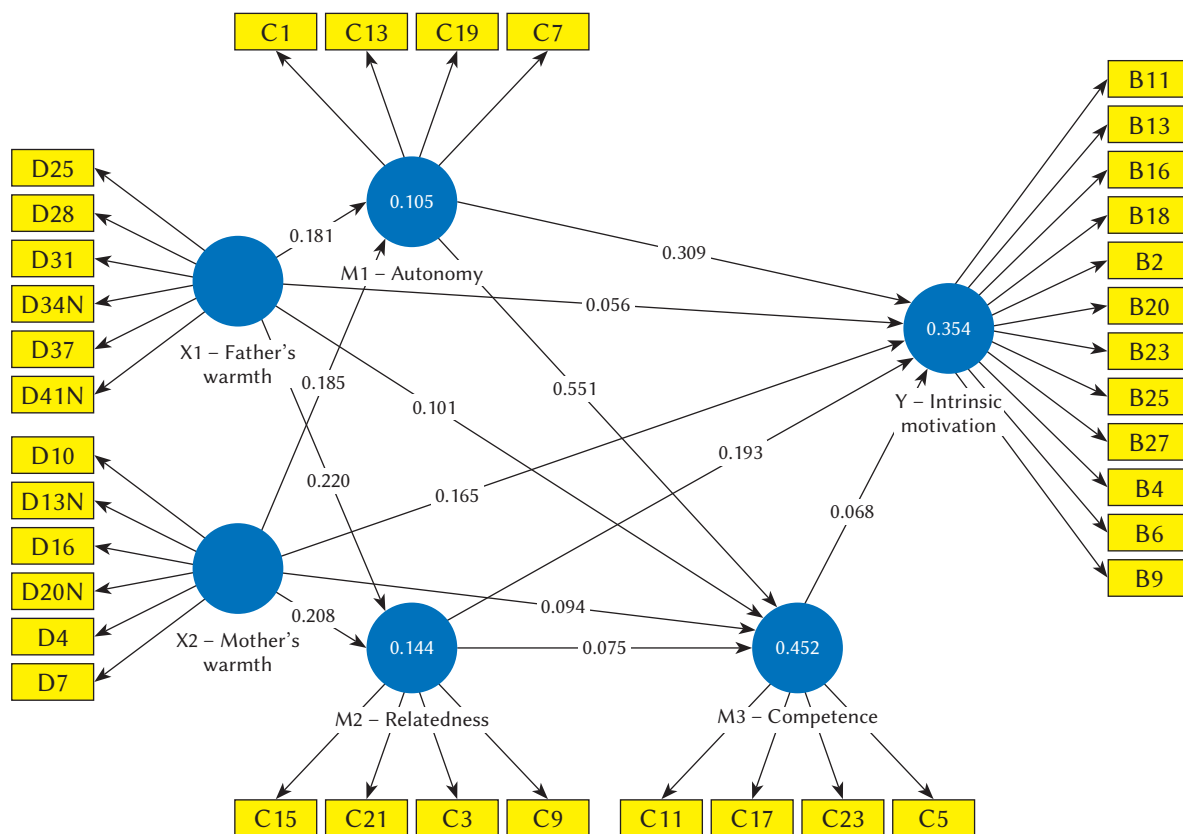


Table 5*Panel A. Coefficient of determination (R^2)*

Construct	R^2	R^2 adjusted	Interpretation
M1 – Autonomy	.08	.08	Weak
M2 – Relatedness	.12	.11	Weak
M3 – Competence	.45	.44	Moderate
Y – Intrinsic motivation	.34	.33	Moderate

Note. R^2 benchmarks were adapted from Hair et al. (2019): 0.25 weak; 0.50 moderate; 0.75 substantial.

