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Adolescents' interpersonal cognition and self-appraisal of their own anxiety in an imagined anxiety-provoking classroom presentation scenario: Gender differences

Cognición interpersonal de los adolescentes y autoevaluación de su propia ansiedad en un escenario imaginado de presentación en el aula que provoca ansiedad: Diferencias de género

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Abstract

Oral class presentations are regularly assigned to adolescents, but often provoke social anxiety, due to the importance of peer approval and need to appraise oneself as normal. Also, little is known about gender differences in girls' and boys' interpersonal cognition and appraisals of anxiety and self in anxiety-provoking speech situations. We examined gender differences in interpersonal cognition and appraisals of anxiety in an imagined class presentation scenario in a normative sample of 687 adolescents, 14-16-years-old, from Southwest Finland. Measures included the Classroom Questionnaire of Social Anxiety and Interpersonal Cognition and the Social Anxiety Scale for Adolescents. T-tests examined gender differences in interpersonal cognition, and chi-square tests examined adolescents' appraisals of the likelihood of their own presentation anxiety and self as anxious. Girls more frequently reported positive, and less frequently reported negative, responses toward the depicted, anxious peer than boys. Also, a higher percentage of girls predicted that becoming anxious in the situation was likely, and non-acceptance of self as anxious was more frequent among girls. Boys predicted negative overt classmate reactions (e.g., laughing) towards the depicted, anxious peer,

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and towards themselves more frequently than did girls. Results are discussed in the context of gender-specific development and procedures for reducing adolescent social anxiety.

Keywords: adolescence, social anxiety, interpersonal cognition, gender, school

Resumen

Las presentaciones orales de la clase se asignan regularmente a los adolescentes, pero a menudo provocan ansiedad social, debido a la importancia de la aprobación de los compañeros y la necesidad de evaluarse a sí mismo como normal. También, se sabe poco acerca de las diferencias de género en la cognición interpersonal de las niñas y los niños y las evaluaciones de la ansiedad y el yo en situaciones de habla que provocan ansiedad. Se examinaron las diferencias de género en la cognición interpersonal y las valoraciones de la ansiedad en un escenario imaginado de presentación de clase en una muestra normativa de 687 adolescentes, de 14 a 16 años, del suroeste de Finlandia. Las medidas incluyeron el Cuestionario de Aula de Ansiedad Social y Cognición Interpersonal y la Escala de Ansiedad Social para Adolescentes. Las pruebas T examinaron las diferencias de género en la cognición interpersonal, y las pruebas de chi cuadrado examinaron las evaluaciones de los adolescentes de la probabilidad de su propia ansiedad de presentación y de sí mismo como ansioso. Las niñas reportaron con más frecuencia respuestas positivas, y menos frecuentemente negativas, hacia el grupo representado y ansioso que los niños. Además, un mayor porcentaje de niñas predijo que era probable que se volvieran ansiosas en la situación, y la no aceptación de sí mismas como ansiosas era más frecuente entre las niñas. Los niños predijeron reacciones negativas abiertas de los compañeros de clase (por ej., risas) hacia el compañero representado, ansioso, y hacia ellos mismos con más frecuencia que las niñas. Los resultados se discuten en el contexto del desarrollo específico de género y los procedimientos para reducir la ansiedad social de los adolescentes.

Palabras clave: adolescencia, ansiedad social, cognición interpersonal, género, escuela

1. INTRODUCTION

During adolescence, remarkable changes occur on several domains of individual development and social functioning. On the individual level, pubertal maturation, and central nervous system (CNS) development are central (Blakemore, Burnett, & Dahl, 2010). In a dynamic interaction with CNS development, a paramount change takes place in the social context and a marked increase in the importance of peers and time spent with them (Nelson et al., 2005).

Concurrent with improvements in several cognitive processing abilities, metacognition, awareness and understanding of own thinking is enhanced (Weil et al., 2013). Of social cognitive functions, capacity for social perspective-taking advances more rapidly in girls relative to boys. The gender difference is evident during early adolescence, and the gap grows until early adulthood as girls' perspective-taking capacity increases faster than boys' (Van der Graaff et al., 2014). Recognition and cognitive understanding of complex emotional states in others are still developing (Tousignant et al., 2017).

However, these multiple and interrelated developmental changes may also contribute to increasing emotional stress and anxiety for adolescents (La Greca & Ranta, 2015). The incidence of social anxiety and social anxiety disorder (SAD) increases (Beesdo et al., 2009), and both are more common in adolescent girls than in boys (Knappe et al., 2015). Public speaking and presentation situations are contexts in which adolescents most frequently experience social anxiety; as many as 20% to 30% report marked fear in these situations (Essau et al., 1999; Ranta et al., 2007). Presentation fears are also slightly more common in girls; however, gender ratios seem more even than for SAD (Essau et al., 1999; Ranta et al., 2007; Furukawa et al., 2014).

