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Parental Anxiety and Adolescent Distress: The Mediating Role of Psychological Control — A Meta-Analysis

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Abstract. Parental anxiety is recognized as an increasingly important influence on adolescent mental health outcomes. While the mechanisms underlying this relationship exist, there is a lack of a comprehensive systemic overview of the link between parental anxiety and adolescent distress via psychological control, a parenting practice that may mediate this relationship. Thus, this meta-analysis (k=22 studies, N=12,919 parent-child dyads) is conducted to assess (1) whether there is scientific support that parental anxiety may confer a greater risk of distress for their adolescents, (2) whether this relationship is mediated by psychological control, and (3) the risk of moderation by parent and adolescent gender or family region. Random-effects models were used to compute pooled effect sizes for meta-regression; analysis of the effect of mediator, moderator, and subgroup was also conducted. Results show that parental anxiety was moderately associated with adolescent distress in both direct and mediated pathways (direct: r=0.12, indirect: r=0.07). Moderator analyses indicated stronger effects for maternal anxiety, female adolescents, and studies conducted in Asian regions, but were only statistically significant for female adolescents (z=0.125, p=0.044, t=2.078). While these results support potential targeting in the prevention of general disorders, substantial heterogeneity, limited support for the extent of this association, and the effect of other preliminary factors need further research.

Keywords: Parental Anxiety, Distress, Adolescent, Psychological Control, Gender

1. Introduction

Adolescent distress, a negative emotional state that involves a feeling of sadness, overwhelm, or frustration [1], is a highly prevalent issue [2]. It is associated with risk of academic difficulties, drug use, suicidality, and sexual abuse [3]. In the long term, adolescent distress predicts future mental health disorders, substance use [4,5], and contributes to the social and economic burden [6].

While school and career were the most prevalent risk factors of adolescent distress, interpersonal relationship issues were associated with the most significant stress level [7]. Thus, parents, as the people who interact the most with most adolescents, have a key influence on adolescent distress. Since anxiety disorders are the most common psychiatric disorder [8], numerous studies have been discussing the associations between parental anxiety and adolescent distress (i.e., including adolescent anxiety, depression, internalization, withdrawal, etc.). However, studies of this

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relationship were mostly fragmented; pathways describing the (1) relationship between parental anxiety and parenting style, (2) parenting style and adolescent distress, or (3) the transmission of specific psychiatric disorders were explored, but few systemically developed the link between parental anxiety and adolescent distress. Therefore, this meta-analysis aims to examine empirical evidence to support a model describing the relation between parental anxiety and adolescent distress.

Furthermore, this meta-analysis also intends to identify possible mediators and moderators. Through review of related studies, parenting style is found to be a main influence over the relationship between parental and adolescent mental status [9,10]. Specifically, parenting style with high control (ex., overinvolvement or reduced autonomy) is generally identified as the most negative parenting style [11-13]. Therefore, this study hopes to explore psychological control, a branch of control that leads mostly to internalizing symptoms [14,15], as a mediator; and moderators—that is, other variables outside this model that may affect the strength of this relationship—of gender and region.

Hence, this meta-analysis tests three hypotheses: (1) Increase in parental anxiety is associated with increased adolescent distress; (2) Psychological control mediates the relationship between parental anxiety and adolescent distress; (3) Parent gender, adolescent gender, and family region will moderate the relationship between parental anxiety and adolescent distress.

2. Methods

2.1. Search, selection, and design

This study conducted a meta-analysis with scientific psychological evidence to support the association between parental anxiety and adolescent distress, and via psychological control. The search method conducted was by PRISMA guidelines (2020), searching separately for the three pathways: (1) Parental Anxiety to Adolescent Distress [16-22]; (2) Parental Anxiety to Psychological Control [23-27]; and (3) Psychological Control to Adolescent Distress [28-37] with keywords parental anxiety, anxiety, psychological control, control, overinvolvement, adolescent, distress, anxiety, internaliz*, parenting, rearing, parent-child, and family in various combinations. Primary computerized databases inspected were PsycInfo, PubMed, ResearchGate, ScienceDirect, and Springer. Others were located on Google Scholar (searched on Mid-July to Mid-August, 2025) or in the references of previous reviews and meta-analyses. Zotero was used to manage, screen, and review all suitable articles.

Studies which were included were published and peer-reviewed empirical studies; between the time frame of the past 15 years; used validated scales to assess anxiety and distress (including both observed and perceived). This meta-analysis excluded studies that focused only on one sex in the parent or child; assessed variables other than anxiety or internalizing symptoms as an effect of parental anxiety; or included adolescents outside the age range of 13-19 years old [38].