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Table 6*Panel B. Effect size (f^2)*

Path	f^2	Effect size
M1 → M3	.41	Large
M2 → M3	.01	Negligible
M1 → Y	.08	Small
M2 → Y	.05	Small
M3 → Y	.01	Negligible
X → M1	.09	Small
X → M2	.13	Small
X → M3	.03	Small
X → Y	.02	Small

Note. Effect-size benchmarks were based on Cohen (1988): 0.02 small; 0.15 medium; 0.35 large.

Table 7*Panel C. Predictive relevance (Q^2)*

Constructs	Q^2	Interpretation
M1 – Autonomy	.04	Small predictive relevance
M2 – Relatedness	.06	Small predictive relevance
M3 – Competence	.23	Medium predictive relevance
Y – Intrinsic motivation	.14	Medium predictive relevance

Note. Predictive relevance criteria were adapted from Hair et al. (2019): > 0 predictive relevance; ≤ 0 no predictive relevance.

dicating that the model had predictive relevance. Specifically, competence ($Q^2 = .23$) and intrinsic motivation ($Q^2 = .14$) showed moderate predictive relevance, while autonomy ($Q^2 = .04$) and relatedness ($Q^2 = .06$) showed relatively low relevance (see Table 7).

MODEL EVALUATION

The following model evaluation indices refer to the main structural model (Figure 1). The explanatory power of the model was assessed using the coefficient of determination (R^2). The results indicated modest explanatory power for competence ($R^2 = .45$) and intrinsic motivation ($R^2 = .34$), whereas the explanatory power for autonomy ($R^2 = .08$) and relatedness ($R^2 = .12$) was relatively low (see Table 5). Effect sizes (f^2) were examined to evaluate the contribution of each predictor. The results showed that autonomy had a large effect size for predicting competence ($f^2 = .41$), while the effect size for the association between relatedness and competence was negligible ($f^2 = .01$). For the dependent variable, autonomy ($f^2 = .08$) and relatedness ($f^2 = .05$) showed small effect sizes for intrinsic motivation, whereas competence showed a negligible effect size ($f^2 = .01$). Father's warmth demonstrated small effect sizes for both the mediators and the dependent variable (see Table 6).

The predictive relevance of the model was assessed using the Stone-Geisser Q^2 index. All endogenous constructs exhibited Q^2 values greater than zero, in-

DISCUSSION

This study examined whether paternal warmth was associated with Vietnamese adolescents' intrinsic motivation through the satisfaction of basic psychological needs. Overall, the findings provide stronger support for indirect pathways through autonomy and relatedness than for a direct paternal association independent of maternal warmth. Although paternal warmth was directly associated with intrinsic motivation in the father-only model, this direct association became non-significant when maternal warmth was included, whereas the indirect pathways through autonomy and relatedness remained significant. These findings offer a context-sensitive account of paternal warmth within the Vietnamese family system.

The significant indirect associations through autonomy and relatedness are broadly consistent with SDT, which posits that social-contextual factors shape motivation primarily through their impact on

psychological need satisfaction (Deci & Ryan, 2000; Ryan & Deci, 2017). Father's warmth was associated with higher levels of autonomy and relatedness, which in turn predicted intrinsic motivation. These findings suggest that emotionally warm fathering may be relevant to adolescents' motivation by supporting both volitional and relational experiences. Specifically, paternal warmth may provide a relational context in which adolescents feel accepted, respected, and understood, thereby supporting their sense of autonomy. At the same time, it may strengthen adolescents' sense of connection and belonging within the family, which is directly aligned with the need for relatedness. The persistence of these two indirect pathways after maternal warmth was included further suggests that paternal warmth has meaningful need-based associations with intrinsic motivation, independently of the relationships between maternal warmth and psychological needs. Together, these two pathways also invite a culturally sensitive interpretation. In SDT, autonomy refers to volition and self-endorsement rather than independence from others (Ryan & Deci, 2017). This distinction is important in collectivistic contexts such as Vietnam, where interpersonal harmony and relational interdependence are highly valued. In such contexts, the experience of emotional connectedness may function as an important pathway through which motivational internalization occurs (Chao, 1994). In this sense, intrinsic motivation may not be rooted solely in personal volition but may also be supported through meaningful social relationships. The simultaneous significance of autonomy and relatedness therefore suggests that motivational processes in this context are shaped by both individual and relational dimensions. This pattern supports the cross-cultural relevance of SDT, while also highlighting the possibility that the relative salience of each psychological need may vary across cultural and relational contexts (Ryan & Deci, 2017).