Developmental research has found adolescent girls are more attuned to social relationships, but also more dependent on peer support and approval (Rose & Rudolph, 2006). Social anxiety is associated with more impairments in relationships among girls than among boys, including lower quality of close relationships, fewer friendships, and relational peer victimization (La Greca & Lopez, 1998; Pickering et al., 2020).

Gender role research has mainly found boys to be more performance- and girls to be more relationship-oriented, although a secular trend towards partial diminishing of such role differences has been observed (Priess et al., 2009). Adopted gender roles may affect attitudes on psychological distress. For example, adolescent boys with a pronounced masculine gender role appear more reluctant to seek help for anxiety than boys with a less pronounced masculine role, or than girls (Clark et al., 2020).

Advancing metacognitive capabilities form the basis for increased psychological self-reflection (Barkai & Rappaport, 2011). More so than children, adolescents will reflect on topics such as their self-concept, public self-presentation, and social role (Sebastian et al., 2008). Adolescents struggle to build a positive self-concept, self-esteem, consolidation of stable identity, and accepted social role (Becht et al., 2016). Appraisals of one's own capacities and deficiencies in relation to those of peers and one's perceived normality may be especially salient in social or group contexts (Crone & Fuligni, 2020). Experiencing oneself psychologically as not normal or weak may be associated with global, negative self-evaluations (Hanlon & Swords, 2019).

A heightened tendency towards self-criticism, instead of acceptance of one's own emotional states such as anxiety, have been associated with social anxiety in adolescents

and young adults (Henderson et al., 2014). Levels of self-criticism seem to increase with age among children and adolescents with SAD. Relative to boys, socially anxious girls show higher persistence of self-criticism even when offered positive feedback (Lau et al., 2022).

Research on mental health stigma is relevant to the study of adolescents' appraisals on social anxiety and its acceptability (Jorm & Wright, 2008). *Personal stigma* refers to adolescent's own cognitive, emotional, and behavioural responses towards a peer with a mental health condition. *Perceived stigma* refers to his/her perception of peers' responses towards an individual with the condition, and *self-stigma* refers to internalization of perceived stigma by an adolescent suffering from symptoms of a mental health condition, as evidenced by cognitive and emotional responses towards the self (De Luca, 2021).

Most of this research indicates that adolescents frequently appraise social anxiety in a peer as a sign of personal weakness, both from their personal viewpoint, and as expected peer appraisals (Reavley & Jorm, 2011; Hanlon & Swords, 2019). Studies have found boys attach higher personal stigma to social anxiety than girls (Jorm & Wright, 2008; Lynch et al., 2021).

The Current Study

Based on research reviewed above, there may be gender differences in adolescents' interpersonal cognition and self-appraisals related to experiencing anxiety in everyday social contexts. Results from population studies may inform further refinement of developmentally sensitive cognitive behavioural interventions (Baker et al., 2021).

We examined adolescent boys' and girls' interpersonal cognition and self-appraisals in a classroom presentation situation, in a population sample of 14-16-year-old Finnish adolescents. Using the Classroom Questionnaire for Social Anxiety and Interpersonal Cognition (CQ-SAIC; Ranta et al., 2016), we examined gender differences in adolescents': 1. own overt and covert responses towards an anxious classmate; 2. predictions of the likelihood of themselves becoming anxious; 3. acceptance of self when experiencing anxiety; and 4. predictions of classmates' overt and covert responses towards the anxious classmate / themselves as presenter.

We hypothesized that girls would show more frequent positive and less frequent own reactions towards an anxious classmate; they would report higher likelihood of becoming anxious; and they would predict more positive classmate responses towards the anxious peer and themselves. We also predicted that boys would show lower acceptance of self when anxious.

2. METHOD

2.1 *Participants and procedure*

Participants were 687 adolescents, including 371 (54 %) girls and 172 (25 %) in 8th and 515 (75%) in 9th grade.

Data came from a population cohort study performed in Southwest Finland that sampled students from three public secondary schools in Turku (approximately 175,000 inhabitants), and Lieto (approximately 175,000 inhabitants) (Ranta et al., 2016). The students represent the general population, as all adolescents attend secondary schools except for students with severe handicaps or learning disabilities. The socioeconomic composition of sample represents urban and sub-urban population in Finland (Statistics Finland, 2007). The studies were approved by the Ethics Committee of the Hospital District of Southwest Finland and by local school authorities.