The authors, publication date, total sample size, gender of parent and child, region of sample, type of study, and pathway studied were extracted and recorded. The outcome was adolescent distress, which is also coded for anxiety and internalization for subgroup analysis. The following categorical moderators were also coded: parent gender (mother vs. father), adolescent gender (girl vs. boy), and family region (Asia vs. Europe vs. North America)

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2.2. Data extraction and analysis

The meta-analysis was conducted in Python 3.11 [39] with the facilitation of NumPy 1.26.4 [40], pandas 2.2.2 [41], SciPy 1.14.1 [42], seaborn 0.13.2 [43], and PythonMeta 1.26 [44]. A random effects model was used.

Most effect sizes reported by the studies reviewed used Pearson product-moment correlation coefficients (r) to measure effect sizes. First, to better compare the results between studies, effect sizes were all transformed into Pearson's r. Second, correlation coefficients are converted to Fisher's z to stabilize variances and ensure the data are more suitable and reliable for linear modeling. For the general results, since both mother and father correlations are based on the same sample size in some studies, the mean of their z-scores was taken. Then, correlation coefficients of each study were weighted based on inverse-variance weights so that the impact of each study on the overall correlation is in accordance with its sample size. Later, pooled z-scores of each pathway were calculated and converted back to Pearson's r for clarity and interpretation.

Concerning the fact that studies in this area with insignificant results may be unpublished or neglected, to test for bias and accuracy, confidence interval (95%), heterogeneity (τ^2), and I^2 (%) were performed to test for heterogeneity of each pathway. Results of each pathway are visualized as forest plots, funnel plots, and a correlation matrix (pooled r).

Using the pooled correlation matrix, the effect of psychological control as a mediator was tested using two-stage Meta-Analytic Structural Equation Modeling (MASEM). Then each pooled r's CI was converted to Fisher's z to approximate standard error, and a Monte-Carlo propagation to get CIs for b, c, ab, cb, and c. For moderator testing, values were weighted as above, and t-values and p-values were calculated using df = n–k. Results are visualized as boxplots.

3. Results

Twenty-two studies met the criteria and were included in this meta-analytic review. In detail, 7 papers were included in the parental anxiety (PA) to adolescent distress pathway, 6 papers were included in the parental anxiety to psychological control (PC) pathway, and 11 papers were included in the psychological control to adolescent distress pathway. Two studies were included in two pathways: Borelli et al. [23] was included in PA to PC and PC to Distress, and Bullock et al. [28] was included in PA to Distress and PC to Distress. Categorization of these studies is summarized in Table 1. The selection process can be found in Figure 1.

Table 1. Studies' characteristic

Study	N	Region	Pathway	Study Type
Borelli (2014)	102	US	PA→PC	Self + Interview
Bullock (2018)	462	US	PC→Distress	Self-report
Burstein (2010)	97	US	PA→Distress	Interview + Report
Costa (2015)	302	Portugal	PC→Distress	Self-report
Festa (2011)	63	US	PA→Distress	Self + Interview
Fu (2022)	1822	China	PC→Distress	Self-report
Gibbons (2021)	457	US	PA→PC	Self-report
Kamis (2021)	3240	US	PA→Distress	Self-report
Lansford (2013)	518	Multi-country	PC→Distress	Self-report

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Table 1. (continued)

Lin (2020)	534	Taiwan	PC→Distress	Self-report
Luebbe (2017)	247	US	PA→PC	Self-report
McClure (2001)	816	US	PA→Distress	Interview + Report
Moberg (2011)	1705	Sweden	PC→Distress	Self-report
Mujahid (2025)	350	Pakistan	PC→Distress	Self-report
Nanda (2012)	107	US	PC→Distress	Self-report
Perez (2021)	106	US	PA→PC	Self-report
Rogers (2019)	500	US	PC→Distress	Self-report
Sutic (2023)	256	Croatia	PA→PC	Self-report
Waters (2012)	85	Australia	PA→Distress	Self + Observation
Woodruff-Borden (2002)	51	US	PA→Distress	Interview
Yu (2021)	543	China	PC→Distress	Self-report
Zalk (2018)	556	Sweden	PA→Distress	Self-report

