The Role of Gender in the Relation Among Anxiety, Theory of Mind, and Well-Being in Early Adolescents

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Abstract

The relation between cognition and life satisfaction is shaped by several factors. The present research investigated whether mindreading skills are linked to subjective well-being and anxiety during the transition into adolescence. Specifically, our aim was to investigate individual differences in those constructs and gendered relational patterns. A sample of 142 Italian sixth- and seventh-graders (84 boys, *M* = 11.83 years, *SD* = 6.87 months) completed a theory-of-mind task, and questionnaires on perceptions of different anxiety subtypes and life satisfaction. In the total sample, no interrelations were found among the variables. Nonetheless, mediation analyses conducted separately by gender showed that, only among girls, higher theory-of-mind scores were associated with lower perception of life satisfaction through the mediation of higher generalized anxiety levels. Results suggest that the approach to adolescence may provide a timely intervention window to develop preventive programs that target internalizing symptoms and their cascade effects on young people's well-being.

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Introduction

Recent longitudinal evidence shows that the relations between cognition and subjective well-being is partially explained by other factors (Yazdani & Siedlecki, 2021). In the present research, we explored whether theory-of-mind or mindreading skills, such as perspective-taking and emotion recognition, are linked to perceived life satisfaction and anxiety in middle school-aged children. Theory of mind (ToM) is the ability to understand ours and others' mental states and to use them to decide how to behave and to comprehend others' behaviour (Premack & Woodruff, 1978). For this reason, ToM is one of the most important abilities that can help an individual to get along well with other people (Weimer et al., 2021).

Researchers initially focused on the development of this mentalizing capacity and on its precursors in early childhood (Wellman, 2018), and now have started to explore its correlates and its use in adolescence and later stages of life (Apperly, Warren, Andrews, Grant, & Todd, 2011; Banerjee, Watling, & Caputi, 2011; Devine & Hughes, 2013; Hughes, 2016). Past research has shown how ToM skills such as emotion recognition and perspective-taking continue to shape (and being shaped by) social connections, and influence children and early adolescents' sense of self and life experiences (Bosacki, 2013; 2015; Hughes & Leekam, 2004). Moreover, intervention studies have shown that ToM can be trained and therefore enhanced to feel better at school during middle childhood and preadolescence.

For example, Caputi and colleagues (2021), recently showed that children receiving a 5-week training on ToM reported lower feelings of loneliness after the intervention, while children receiving a time-equivalent no-ToM training reported stable feelings of loneliness after the intervention. The approach to adolescence (e.g. 8 to 11–12 years) is particularly fragile in terms of satisfaction with social relationships, as preadolescents are usually quite worried about their peer status, and feel a strong desire to be accepted by their peer group (Goossens, 2018). Adolescents increasingly share their experiences and emotions with peers and rely on these peers for social support, and become more sensitive to their own peer status within the group (Furman & Buhrmester, 1992). How they are evaluated by peers and particularly if they are accepted by peers are important factors in the lives of adolescents (Sentse et al., 2010). If adolescents are unable to cope with social stress in an effective way, internalizing problems related to social anxiety may develop (Richey et al., 2019). In turn, these problems may then further hinder the use of adequate stress responses possibly resulting in even more social stress,

anxiety symptoms, and ultimately social anxiety disorder. Thus, adolescents' responses to stress may be risk factors as well as consequences of social anxiety problems (Wright et al., 2010).

In addition, preadolescence is a time that becomes a very different school experience depending on whether you are a girl or a boy. That is, during later childhood and into early adolescence, children's peer groups become increasingly important and take precedence over parent relationships. At the same time, peer groups become more segregated due to same-gender preference for friends (Fabes et al., 2004). During the approach to adolescence, gender-role expectations within societal rules (family, school) are intensified, and often bring girls to focus more on *others'* emotional needs rather than *theirs* (Endendijk et al., 2020; Lan Hor et al., 2022).