Written consent and completed study questionnaires were obtained from 687 students; the participation rate was 77%. Questionnaires were administered in the classrooms during regular school day. The amount of missing data for individual CQ-SAIC items was small, ranging from 1.7 to 3.8 %.

2.2. *Measures*

The Classroom Questionnaire of Social Anxiety and Interpersonal Cognition (CQ-SAIC). (Ranta et al., 2016). The CQ-SAIC assesses several dimensions of adolescents' interpersonal cognition and their self-evaluations of the likelihood and acceptability of experiencing speech anxiety before the class. The CQ-SAIC first presents a vignette describing a student experiencing cognitive, emotional, behavioral, and bodily symptoms of anxiety in a classroom presentation situation in front of the classmates. See Figure 1.

After reading the vignette, respondents describe their: 1. own overt/covert responses towards the anxious peer (OR subscale), 2. evaluation of the likelihood of themselves becoming anxious like the depicted peer (LPA subscale), 3. acceptance of self as anxious, like the depicted peer, and 4. predictions of classmates' responses towards either the depicted peer (MEPE-peer subscale), or towards themselves as the presenter (MEPE-self subscale).

The OR and MEPE-peer, and MEPE-self subscales each consist of 18 items, describing 6 overt responses, 6 cognitive responses, and 6 emotional responses of either positive, neutral, or negative affective valence (2 of each). Items are further classified according to their affective valence. Thus, CQ-SAIC further yields the six-item positive, neutral, and negative OR-, MEPE-peer-, and MEPE-self scales.

Figure 1.
The CQ-SAIC vignette

“Please read the following story and imagine it would happen in your own class”.

Mary was supposed to give an oral presentation on a book to her class. Mary tended to feel very nervous about speaking in front of her class, no matter how familiar she was with her classmates. Although she knew that everyone would have to give a presentation, this did not make her feel any less nervous. Mary had been feeling anxious about the presentation for several days already, and she was certain that she would make a fool of herself in front of the class. She believed that she would forget everything she had planned to say. As she stood in front of the class, she could feel herself sweating and her heart starting to beat hard. Mary noticed that she was speaking unclearly, and that nervousness was making her voice tremble. She sensed that she would soon start mixing up her words. She pictured in her mind other pupils noticing that her hands were shaking. She felt all of her classmates staring at her, and she was convinced that they would find her ridiculous. In her nervousness, she dropped her notes on the floor and felt herself blushing in embarrassment. Tears filled her eyes, as she believed she had made a total idiot of herself in front of the class.

For the OR scales, respondents rate items on a 4-point scale, describing the level of certainty with which their own response would be accordance with the presented response. On MEPE scales adolescents rate items on a 5-point scale, representing their evaluation of how frequent the response would be among their classmates. The range of total scores for positive, neutral, and negative OR scale is 6-24 points; for MEPE-peer and MEPE-self scales it is 6-30 points. The full items and prompts for CQ-SAIC subscales are in the Appendix. Key content of the items is presented in Tables 1, 3, and 4.

For the LPA subscale (likelihood of presentation anxiety) respondents rate the likelihood of themselves becoming anxious when being the presenter, in response to the question: *“Now imagine that you were in the same situation as Mary. Would you be anxious in that situation like Mary?”* The response alternatives are: 1. absolutely not, 2. hardly, 3. likely, 4. surely. Answers are defined to indicate low (absolutely not/hardly) or high (likely/surely) perceived likelihood of presentation anxiety.

For acceptance vs. non-acceptance, adolescents are asked: *“If you would be anxious like Mary, what would you think of yourself as a person?”* Adolescents answer on a scale reflecting either negative (i.e., non-accepting), neutral, or positive metacognitive stance. The response alternatives are: 1. I would consider myself weird or over-sensitive, 2. I would consider myself like others, and 3. I would accept myself despite feeling anxious. Alternative 1

indicates non-acceptance, alternatives 2 and 3 indicate acceptance of self when experiencing presentation anxiety.

Social Anxiety Scale for Adolescents (SAS-A). The Social Anxiety Scale for Adolescents (La Greca & Lopez, 1998), is a 22-item self-report measure assessing general social anxiety among adolescents. SAS-A is a valid measure of social anxiety in Finnish adolescents (Ranta et al., 2012).