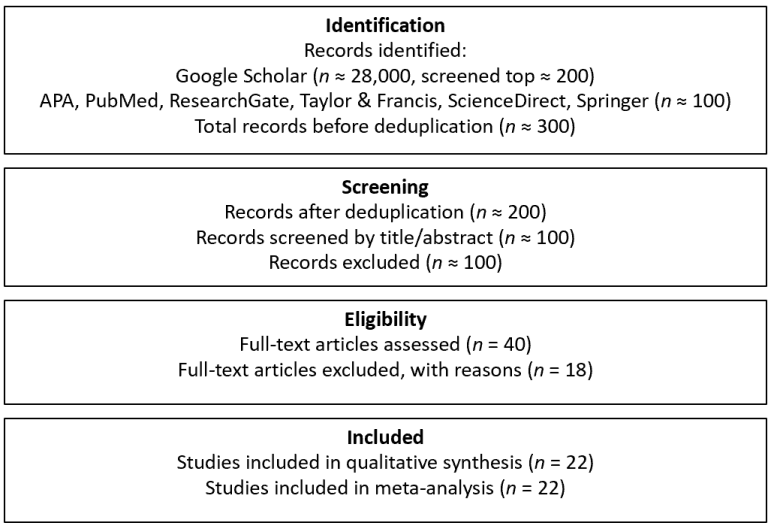


Figure 1. Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA 2020)

3.1. Direct association between parental anxiety and adolescent distress

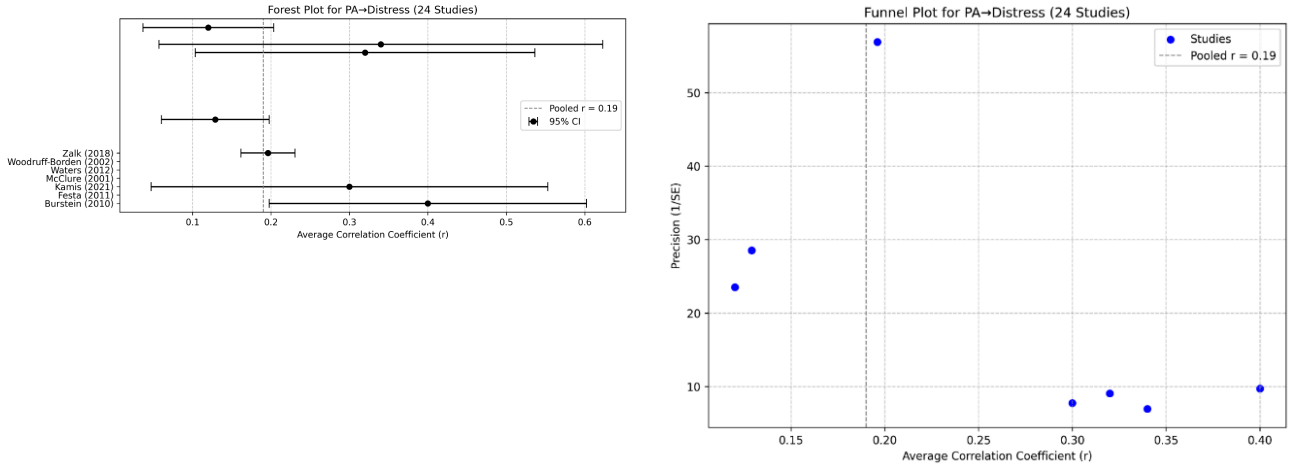
Seven studies examined the connection between parental anxiety and adolescent distress, reporting data on a total of N=4,908 parent-child dyads. The meta-analysis demonstrates an overall low-moderate but significant ($p<0.05$) positive association (total effect $r=0.19$) between parental anxiety and adolescent distress, suggesting that high parental anxiety levels were relatively associated with increased adolescent distress. The heterogeneity level of this association is tested to be moderate ($I^2 = 38\%$, $\tau^2 = 0.005$), indicating that differences between studies exist, but are mostly due to chance. While this low-moderate heterogeneity may be due to the inclusion of various variables, such as both anxiety and internalizing symptoms in the category “distress”, this result motivates further exploration of possible indirect pathways between parental anxiety and adolescent distress or any moderators that might influence this link. The results of the calculations are seen in Table 2. Forest and Funnel plot of the direct parental anxiety to distress pathway in Figure 2.

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Table 2. Pathway-specific statistical results

Pathway	k (Studies)	Pooled r (Parents)	95% CI	τ^2	I^2 (%)
PA → PC	6	0.29*	[0.21, 0.37]	0.012	65%
PC → Distress	11	0.27*	[0.20, 0.34]	0.008	52%
PA → Distress	7	0.19*	[0.12, 0.26]	0.005	38%

Note. * Indicates statistically significant effect ($p<0.05$).