In contrast, boys are often encouraged to focus on their sense of *dominance* and *independence* within the social group (Doey et al., 2014). Moreover, early adolescence is a period in which different types of anxiety symptoms can become difficult to bear, especially for girls (Bosquet & Egeland, 2006; Nelemans et al., 2018; Wehry et al., 2015). For example, past studies show that girls often report higher levels of social anxiety and emotional challenges than boys (Asher & Aderka, 2018; Burani & Nelson, 2020). Specifically, studies on developmental trajectories of anxiety reveal an increase from childhood to adolescence of general (Broeren & Muris, 2009), and social anxiety (Weems & Costa, 2005).

Extant research regarding the cross-sectional and the longitudinal association between ToM and anxiety in childhood is mixed. On the one hand, some studies reported that a good performance in various ToM tasks (e.g., faux pas understanding), self-presentational strategies, and the understanding of social partners' preferences was linked to lower levels of panic disorder, social and separation anxiety (Banerjee & Henderson, 2001; Banerjee & Watling, 2005; Caputi & Schoenborn, 2018; Colonnesi et al., 2017; Grist & Field, 2012; Ronchi et al., 2020; Scaini et al., 2020). On the other hand, some studies revealed the opposite relation between ToM and anxiety. For example, Bosacki (2015) found that higher second-order false-belief skills at six years of age predicted increased socially anxious behaviors reported by teachers two years later.

Moreover, in a study conducted on preadolescents, high ToM performance was predicted by high levels of generalized anxiety (Scaini et al., 2020). In addition, other studies suggest complex relations among ToM, self-processes (such as self-consciousness and perceived self-worth) and social anxiety. To illustrate, Nikolic and colleagues (2019) found that ToM in preadolescents related to different experiences of social anxiety with self-consciousness serving as an intervening variable. That is, youth who were skilled in ToM, if they were also more susceptible to feelings of self-consciousness, they

also experienced high levels of social anxiety. Thus, expert mindreaders only felt socially anxious when they also experienced high self-consciousness.

Regarding gender differences in internalizing difficulties, given the increase in gender-role stereotypes and expectations during the approach to adolescence (Bosacki, 2000), many studies also show that girls are more likely than boys to report feelings of low self-worth, anxiety, depression and feelings of loneliness (Costello et al., 2011; Maciejewski et al., 2017; Narmandakh et al., 2020; Ohannessian et al., 2017). For example, with a sample of preadolescents, Bosacki (2000) found that highly skilled mindreaders were rated by their peers and teachers as less socially competent and more socially anxious and withdrawn only if they also reported low feelings of self-worth, particularly among girls. In contrast, for those children with high levels of mindreading skills, if they reported high levels of self-worth, then they were rated as more socially competent and less anxious by their peers and teachers.

Previous evidence shows that overall anxiety and specific anxiety symptoms are often associated with lower levels of life satisfaction (e.g., Barrera & Norton, 2009; Martinsen et al., 2016). A recent longitudinal study examined the association among the five prevalent anxiety subtypes (generalized anxiety, separation anxiety, social anxiety, school anxiety, and panic disorder) and psychological well-being (Xu et al., 2021). Interestingly, the authors confirmed previous evidence of heterogeneous developmental trajectories for each specific anxiety subtype, when inspected independently from the others. Moreover, they found peculiar links between the five anxiety trajectories emerged using latent growth curve models and levels of life satisfaction. Specifically, the congruent-low group (i.e. showing a persistent low level of all anxiety symptoms across time) showed the best psychological well-being status. Whereas, the congruent-high group (i.e. showing a persistent high level of all anxiety symptoms across time) and youth in the moderately high with predominant generalized and social anxiety group showed the worst psychological well-being status.

Overall, the link between different components of theory of mind and distinct anxiety phenotypes needs to be explored further, especially according to gender, to help disentangle the associations between anxiety symptoms and general aspects of well-being at different stages of life for boys and girls.