2.3 Statistical analysis

Cronbach's alphas (α) were calculated to evaluate internal consistencies of OR and MEPE subscales. Means and standard deviations of answers to all CQ-SAIC items were examined separately for both genders. Girls' and boys' mean scores on OR and MEPE scales were compared with Bonferroni adjusted Student's t-tests for independent samples, reporting Cohen's effect sizes (d). Full comparisons are presented for positive and negative OR and MEPE scales. Results from neutral scales are briefly summarized.

Concurrent validity of the LPA subscale was studied by examining Spearman rank order correlation coefficients (r) between SAS-A and LPA total scores for total sample, and for both genders separately. Gender differences on LPA subscale, and in acceptance of self as anxious, were examined with chi square tests, reporting Cramer's V effect sizes.

Associations between perceived likelihood of own presentation anxiety and acceptance of self as anxious were examined in cross-tabulations, using chi-square tests. Gender differences were examined by performing a three-way interaction analysis between gender, likelihood of anxiety, and acceptance using log-linear modeling; we also did separate analyses for both genders. Finally, we compared whether general social anxiety, assessed with SAS-A, was related to acceptance of self as anxious using cross-tabulations and chi-square tests. The level of trait social anxiety was dichotomized to high/low according to belonging to high/low quartile of SAS-A distribution of respective sex.

Only questionnaires with complete responses were included in the analyses. Because of multiple comparisons, significance level of p was adjusted to $0.05/6 = 0.008$ using Bonferroni's procedure. IBM SPSS statistical software version 26 was used.

3. RESULTS

3.1. Reliability and validity of CQ-SAIC

Cronbach alphas for OR subscale (negative scale $\alpha = .81$, positive scale $\alpha = .88$, neutral scale $\alpha = .76$) demonstrated good internal consistency. Alphas for MEPE-peer and MEPE-self subscales were good, ranging from .78 to .87. The LPA subscale correlated positively

with the SAS-A total score (total sample: $r_s = .321, p < .001$; girls: $r_s = 0.358, p < .01$; boys: $r_s = .264, p < .01$), suggesting concurrent validity of LPA subscale.

3. 2. Own responses

Positive responding. Girls scored higher on the positive OR total scale and on all positive response items (all p 's $< .001$). Compared with boys, higher proportion of girls reported they would probably/surely show positive overt responses (49-53% vs. 9-15%), thoughts (60-74% vs. 27-28%), and emotional responses (64-91% vs. 17-71%) towards the anxious peer. Positive overt responses were rarer than covert responses among both genders. Very few (0.3%) of boys reported they would surely encourage or comfort the anxious peer, compared with 7% of girls. Less than one fifth of boys reported they would surely respond by feeling compassion/concern.

Negative responding. Gender differences were also found on the negative OR total scale and all of its items (all p 's $< .001$). Boys, more frequently than girls, reported they would probably/surely show negative overt responses (5-15% vs. 1-4%), thoughts (14-32% vs. 6-18%) and emotional responses (12-18% vs. 4-10%). Overt negative responses were more infrequent than covert responses, especially in girls. For example, no girls expected responding with ridiculing or teasing the anxious peer. See Table 1.

No gender differences were found on the neutral OR scale means.

Table 1.

Boys' and girls' negative and positive own responses (OR) towards the anxious classmate. Distributions of answers, means, significance of gender differences, and effect sizes.

	BOYS (n=313)				GIRLS (n=374)				Mean (SD)	p	d	
	Absolutely not		Surely		Absolutely not		Surely					
	1	2	3	4	1	2	3	4				
Positive OR-scale												
I would encourage her	19.9	65.6	14.2	0.3	1.95 (0.59)	7.1	44.0	42.0	6.9	2.49 (0.73)	<.001*	0.814
I would comfort her	29.8	60.9	8.9	0.3	1.80 (0.60)	8.2	39.2	45.5	7.1	2.52 (0.75)	<.001*	1.060
I would think: "I hope you can make it"	23.2	49.3	26.8	0.7	2.05 (0.73)	6.6	19.2	54.1	20.1	2.88 (0.80)	<.001*	1.084
I would think "She's doing fine"	22.6	50.8	24.9	1.7	2.06 (0.74)	7.9	32.3	50.7	9.0	2.61 (0.76)	<.001*	0.733
I would understand how she feels	5.6	23.9	52.8	17.7	2.83 (0.78)	1.9	7.1	47.8	43.2	3.32 (0.69)	<.001*	0.665
I would feel compassion and concern for her	27.3	55.3	14.1	3.3	1.93 (0.74)	9.0	26.8	46.8	17.3	2.72 (0.85)	<.001*	0.991
Total score of positive OR-scale					12.60 (3.03)					16.52 (3.46)	<.001*	1.205
Negative OR-scale												
I would laugh at Mary	32.0	52.1	13.5	1.3	1.84 (0.70)	64.6	31.9	3.0	0.5	1.40 (0.58)	<.001*	0.684
I would ridicule or tease Mary	56.4	37.6	4.3	1.7	1.51 (0.66)	86.0	13.2	0.8	-	1.15 (0.38)	<.001*	0.669
I would think: "she loses her nerve for nothing"	25.2	43.2	25.6	6.0	2.12 (0.86)	38.6	43.3	15.6	2.5	1.82 (0.78)	<.001*	0.365
I would think: "she is weird"	37.7	48.7	11.6	2.0	1.78 (0.73)	64.9	29.6	4.7	0.8	1.41 (0.62)	<.001*	0.546
I would feel glad over Mary's distress	37.5	50.3	9.2	3.0	1.78 (0.73)	69.8	26.4	3.3	0.5	1.35 (0.57)	<.001*	0.657
I would feel superior to Mary	28.4	54.1	14.9	2.6	1.92 (0.73)	42.7	46.8	9.9	0.5	1.68 (0.67)	<.001*	0.343
Total score of negative OR-scale					10.94 (3.14)					8.82 (2.44)	<.001*	0.754