(a) Forest plot of the parental anxiety to distress pathway

(b) Funnel plot of the parental anxiety to distress pathway

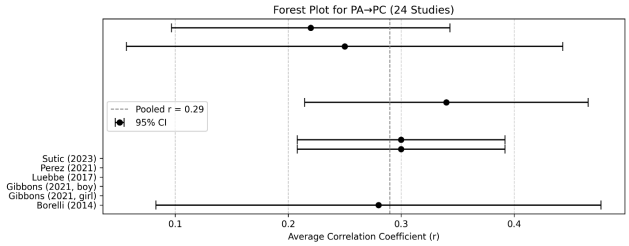
Figure 2. Plots of parental anxiety to adolescent distress

3.2. Indirect pathway between parental anxiety and adolescent distress: mediated by psychological control

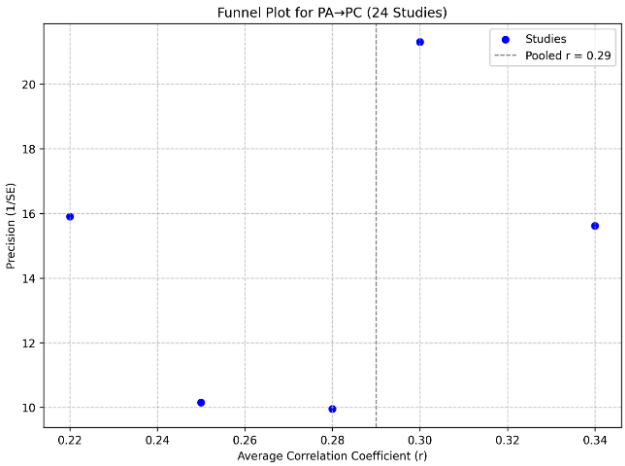
Eighteen studies, a total of 10173 parent-child dyads, examined the relation between parental anxiety and adolescent distress via psychological control. There is a moderate relation between each pathway, specifically r=0.29 between parental anxiety and psychological control, and r=0.27 between psychological control and adolescent distress. Substantial heterogeneity between these pathways (PA to PC: I^2 = 65%, τ^2 = 0.012; PC to Distress: I^2 = 52%, τ^2 = 0.008) may be due to different scales used in studies, or the general categorization of parental behaviors such as overinvolvement, low-autonomy, and dominance, etc. as psychological control and symptoms such as internalization and withdrawal as adolescent distress.

Though MASEM analysis supports psychological control as a significant mediator between parental anxiety and adolescent distress (indirect effect r=0.067, 95% CI=[0.041, 0.100]), psychological control explains only part (indirect/total effect ≈ 35%) of this link. After accounting for psychological control, parental anxiety still has a small to moderate direct effect on adolescent distress (direct effect r=0.122, 95% CI=[0.039, 0.202]). The Forest and Funnel plots of the pathway from parental anxiety to psychological control are presented in Figure 3; psychological control to adolescent distress is presented in Figure 4.

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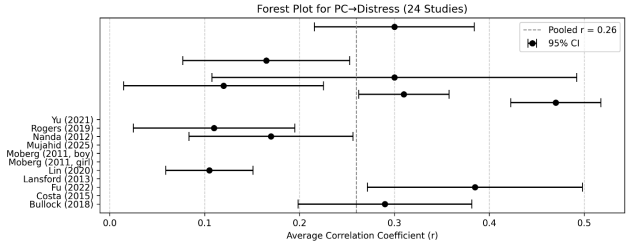