The Current Study

Our main goal is to build on previous works on the links between ToM and well-being, and focus on the understudied area of children's experiences during the transition from middle childhood to early adolescence. First of all, we assessed interconnections among theory of mind, anxiety symptoms and life satisfaction. Secondly, we focused on individual differences and explored gendered relational patterns among the key constructs, given previous

fragmented and inconsistent findings. Thirdly, we predicted that anxiety would play a mediating role between theory of mind and perceived life satisfaction. Previous literature indeed showed that theory of mind plays an instrumental role to help shape children' social relations and influence the way they feel in different situations and how they perceive life events. Based on recent evidence regarding the emergence of different anxiety symptoms in school-aged children and their different trajectories, we purposely assessed distinct anxiety dimensions. Finally, given the lack of studies that target preadolescents (Devine & Apperly, 2021; Gonultas et al., 2020), and based on emerging evidence that middle childhood represents a sensitive time in the growth of socio-cognitive and emotional skills (Devine & Hughes, 2013; Steinberg, 2010), we chose a sample of 11–12 year-olds, girls and boys.

Methods

Participants

Following an agreement with the Head and teachers of a middle school located in a city of Northern Italy, we presented the research project in a parent-meeting. All the parents who attended the meeting provided informed consent for their children to be involved in the study and children provided verbal assent before the testing session ($N = 156$). Nonetheless, criteria for inclusion in the analyses were the following: written parental informed consent, oral assent and no diagnosis of cognitive/learning difficulties. Therefore, although all children were tested, the present analyses were conducted on a final sample of 142 children (84 boys and 58 girls; 66 sixth graders and 76 seventh graders, which are students attending 1st and 2nd year of middle school), because 14 children had cognitive/learning difficulties. The sample had a mean age of 11.83 years ($SD = 6.87$ months).

Measures

Theory of Mind (ToM) - Children's ToM was tested using the Strange Stories task (Happé, 1994), which requires participants to interpret nonliteral statements. We administered five stories (persuasion, misunderstanding, white lie, irony/sarcasm and contrary emotions). After reading the stories, children were asked to explain the meaning of a character's sentence in a written format. In line with scoring guidelines, answers were rated using a 0-2 scale (0 points for incorrect answers, 1 point for partially correct answers, and 2 points for full and explicit answers). The total score ranged from 0 to 10, with higher scores indicating higher ToM skills.

Anxiety symptoms - Children completed the Screen for Child Anxiety Related Emotional Disorders (SCARED) (Birmaher et al., 1997; Italian

version by Ogliari et al., 2006). Albeit originally developed to assess anxiety disorders in clinical samples (Birmaher et al., 1997), the SCARED is now used as a screening tool in community samples (Muris, Merckelbach, Schmidt & Tierney, 1999). Symptoms are assessed on a 0–2 scale (0 = not/hardly ever true, 1 = somewhat/sometimes true, 2 = very/often true). Scores are created by summing items of five subscales: Panic Disorder or Significant Somatic Symptoms (13 items, score ranges from 0 to 26), Generalized Anxiety Disorder (9 items, score ranges from 0 to 18), Separation Anxiety (8 items, score ranges from 0 to 16), Social Anxiety Disorder (7 items, score ranges from 0 to 14) and Significant School Avoidance (4 items, score ranges from 0 to 8). Higher scores indicate higher anxiety symptoms. The SCARED has high test-retest reliability and high internal and external validity (e.g., Birmaher et al., 1997; Su, Wang, Fan, Su, & Gao, 2008), and has been extensively used in studies of anxiety traits (e.g., Jones, Lebowitz, Marin, & Stark, 2015; Warnell, Pecukonis, & Redcay, 2018). The scores found in the present research are in line with past studies conducted among Italian community samples (e.g., Caputi & Schoenborn, 2018; Scaini et al., 2020). Internal consistency was overall acceptable (Cronbach's alpha for each subscale in the order in which they were presented above = .78, .74, .69, .84, .63).