**independent samples t-test with Bonferroni correction: p is significant at the level 0.05/6 = 0.008*

d = Cohen's d effect size: ≥ 0.20 = small, ≥ 0.50 = medium, ≥ 0.80 = large

3.3 Perceived likelihood of anxiety and acceptance of self

Half of participants (50.1%) expected they would likely/certainly experience similar anxiety as the anxious peer while performing before the class, girls more frequently than boys (54.1% vs. 45.4%, $p < .05$). Of participants, 79.1% reported accepting, and 20.9% non-accepting metacognitive stance towards one's self as anxious. Girls showed more frequent non-acceptance than boys (25.4% vs. 15.7%, $p = .002$).

Among girls, the acceptance/non-acceptance ratio was equal regardless of whether they evaluated likelihood of their own presentation anxiety as being high or low. Among boys, accepting stance was more frequent among those reporting the likelihood of their own presentation anxiety as high ($p = .001$). (See Table 2.) The 3-way interaction term (likelihood*acceptance*gender) was significant in the loglinear model ($p = .010$), indicating a gender effect on this association.

Table 2.

Boys' and girls' evaluations of the likelihood of experiencing presentation anxiety and their metacognitive acceptance of experiencing anxiety before the class.

	BOYS (n=306)		GIRLS (n=355)	
	Expected likelihood of own presentation anxiety*			
	Low	High	Low	High
	167	139	163	192
	54,6 %	45,4 %	45,9 %	54,1 %*
Acceptance of own presentation anxiety**				
YES				
I would accept myself despite anxiety	130	128	120	145
I would consider myself like others	77,8 %	92,1 %	73,6 %	75,5 %
NO				
I would consider myself weird or oversensitive	37	11	43	47
	22,2 %	7,9 %	26,4 %	24,5 %
	100	100	100	100
	Chi square = 11.634		Chi square = 0.168	
	Cramer's V = 0.195		Cramer's V = 0.022	
	$p = .001$		$p = .682$	

Low: denotes "surely not" or "hardly". High: denotes "likely" or "surely".

**Percentage of participants reporting likelihood high: girls>boys (Chi square = 4.171, df = 1, $p = .041$, Cramer's V = .079).*

*** Percentage of participants with non-accepting stance towards self as anxious: girls > boys (Chi Square = 9.181, df = 1, $p = .002$, Cramer's V = .12).*

Non-acceptance of self as anxious was three times more common in girls with a high level of trait social anxiety, compared to those with a low level (45.4% vs. 13.8%) The effect size was moderate (Chi Square = 18.094, $df = 1$, $p < .001$, Cramer's $V = .323$). In boys, the level of trait social anxiety was not associated with acceptance of self as anxious (high 26.0% vs. low 16.0%; Chi Square = 2.322, $df = 1$, $p = 0.128$, Cramer's $V = .123$).

3.4 Metaperception

Peer-referent metaperception. Compared with boys, girls expected more frequent positive classmate responses towards the anxious peer. Differences in this direction were found on the positive MEPE-peer scale total and on 5 of 6 individual items (all p -values $< .008$), the remaining item showed a trend level difference ($p = .009$). Overt positive responses from majority of classmates (almost all/all) were predicted being more infrequent than covert positive responses among both girls and boys (See Table 3).