(a) Forest plot of parental anxiety to psychological control

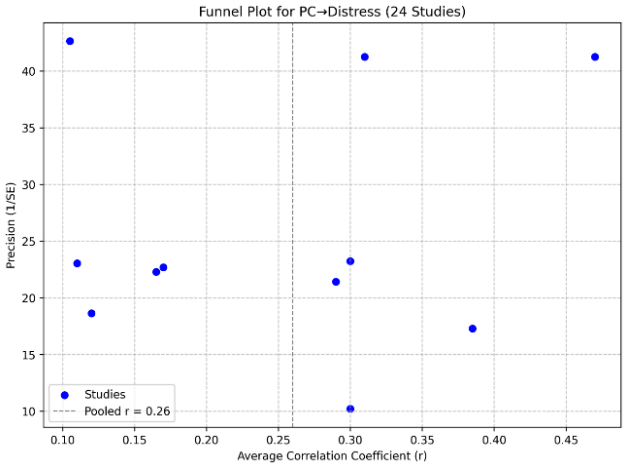


(b) Funnel plot of parental anxiety to psychological control

Figure 3. Plots of parental anxiety to psychological control



(a) Forest plot of psychological control to adolescent distress



(b) Funnel plot of psychological control to adolescent distress

Figure 4. Plots of psychological control to adolescent distress

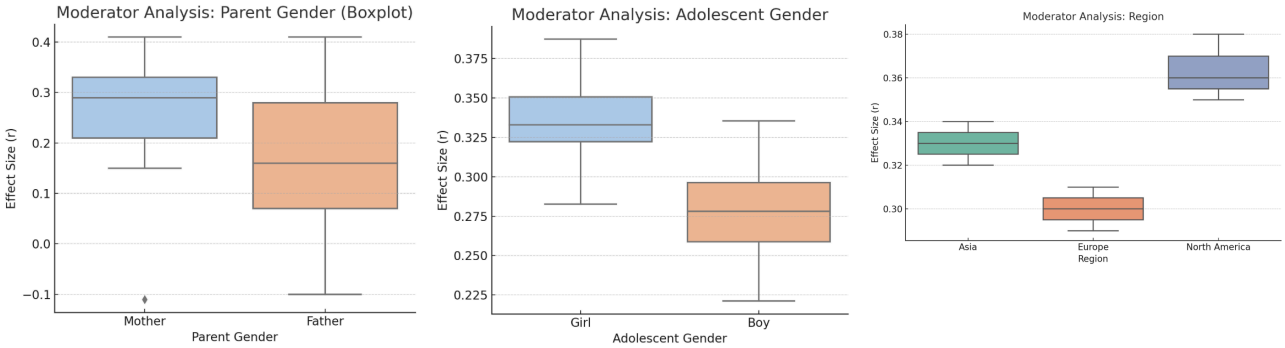
3.3. Moderator analysis

Due to moderate-substantial heterogeneity tested between pathways, a moderator test was completed to identify other variables that may influence the relationship between parental anxiety and adolescent distress. Moderators tested in this meta-analysis include parent and adolescent gender and family region (separated by continents). In the relationship between parental anxiety and adolescent distress, mothers demonstrate more anxiety than fathers, female adolescents experience greater distress, and Asian families display higher anxiety and stress symptoms. However, this effect is only statistically significant for adolescent gender ($p = 0.044$). Statistics and boxplots of each moderator can be found in Table 3 and Figure 5. The model of all pathways can be visualized in Figure 6.

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Table 3. Moderator statistical calculations

Moderator	Variable	Coef. (z)	p-value	t	β_0	β_1	SE(β_1)
Parent Gender	Intercept (Mother)	0.271	<0.001	–	0.271	–0.0890	0.059
	Father	–0.090	0.142	–1.514	–	–	–
Adolescent Gender	Intercept (Boys/Mixed)	0.249	<0.001	–	0.248	0.125	0.060
	Girls	0.125	0.044	2.078	–	–	–
Region	Asia (baseline)	0.265	<0.001	–	0.265	–0.043	0.065
	Europe	–0.043	0.513	–0.664	–	–	–
	North America	–0.001	0.995	–0.007	–	–	–



(a) Moderator Analysis of Parent Gender

(b) Moderator Analysis of Adolescent Gender

(c) Moderator Analysis of Region

Figure 5. Boxplot of moderators

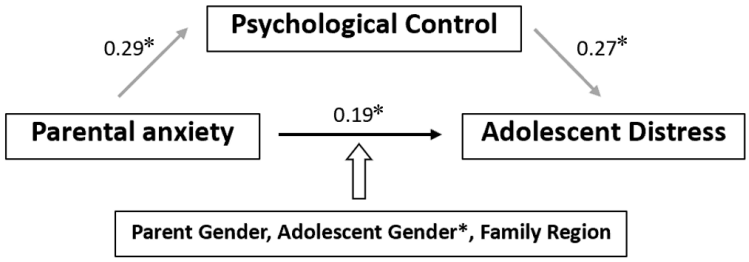


Figure 6. Model of the relationship between variables, mediator, and moderator

Note. The numbers noted on this graph are correlation coefficients between pathways.

* Indicates statistically significant effect (p<0.05).