Life Satisfaction - The Students' Life Satisfaction Scale (SLSS, Huebner, 1991; Italian version by Caputi et al., 2019) was used to evaluate perception of life satisfaction. The SLSS is a seven-item self-report measure suitable from ages 8 to 18 (e.g., "I have a good life"). Children expressed their agreement with the items on a 6-point Likert scale (two were reverse-scored), from 1 (strongly disagree) to 6 (strongly agree). Scoring of the SLSS was determined by summing the scores on each item Final score thus ranged from 7 to 42, with a higher score indicating a higher degree of satisfaction. In the present research, the Cronbach's alpha for this scale was .82.

Verbal Ability - To assess children's verbal ability, the Vocabulary subtest of the Wechsler Intelligence Scale for Children–Revised (WISC-R; Italian version by Orsini, 1997) was used. Children were asked to define 32 words and scored 0 to 2 points for each definition. The total score ranged from 0 to 64, with higher scores indicating higher verbal ability.

Socio-economic Status (SES) - Children completed the Family Affluence Scale (FAS, Currie et al., 2008), which is a four-item measure of family wealth found to be reliable and sensitive in differentiating levels of affluence. The total score ranged from 0 to 9, with higher scores indicating higher wealth.

Procedure

The study was conducted according to the Declaration of Helsinki. The Head and teachers of the contacted schools agreed to participate in the study.

Parental written informed consent and children's assent were obtained at the beginning of the study. Children were tested in their classroom during school-time in February. Under the supervision of one experimenter, children completed the Strange Stories task (Happé, 1994), the Screen for Child Anxiety Related Emotional Disorders (Birmaher et al., 1997), Students' Life Satisfaction Scale (SLSS, Huebner, 1991), the Vocabulary subtest from the WISC-R (Orsini, 1997) and the Family Affluence Scale (Currie et al., 2008). These last two measures were included because of their potential role in ToM performance (Cutting & Dunn, 1999; Milligan et al., 2007).

Overview of Analyses

In the sections below, we first present preliminary analyses, including descriptive statistics, correlations, and t-tests for gender differences. Second, we will present a model of mediation to describe specific relationships among ToM, anxiety symptoms and Life Satisfaction. Mediation analyses were performed using Hayes' (2013) PROCESS computational tool, on the basis of 5000 bootstrap samples (Hayes, 2009). The PROCESS macro generates estimates of direct and indirect effects (i.e., mediation), based on bootstrap samples of the data. The results of the procedure are reported in terms of bias-corrected confidence intervals (Preacher & Hayes, 2008), based upon the sampling distribution of the indirect effect. Thus, 95% confidence intervals that do not include 0 must be regarded as conceptually equivalent to rejecting the null hypothesis with α set at .05 (Hayes, 2009). Specifically, we ran two distinct models (one for boys and one for girls) to test the hypothesis that Generalized Anxiety mediates the relation linking ToM to Life Satisfaction. All the analyses were conducted with SPSS v18 software.

Results

Descriptive statistics of the study variables are provided for each gender in Table 1, along with t-tests conducted to explore gender differences. As shown in Table 1, significant differences between boys and girls were detected in Panic Disorder, Generalized Anxiety and Social Anxiety, with girls reporting higher scores compared to boys.

Table 2 includes descriptive statistics and correlation analyses among the variables of interest. ToM was positively associated only with Verbal Ability. All Anxiety subscales were positively related one to each other. Life Satisfaction was negatively associated with all Anxiety subscales, $r \geq -.29, p \leq .01$, with the exception of Social Anxiety, $r = -.07$, $p = .416$ No significant association emerged between ToM and Anxiety subscales, nor between ToM and Life Satisfaction.

Table 1. Boys' (N = 84) and girls' (N = 58) Descriptive Statistics of the Variables of Interest and t-tests.