Fewer gender differences in expecting negative classmate responses towards the anxious peer were found. However, expecting a majority (almost all/all) of classmates to laugh was more common (13% vs. 8%, $p = .006$) in boys. (Table 3). Neutral responding was clearly the most common expected response expected towards the anxious peer. Of all participants, 33% to 55% expected the majority of classmates to show overt/covert neutral responses, girls more often than boys (neutral MEPE-peer total score comparison, $p = .003$).

Self-referent metaperception. Girls predicted more frequent positive classmate responses towards themselves than boys did, shown by comparisons of positive MEPE-self scale total means, and individual item means (all p 's $< .008$). Overt positive responses towards self from the majority of classmates were expected to be rarer than covert positive responses, among both girls and boys. (Table 4).

Boys expected more frequent negative classmate responses towards themselves than girls did, shown by comparing negative MEPE-self total scores ($p = .001$), and items on laughing ($p < .001$) and feeling glad over the speaker's distress ($p = .008$). Other items mainly showed trend level differences in the same direction. Fewer girls expected the majority of classmates to respond negatively towards self than did boys on all response types: overt (3-4% vs. 4-12%), cognitive (4% vs. 7-8%), and emotional (4-5% vs. 9-11%).

Responses of neutral valence were also the most frequently expected responses towards self. Of all participants, 46% to 73% expected the majority of classmates to respond neutral, girls more frequently than boys (neutral MEPE-self total mean comparison, $p < .003$).

Table 3. Boys' and girls' metaperceptions of their classmates' positive and negative responses to a classmate (MEPE-peer). Distributions of answers, means, significance of gender differences, and effect sizes.

	BOYS (n=313)					GIRLS (n=374)					Mean (SD)	p	d				
	No one		Some		Almost all	No one		Some		Almost all							
	1	2	3	4	5	1	2	3	4	5							
Positive MEPE-peer scale	32.1	17.2	42.4	7.3	1.0	2.28	(1.03)	21.9	17.8	49.4	10.8	-	2.49	(0.95)	.006*	0.212	
They would encourage her	36.2	20.3	36.9	6.0	0.7	2.15	(1.01)	23.6	18.9	50.3	6.7	0.6	2.42	(0.94)	<.001*	0.277	
They would comfort her	16.8	21.8	51.5	9.2	0.7	2.55	(0.90)	10.2	15.7	52.8	19.6	1.7	2.87	(0.90)	<.001*	0.356	
They would think "I hope you can make it"	22.2	18.9	43.4	14.6	1.0	2.53	(1.02)	16.3	16.6	45.4	19.9	1.7	2.74	(1.01)	.009	0.207	
They would think "she's doing fine"	4.9	7.8	55.6	28.8	2.9	3.17	(0.81)	0.8	5.0	54.4	36.7	3.0	3.36	(0.67)	.001*	0.256	
They would understand how she feels	22.3	22.3	46.2	8.3	1.0	2.44	(0.96)	11.0	21.3	56.4	10.8	0.6	2.69	(0.83)	<.001*	0.279	
They would feel compassion and concern for her												15.08	(4.00)	16.55	(3.75)	<.001*	0.379
Total score of positive MEPE-scale																	
Negative MEPE-peer scale	18.5	10.6	57.9	11.3	1.7	2.67	(0.96)	23.4	15.1	53.6	7.7	0.3	2.46	(0.94)	.006*	0.221	
They would laugh at Mary	39.0	17.7	38.7	3.3	1.3	2.10	(1.01)	43.9	20.8	30.6	4.4	0.3	1.96	(0.97)	.072	0.141	
They would ridicule or tease Mary	16.1	11.2	45.7	25.0	2.0	2.86	(1.03)	16.5	10.5	54.0	17.1	1.9	2.77	(0.98)	.300	0.090	
They would think "she loses her nerve for nothing"	29.8	16.1	42.1	10.0	2.0	2.38	(1.08)	32.6	22.7	35.4	8.0	1.4	2.23	(1.04)	.060	0.141	
They would think "she is weird"	21.4	22.0	42.8	12.5	1.3	2.50	(1.01)	24.5	24.8	42.1	8.0	0.6	2.35	(0.96)	.048	0.152	
They would feel glad over Mary's distress	16.2	7.0	57.9	15.6	3.3	2.83	(0.99)	11.6	15.2	60.2	11.0	1.9	2.77	(0.87)	.385	0.064	
They would feel superior to Mary												15.39	(4.12)	14.57	(4.03)	.011	0.201
Total score of negative MEPE-scale																	

*independent samples t-test with Bonferroni correction: p is significant at the level 0.05/6 = 0.008.
d = Cohen's d effect size: ≥ 0.20 = small, ≥ 0.50 = medium, ≥ 0.80 = large

Table 4. Boys' and girls' metaperceptions of their classmates' positive and negative responses to themselves as presenter (MEPE-self). Distributions of answers, means, significance of gender differences, and effect sizes.