Contrary to expectations, competence did not function as a significant mediator in the relationship between father's warmth and intrinsic motivation. This finding is consistent with prior research suggesting that not all parenting behaviors support psychological needs in the same manner (Bureau et al., 2022). A plausible interpretation is that father's warmth primarily fulfills affective and relational functions rather than directly enhancing adolescents' perceptions of effectiveness. In other studies, competence was more strongly associated with parenting practices that provided structure, guidance, and clear feedback than with emotional warmth (Grolnick et al., 2014; Jang et al., 2010). Thus, while father's warmth may create a psychologically supportive environment, it may not be sufficient to shape students' beliefs about their academic capabilities directly. This caveat underscores the need to differentiate between types of parental

support when examining their associations with specific psychological needs.

An important contribution of our study is its explicit focus on the role of fathers, a dimension that has been relatively underexplored in the existing literature (Cabrera et al., 2018). In many Asian contexts, including Vietnam, fathers are traditionally perceived as authority figures associated with discipline and control rather than emotional support. The present findings challenge this conventional view by demonstrating that father's warmth plays a meaningful psychological role in Vietnamese adolescents' motivational development. This suggests a shifting conceptualization of fatherhood, from a primarily regulatory role toward one that also encompasses emotional responsiveness and relational support. However, this father-focused contribution should not be interpreted as evidence of a unique direct paternal effect.

By examining paternal warmth as a distinct construct, the study provides more nuanced insights into father-specific associations that may be obscured when parenting is treated as a unitary construct. At the same time, the extended model indicates that paternal warmth should be interpreted within the broader family system. Paternal warmth retained significant indirect associations with intrinsic motivation through autonomy and relatedness, whereas maternal warmth showed a significant direct association and an autonomy-mediated indirect association. These findings suggest that warmth from fathers and mothers may represent partly overlapping, but not identical, motivational resources within the family system. This interpretation is consistent with basic psychological need theory, which emphasizes that need satisfaction can be supported by different relational sources (Vansteenkiste et al., 2020). The attenuation of the direct paternal pathway suggests that the direct association observed in the father-only model may partly reflect variance shared with maternal warmth, or a more supportive family climate in general. Paternal warmth should consequently be understood as a distinguishable component of the family environment, but not as a process entirely independent of maternal practices.

From a family-systems perspective, maternal practices may combine with paternal warmth in several empirically plausible ways. Chung et al. (2020) identified distinct profiles of congruent and incongruent maternal and paternal warmth among adolescents and showed that these profiles were distinctly associated with academic outcomes, suggesting that considering only one parent provides an incomplete account of family influences. Similarly, Salaam (2024) found significant interactions between mothering, fathering, and adolescents' anxiety, indicating that associations of one parent's warmth with adolescent adjustment may depend partly on the other parent's behavior. These findings suggest that maternal and paternal

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warmth may operate additively, reinforce one another, compensate for one another, or form inconsistent patterns with divergent implications for adolescents.

The theoretical contribution of this study, therefore lies not in demonstrating a unique direct association of paternal warmth, but in identifying need-based pathways through which paternal warmth remains associated with intrinsic motivation after maternal warmth is taken into account. The study extends previous Vietnamese evidence in two ways. First, it shifts the focus from autonomy-supportive fathering to paternal warmth, a related but conceptually distinct form of parenting. Second, it considers autonomy, relatedness, and competence within the same analytical model, rather than examining autonomy as the sole mediator. This differentiated approach is consistent with basic psychological needs theory, which conceptualizes autonomy, competence, and relatedness as distinct yet interrelated needs (Vansteenkiste et al., 2020). The findings suggest that emotional warmth is more closely associated with autonomy and relatedness, whereas competence may require more structured forms of support.