Variable	Boys' Mean (Standard Deviation)	Girls' Mean (Standard Deviation)	*t*-value	*p*-value
Socio-Economic Status	5.98 (1.52)	5.89 (1.95)	.265	.791
Verbal Ability	30.75 (8.35)	32.16 (7.25)	−1.039	.300
Theory of Mind	6.06 (1.61)	6.25 (1.48)	−.691	.491
Panic	4.69 (3.19)	6.82 (4.85)	−2.886	.005
Generalized Anxiety	6.59 (3.24)	8.29 (3.94)	−2.750	.007
Separation Anxiety	4.13 (2.48)	4.63 (3.07)	−1.047	.297
Social Anxiety	5.34 (3.38)	7.32 (3.72)	−3.233	.002
School Avoidance	1.81 (1.58)	1.77 (1.66)	.159	.874
Life Satisfaction	21.21 (4.16)	20.47 (4.02)	1.042	.299

Based on significant gender differences provided by t-tests, we conducted correlations among all test variables for girls and boys as separate samples (see Table 3). Gender differences were found between following: ToM and Panic Disorder ($z = -2.09$, $p = .04$), between ToM and Generalized Anxiety ($z = -2.06$, $p = .04$, girls, $r = .28$, $p < .05$, boys = ns), between ToM and Separation Anxiety ($z = -2.39$, $p = .02$, girls, $r = .27$, $p < .05$, boys = ns)), between ToM and School Avoidance ($z = -2.19$, $p = .03$), between ToM and Life Satisfaction ($z = 3.14$, $p = .002$), between Generalized Anxiety and Separation Anxiety ($z = -2.87$, $p = .004$), between Generalized Anxiety and School Avoidance ($z = -2.9$, $p = .004$), between Separation Anxiety and School Avoidance ($z = -3.16$, $p = .002$), between Panic Disorder and Life Satisfaction ($z = 3.17$, $p = .002$), between Separation Anxiety and Life Satisfaction ($z = 3.42$, $p < .001$), between Social Anxiety and Life Satisfaction ($z = 2.16$, $p = .03$).

To test the relations among ToM, Anxiety and Life Satisfaction, we assumed a simple mediation, described by Hayes (2013) as model 4 of mediation. In this model, the independent variable X influences the dependent variable Y with an indirect effect via the mediator M. The indirect effect of X on Y mediated by M is calculated by the sum of the effect of X on M and the effect of M on Y controlling for X. Based on preliminary t-tests, mediation analyses were run separately for boys and girls, using PROCESS macro model 4 (Hayes, 2013), with 5000 bootstrap estimates for the construction of 95% bias-corrected confidence intervals. In our models (see Figure 1), ToM was the independent variable (X), Life Satisfaction was the dependent variable (Y)

Table 2. Correlations Among the Variables of Interest in the Total Sample (N = 142).

Variable (Mean and Standard Deviation)	1	2	3	4	5	6	7	8	9
1. Socio-Economic Status (5.94.±1.70)	—	.22**	.14	−.01	.02	−.12	−.12	.01	.16
2. Verbal Ability (31.32±7.92)		—	.26**	−.04	.11	.03	.13	−.14	.12
3. Theory of Mind (6.14±1.56)			—	.05	.09	.04	.03	.11	−.03
4. Panic (5.57.±4.08)				—	.50***	.41***	.40***	.44***	−.29**
5. Generalized Anxiety (7.29±3.63)					—	.43***	.39***	.38***	−.36***
6. Separation Anxiety (4.33±2.74)						—	.29**	.30***	−.31***
7. Social Anxiety (6.15±3.64)							—	.19*	−.07
8. School Avoidance (1.79±1.61)								—	−.34***
9. Life Satisfaction (4.34±1.01)									—

Note. * $p < .05$; ** $p < .01$; *** $p < .001$.

Table 3. Correlations Among the Variables of Interest by Gender (N boys =84, N girls = 58).