	BOYS (n=313)					GIRLS (n=374)					Mean (SD)	p	d	
	%	%	%	%	%	%	%	%	%	%				
	No one	Just one	Some	Almost all	All	No one	Just one	Some	Almost all	All				
	1	2	3	4	5	1	2	3	4	5				
Positive MEPE-self scale														
They would encourage her	41.1	17.9	32.5	7.0	1.7	2.10 (1.08)	16.9	16.0	55.2	11.3	0.6	2.63 (0.91)	<.001*	0.531
They would comfort her	64.6	8.9	22.5	3.0	1.0	1.67 (0.99)	30.5	15.8	47.6	5.3	0.8	2.30 (0.99)	<.001*	0.636
They would think "I hope you can make it"	44.0	11.9	37.1	5.6	1.3	2.08 (1.07)	14.3	13.2	57.4	13.2	1.9	2.75 (0.92)	<.001*	0.671
They would think "she's doing fine"	31.5	12.6	42.4	11.3	2.3	2.40 (1.11)	7.7	10.8	56.6	22.4	2.5	3.01 (0.86)	<.001*	0.614
They would understand how she feels	13.9	8.3	45.7	27.2	5.0	3.01 (1.06)	5.5	4.1	49.0	34.8	6.6	3.33 (0.88)	<.001*	0.328
They would feel compassion and concern for her	43.3	17.0	32.0	7.0	0.7	2.05 (1.05)	19.3	14.6	55.6	9.6	0.8	2.58 (0.94)	<.001*	0.547
Total score of positive MEPE-scale						13.32 (4.84)						16.59 (4.19)	<.001*	0.722
Negative MEPE-self scale														
They would laugh at me	33.4	14.9	40.1	8.6	3.0	2.33 (1.12)	51.4	17.4	27.3	3.3	0.6	1.84 (0.97)	<.001*	0.468
They would ridicule or tease me	56.6	14.6	25.2	1.7	2.0	1.78 (1.01)	62.7	18.8	15.7	2.5	0.3	1.59 (0.86)	.010	0.203
They would think "you lose your nerve for nothing"	43.2	15.8	33.0	5.0	3.0	2.09 (1.11)	48.8	16.3	30.9	3.3	0.8	1.91 (1.00)	.035	0.170
They would think "you are weird"	54.0	16.2	23.2	4.0	2.6	1.85 (1.07)	55.4	21.6	19.1	3.3	0.6	1.72 (0.92)	.096	0.130
They would feel glad over my distress	38.1	20.2	33.1	5.6	3.0	2.15 (1.09)	44.1	22.9	29.2	3.0	0.8	1.94 (0.96)	.008*	0.204
They would feel superior to me	25.6	15.0	48.5	8.3	2.7	2.48 (1.04)	18.7	19.0	57.3	4.4	0.6	2.49 (0.87)	.839	0.010
Total score of negative MEPE-scale						12.66 (4.78)						11.48 (4.06)	.001*	0.266

*independent samples t-test with Bonferroni correction: p is significant at the level 0.05/6 = 0.008
d = Cohen's d effect size: ≥ 0.20 = small, ≥ 0.50 = medium, ≥ 0.80 = large

4. DISCUSSION

We found clear gender differences across domains of interpersonal cognition and in self-evaluations between adolescent boys and girls as they relate to anxiety experienced in a classroom presentation situation. We also obtained support for the psychometric properties of the CQ-SAIC as a multidimensional measure of interpersonal cognition in adolescents.

Regarding the CQ-SAIC, reliability of OR, MEPE-peer and MEPE-self subscales ranged from .76 to .88 (i.e., within acceptable/good range; Cicchetti, 1994). The LPA subscale was moderately highly correlated with the SAS-A, a measure of general/trait social anxiety, lending support to its concurrent validity. As LPA assesses expected state-type anxiety in a presentation situation in classroom, it is both more specific and circumscribed than SAS-A. Of respondents, 12% reported they would surely, and 38% probably would experience presentation anxiety, frequencies concordant with the prevalence of public speaking fears in adolescents (Essau et al., 1999; Knappe et al., 2015).