3.4. Subgroup analysis: correlation

Furthermore, subgroups of "distress" are tested to see whether the moderate-substantial heterogeneity tested between pathways stems from statistical design deficiencies. Results (See correlation matrix in Table 4) show strong correlations between adolescent general distress, adolescent anxiety, and adolescent internalization, showing how these concepts are highly

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correlated, and it is logical to be included in the general variable of distress. This facilitates the meta-analysis framework where anxiety, internalization, and other stress behaviors are tested together as a general variable of distress.

Table 4. Correlation (r) matrix between subgroups: Fixed effect-style summary of Fisher's z transformed weighted averages of r

Variable	(1)	(2)	(3)	(4)	(5)
(1) Parental Anxiety	—				
(2) Psychological Control	0.378	—			
(3) Adolescent General Distress	0.312	0.346	—		
(4) Adolescent Anxiety	0.294	0.270	0.589	—	
(5) Adolescent Internalization	0.327	0.299	0.519	0.566	—

Note. All correlations presented are significant at $p > 0.01$.

4. Discussion

4.1. Conclusion

This meta-analysis examines the parent-child dynamics, specifically, the association between parental anxiety and adolescent distress. A positive association has generally been supported by past studies, although they varied in significance. This meta-analysis combines the associations between studies to find statistical evidence that suggests a general moderate positive association between parental anxiety and adolescent distress directly and via psychological control. The reason that the correlation between parental anxiety and adolescent stress is not statistically strong may be because of different meta-analysis constructs and individual differences between participants.

Particularly, moderator analysis shows that they tend to perceive mothers, female adolescents, and Asian families as showing more significant symptoms. This may be explained by biological, societal, and cultural differences: females tend to be more affected by stressors and expressive in emotion due to bio-psych-social influences [45-46], thus demonstrate greater anxiety and distress symptoms; mothers, compared to fathers, overall, interact more with their children [47], which may lead to greater stress and controlling behaviors; and Asian culture commonly emphasize more close bonding and responsibility between family members, which may be a risk factor of greater stress and control [48].

Other possible explanations also exist for the small-moderate correlation identified in this study. On one hand, one explanation may be that parental behaviors to reduce their anxiety, or to say fear of the future, may lead to two extremes: controlling behavior to create a sense of security, or avoidant and withdrawal behaviors [49] to avoid confronting worry. The possible contrasting results may contribute to a small-moderate correlation. Thus, a possible polarized U-shape relationship may be tested in further research to better model this association. On the other hand, there exist individual differences between parents and adolescents. For instance, parental anxiety may be triggered elsewhere (such as career situations) instead of from the parent-child relationship, in which case, although the parent still demonstrates anxiety symptoms, it is not reflected in the child. Adolescents may also differ in sensitivity, where the same amount of parental psychological control may lead to different distress levels in adolescents.

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4.2. Limitations

While the proposed hypothesis and model of this study are supported, some clear limitations and gaps can be further developed. Typically, of this meta-analysis, even though 22 studies and 5+ studies for each pathway hypothesized are enough for statistical analysis, an increased number of studies may better assess the relationship between parental anxiety and adolescent distress holistically. Although funnel plots and Egger's tests did not indicate severe bias, the limited number of studies in some pathways may indicate reduced robustness. Also, these related studies in this area, and this meta-analysis too, focus mostly on cross-sectional studies. Therefore, there tends to be a lack of empirical evidence for causal relationships between parent and child mental health and risk of spurious correlation or over-interpretation. More future longitudinal studies in this area may better fill in this gap.

Moreover, relationships in general are already a complex phenomenon to describe, let alone familial relationships, where even more diverse influences take place. Subsequent research can assess possible mediators, such as parenting style (ex., authoritative), or moderators such as socio-economic status, genetic predisposition, etc., that may affect this relationship. Furthermore, how, specifically, parents with anxiety are different from other parents who may not have anxiety but are still controlling can also be developed. The bidirectional association between parental anxiety and adolescent distress may also alter the significance of this relationship.

4.3. Implications

The results of this study highlight the importance of parental mental health in shaping adolescent well-being, and advocate for more concern in the parent-child relationship, both clinically and socially. The identification of this association via psychological control as a mediator suggests interventions targeting parental anxiety may not only alleviate their own distress but also reduce the likelihood of psychological control, thereby mitigating adolescent internalizing behaviors, facilitating a healthier parent-child relationship. Practitioners and clinicians could consider family-focused strategies that address both parental and adolescent mental health concurrently.

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