Variable	1	2	3	4	5	6	7	8	9
1. Socio-Economic Status	—	.21	.06	−.03	−.08	−.09	−.22	.14	.28*
2. Verbal Ability	.25*	—	.14	−.12	.00	.10	−.02	−.06	.12
3. Theory of Mind	.20	.31**	—	$.22_{a}$	$.28^{*}_{b}$	$.27^{*}_{c}$	.15	$.33^{*}_{d}$	$-.36^{**}_{e}$
4. Panic	.03	−.05	$-.14_{a}$	—	.56***	.47***	.38**	.55***	$-.54^{***}_{i}$
5. Generalized Anxiety	.12	.14	$-.07_{b}$	.36**	—	$.62^{***}_{f}$	.28*	$.61^{***}_{g}$	−.43**
6. Separation Anxiety	−.15	−.03	$-.14_{c}$	.31**	$.22^{*}_{f}$	—	.33*	$.56^{***}_{h}$	$-.59^{***}_{j}$
7. Social Anxiety	−.03	.16	−.09	.35**	.42***	.22*	—	.25*	$-.27^{*}_{k}$
8. School Avoidance	−.12	−.19	$-.04_{d}$	.38***	$.20_{g}$	$.08_{h}$	.16	—	−.44***
9. Life Satisfaction	.07	.13	$.17_{e}$	$-.05_{i}$	−.30**	$-.08_{j}$	$.10_{k}$	−.28*	—

Note. * $p < .05$; ** $p < .01$; *** $p < .001$ Correlations for girls on the upper half of the diagonal and for boys on the lower half of the diagonal. Matching subscripts = significant gender differences between correlations, $p < .05$.

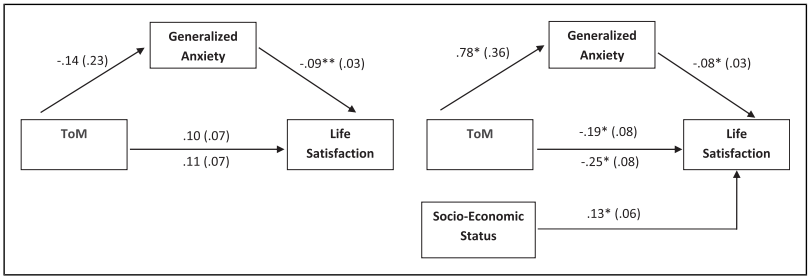

Figure 1. Generalized Anxiety as mediator of the association between ToM and Life Satisfaction in boys (left model) and girls (right model). Unstandardized coefficients are reported with standard errors in parentheses. Total effects are presented below the arrows; while direct effects are presented above the arrows. Girls' model includes Socio-Economic Status as a covariate of Life Satisfaction. Note. Analyses were based on 5000 bootstrap samples with 95% bias-corrected confidence intervals; *$p < .05$; **$p < .01$.

and Generalized Anxiety represented the mediator (M). We chose to focus on Generalized Anxiety as this subtype of anxiety was the only one – among those significantly different between boys and girls that related to ToM and life satisfaction. Moreover, SES was included, in the girl's model only, as covariate of Life Satisfaction. Indeed, according to Hayes (2013), covariates in the mediation model should be entered when they are related a) to both M and Y, b) to M only, c) to Y only.

Results showed that for boys, the only significant path was the one between Generalized Anxiety and Life Satisfaction (i.e., higher Anxiety predicted lower Satisfaction). Among girls, all the paths were significant (total effect of ToM on Life Satisfaction = −.2509, SE = .0848, 95%, CI [-.4211, −.0806], effect of ToM on Generalized Anxiety = .7805, SE = .3613, 95%, CI [.0550, 1.5059], effect of Generalized Anxiety on Life Satisfaction = −.0827, SE = .0311, 95%, CI [-.1452, −.0202]), effect of Socio-Economic Status on Life Satisfaction = .1282, SE = .0602, 95% CI [.0072, .2493]. Moreover, the effect of ToM on Life Satisfaction was reduced but still significant (direct effect = −.1851, SE = .0838, 95%, CI [-.3535, −.0168]) after controlling for Generalized Anxiety (indirect effect = −.0645, SE = .0356, 95%, CI [-.1617, −.0137]). In other words, among girls increased Generalized Anxiety partially mediated the relation between high ToM and low Life Satisfaction.