From a practical perspective, the findings offer important lessons for parents, educators, and policymakers. A warm, supportive, autonomy-respecting family environment may encourage adolescents' intrinsic motivation, mainly through enhancing their sense of autonomy and relatedness. However, emotional warmth alone may be insufficient to promote competence. Strengthening students' perceptions of effectiveness may require additional elements such as structured guidance and constructive feedback, consistent with SDT-based research on competence support (Guay, 2022). These findings highlight the need for coordinated family-school support. This is consistent with evidence that need-supportive environments created by teachers and parents are associated with students' need satisfaction and self-determined motivation (Bureau et al., 2022), as well as recent evidence that self-determination theory-based educational interventions can improve students' need satisfaction and intrinsic motivation (Wang et al., 2024). At the policy level, family engagement should be treated as an essential component of students' learning and well-being, rather than as an optional extra for schools (Nada, 2024).

Limitations include the cross-sectional design, which prevents causal or temporal conclusions. Although paternal warmth was indirectly associated with intrinsic motivation through autonomy and relatedness, these data cannot determine whether perceived paternal warmth leads to greater need satisfaction, whether more motivated adolescents perceive or elicit greater warmth, or whether these processes are reciprocal. Longitudinal and intervention-based studies are needed, particularly across educational transitions and periods of increasing academic pressure. Re-

liance on adolescent self-reports may also introduce common method variance, social desirability bias, and subjective interpretations of family relationships. Future research should use parents'/teachers' reports, observations, diaries, and interviews. Although maternal warmth was included in the extended model, the study did not directly test more complex family dynamics, such as parental interaction, co-parenting quality, inter-parental conflict, compensation between parents, or congruent/incongruent warmth profiles. Future studies should examine these processes using interaction models, latent profile analysis, polynomial regression, dyadic data, or longitudinal family-level designs. The convenience sample from two Hanoi high schools limits generalizability. Broader samples would include adolescents from rural areas, diverse socioeconomic backgrounds, different family structures, ethnic minority groups, and varying academic achievement levels. Future work should also consider grandparents, siblings, teachers, and peers as alternative sources of support for autonomy, relatedness, and competence.

CONCLUSIONS

This study provides evidence that paternal warmth is a meaningful correlate of adolescents' intrinsic learning motivation within the Vietnamese cultural context, operating through indirect pathways as posited by SDT. Although paternal warmth showed a direct association with intrinsic motivation in the father-only model, this pathway became non-significant when maternal warmth was included, suggesting that paternal warmth should be interpreted within the broader family system rather than as an independent paternal effect. The findings suggest that autonomy and relatedness are significant mediators, indicating that fathers' emotional warmth is associated with adolescents' sense of volition and emotional connectedness, in turn being associated with genuine engagement in learning activities. Notably, competence was not a significant mediator, suggesting that emotional warmth alone may be insufficient to explain adolescents' perceptions of academic effectiveness, a domain perhaps more closely tied to structured guidance from adults. By focusing specifically on fathers – a parental figure traditionally associated with discipline rather than emotional support in Asian contexts – our study challenges conventional assumptions and highlights the multifaceted role of fatherhood in adolescent development. These findings extend the cross-cultural applicability of SDT, while underscoring the culturally situated nature of motivational processes. Practically, the results suggest the potential value of family-based interventions that encourage paternal warmth and autonomy-supportive behaviors, alongside school-based

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efforts that provide structured competency-building opportunities, ultimately supporting a more holistic approach to nurturing adolescents' intrinsic motivation in collectivistic societies like Vietnam.

Supplementary materials are available on the journal's website.

DISCLOSURES

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