Discussion

The present study provides empirical evidence of gendered relational patterns in ToM and well-being in preadolescence (Bosacki, 2015; Caputi & Schoenborn, 2018; Devine & Hughes, 2013; Scaini et al., 2020). Notably,

we found that boys' feelings of life satisfaction were not significantly influenced by their ToM abilities. In contrast, girls who were more skilled in reading the minds of others were also more likely to experience increased Generalized Anxiety, which was in turn related to lower life satisfaction (providing support for a partial mediation). Such a mediation pattern held also when controlling for socio-economic status, which was positively related to life satisfaction among girls only.

The main aim of the research study was to expand our knowledge about ToM and well-being within a relatively neglected population of preadolescents. The secondary aim was to explore the role of anxiety in the relation between ToM and perceived life satisfaction, with a particular interest in exploring gender differences. In the sections below, we discuss our main findings within the context of past research followed by strengths and limitations of our study, and implications for research and practice.

Main Findings of the Present Study

First of all, previous studies conducted in middle childhood have shown that advanced ToM abilities are related to lower anxiety in some studies (e.g., Banerjee & Watling, 2005; Caputi et al., 2021; Colonnesi et al., 2017; Ronchi et al., 2020), and to higher anxiety in other studies (Bosacki, 2015; Scaini et al., 2020). Based on such evidence, albeit the present study was the first to specifically assess the correlation between adolescents' mindreading skills and perceptions of life satisfaction, a positive link between the two constructs could have been expected. Nonetheless, in the total sample, we found no relation between them.

Therefore, being aware of the documented differences in internal (Nelemans et al., 2018) and social functioning (Devine & Hughes, 2013; Van der Graaff et al., 2018) of preadolescents, we moved on exploring gender differences among the key test variables, i.e. ToM, life satisfaction and anxiety. Although girls and boys scored similarly in their ToM and life satisfaction scores, compared to boys, girls reported higher anxiety scores in three out of five subtypes of anxiety (Panic Disorder, Generalized Anxiety and Social Anxiety).

Such findings inspired the idea that correlation patterns and the mechanisms underlying the relation between our target variables can vary according to gender. To confirm our intuition, we found significant discrepancies between boys and girls in several correlations among the examined variables. Crucially, among girls, ToM was positively related to Generalized Anxiety, Separation Anxiety and School Avoidance; so that girls who scored high on Strange Stories, also reported higher levels in these three subtypes of anxiety.

In the following mediation analyses, we focused on Generalized Anxiety. As reported above, we found that girls with higher ToM skills perceived both

higher Generalized Anxiety levels and lower life satisfaction. Moreover, the link between ToM and life satisfaction was at least partially due to increased Generalized Anxiety. Such a mediation did not hold for boys. The present findings is coherent with a previous study that showed, for a similar age range, the same positive link between ToM and Generalized Anxiety (Scaini et al., 2020). Such finding suggests the need for more research on the emotional consequences of varying levels of mindreading abilities, especially during early adolescence, which is already known to be a sensitive time emotionally for young people (Maciejewski et al., 2017).

Based on past research, there is evidence to suggest that mindreading is generally beneficial, but also entails a cost in terms of internalizing symptoms. For example, proficient mindreading might lead to intensified sensitivity to others' judgements and criticisms, and negative self-thoughts and feelings (Bosacki, 2000; 2015; Lecce et al., 2014; Smogorzewka et al., 2022). That is, some children with high levels of Generalized Anxiety may be more likely to be hyperfocused on external events, and over-mentalize in that they might be highly worried about the surrounding situation (Hezel & McNally, 2014; Washburn et al., 2016). Being sensitive to others' evaluations and judgments may also be due to the ability to over-mentalize which may increase one's ability to read other people's minds (Roemer et al., 2004). However, such a skill and being more sensitive to other's thoughts and emotions may also lead to increased self-reflection and self-examination, which in turn, if negative –may lead to a lower perception of one's own quality of life (Pequet & Warnell, 2021).

Implications for Research and Practice

Our findings have significant implications for research and theory, as future studies should carefully consider the importance of assessing individual differences and relational patterns defined by gender. This is particularly meaningful in early adolescence, as intervention programs need to aim to improve well-being through the inclusion of a balanced mix of strategies that promote intra- and inter-personal skills (Bosacki, 2020; Effeney et al., 2013). For example, recent studies show that intervention programs that focus mainly on social skills (e.g. FRIENDS Barrett & Turner, 2000), may not be that effective for children who experience high levels of anxiety and stress within social situations. More comprehensive interventions programs need to be developed to promote self and emotional regulation, and other self-focused skills together with social skills (Klein et al., 2021). In addition, to address the different social and emotional experiences of girls and boys, positive youth development programs that promote mindfulness and compassionate approaches to education should also be emphasized during middle school and beyond (Decker et al., 2019; Smith et al., 2021).

Moreover, adults who spend a lot of time with preadolescents, such as educators and youth workers, need to be cognizant of the fact that socio-cognitive abilities have differentiated correlates in girls and boys and might therefore exhibit different self-directed feelings and social behaviors. Thus, girls and boys during early adolescence, for many possible reasons such as biogenetic differences (Steinberg, 2010), as well as differences in socialization (Doey et al., 2014), may be activated by different social stimuli, experience different kinds of stress, feel more under pressure because of gender-role expectations, and engage differently with teachers and peers. These differences rise over middle childhood and cause diverse perceptions of the surrounding world, finally impacting on overall perception of life satisfaction.

Given these possible differences in girls' and boys' school experiences, the present findings suggest that future positive youth development education programs should address gender differences starting from the variety of self-regulation strategies that can be used in the context of the classroom (Lennarz et al., 2019; Liu et al., 2019). For example, teachers could incorporate *2-min exercise 'snacks*,' *breathing techniques*, or arrange their classroom to include *safe spaces* that promote feelings of comfort and calm such as *reading/art corners* could be used to help youth to relax and calm down. Children can also be encouraged to use positive and compassionate self-talk that may lead to more positive feelings and fewer negative emotions (Ciarrochi et al., 2016). Such positive psychology and emotion strategies and techniques may help some children to lower their levels of anxiety and worry, especially such students lack the coping skills to help deal with academic challenges and social stress.

Future Directions and Conclusion

Despite the unique and meaningful contributions of the present results to the literature on social cognition and well-being in early adolescence, this study was limited in a variety of ways. The relatively limited sample (with fewer girls compared to boys) of a mainly homogenous population prevented the findings from being generalized to more diverse samples. The present study was cross-sectional and future research should include more longitudinal data that measures social cognition and well-being in youth over time to explore directional pathways among variables. Furthermore, given the conceptual multidimensionality of anxiety, well-being and ToM, future research should include diverse measures to capture a more comprehensive picture of pre-adolescent's social and emotional experiences (Lennarz et al., 2019). For example, researchers are advised to use multiple measures of mindreading and try to assess the multidimensional aspect of ToM including emotion recognition and perspective taking using verbal (e.g. use of social stories), and

reduced verbal or more graphics only measures such as the computerized Triangle task or Silent Film task (Devine & Hughes, 2013). In addition, future research should include data from multiple informants such as parents, teachers and peers on their perceptions of children's wellbeing and anxiety levels.

In sum, although results should be replicated in larger, more culturally diverse samples, our findings indicate that, as early as middle childhood, high levels of anxiety among girls could be related to a heightened propensity to mentalize experiences. The present findings provide novel and meaningful contributions to the literature on social cognition and well-being in young adolescence, and highlight the importance of gender when working with youth. In particular, the present findings emphasize the important role anxiety and feelings of worry play in shaping the social and emotional experiences that children may experience as they approach adolescence, especially girls who appear more sensitive to feelings of self-doubt, anxiety, and worry. Overall, our findings provide empirical evidence to support the development of future intervention programs that are developmentally appropriate and gender sensitive and provide a balanced approach to promoting interpersonal and intrapersonal skills.

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