In terms of gender differences, our finding that girls' own overt and covert responses towards the anxious peer were more positive and less negative than those of boys is concurrent with findings on girls' greater orientation to social connectedness, greater sensitivity to peers' distress, and tendency to use their attunement in interactions and relationships (Rose & Rudolph, 2006; Flannery & Smith, 2017). It is also in line with findings of a temporal dip in emphatic concern among boys approaching middle adolescence, the time frame of this study (van der Graaff et al., 2014); and with findings of adolescent girls attaching lower personal stigma to social anxiety than boys do (Jorm & Wright, 2008; Lynch et al., 2021).

Girls' higher prosocial responding in this context might also be related to a gender-specific (tend-or-befriend) response pattern to stress, more prevalent in adolescent girls than in boys (Taylor et al., 2000). The finding that both girls' and boys' own overt responses, whether positive or negative, were rare compared with their covert responses, and that neutral responses were the most common, could be interpreted to describe adolescents' uncertainty and avoidance of perceived risk of peer rejection (Jorm & Wright, 2008; Tomova et al., 2021).

Girls predicted becoming anxious in the classroom presentation situation slightly more often than boys. This finding is consistent with gender comparisons from population studies (Furukawa et al., 2014; Essau et al., 1999). Our findings of high levels of anticipated presentation anxiety among both genders, and of more even female-to-male ratio than found for general social anxiety and SAD (Knappe et al., 2015), indicates that classroom presentations are typical, developmentally salient contexts for the occurrence of anxiety for both genders.

Girls reported lower acceptance of self as anxious in the classroom presentation situation. This finding was unexpected, given that boys' gender-typical role stresses independence,

with which showing anxiety may be incongruent (Rice et al., 2021). However, some studies have found that relative to boys, girls report lower levels of self-compassion, and specifically more negative self-judgements as they approach mid-adolescence (Bluth & Blanton, 2015; Gill et al., 2018).

A gender difference was also found in associations between general social anxiety and accepting self as anxious while giving a presentation; nearly half of socially anxious girls showed non-acceptance. Indeed, clinical research has found low levels of self-compassion, and high levels of self-blame and self-criticism associated with shyness and social anxiety in adolescents and young adults (Henderson et al., 2014). Essau et al. (1999) studied mid-adolescents' subjective concerns in feared social situations and found that girls, more often than boys, feared becoming judged as weak/crazy, and felt ashamed of oneself. In a Scottish population study, social anxiety was associated with higher self-criticality and more negative self-judgements in 14-18-year-old girls, while higher levels of self-compassion were found in boys (Gill et al., 2018). Despite methodological differences, results from these studies point to similar gender differences as we found.

Our results on peer-referent metaperception relate to studies examining perceived social anxiety stigma. We found girls showed a higher expectancy of positive, and lower expectancy of negative classroom responses towards the anxious peer, indicating lower levels of perceived stigma. In stigma studies, perceived social anxiety stigma most often relates to expectations of the described individual being weak; however, gender differences have not been found (Jorm & Wright, 2008; Lynch et al., 2018). It may be that presentation anxiety symptoms, being very frequent, do not trigger expectations of stigmatizing classroom responses. The results may simply reflect girls' normative expectancy of attuned, emphatic concern and supportive behavior (Rose & Rudolph, 2006; Hollarek & Lee, 2022) in a stressful situation.

The results from analyses on MEPE-self scale reflect adolescents' social self-perceptions (Kenny, 1994). When imagining themselves as the presenter, girls again predicted more frequent positive, and fewer negative classroom responses compared with boys. This could reflect findings of adolescent girls reporting more positive and less negative peer group interactions overall, relative to boys (Gavin & Furman, 1989). In contrast, boys predicted more frequent negative classmate responses overall, and also overt negative responses (e.g., laughing) towards self. This finding might be explained by some boys adopting a traditional masculine role, even perceiving presentation situations as arenas in which to demonstrate a highly independent attitude. Research findings on masculinity-oriented adolescent boys' less favorable attitudes towards help-seeking (Clark et al., 2020) may translate to a similar denial/minimization of anxiety. On the other hand, boys' higher expectancies of overt negative responding might plainly reflect their slower development of social cognition and emotion recognition (van der Graaff et al., 2018).

Several study limitations should be considered. We asked adolescents to self-report on their own and peers' behaviors, attitudes, and emotions. Self-report methods should optimally be combined with observations of real-life interactions (Hollarek & Lee, 2022). Also, the CQ-SAIC presented the example of an anxious girl, which meant that boys reacted to an opposite-sex peer, and girls to a same-sex peer, which may have influenced the results (Tisak et al., 2012). Reavley and Jorm (2011) presented vignettes of a socially anxious female/male peer to young people, randomizing the gender of the person in the vignette, and found no in gender differences in attitudes, suggesting that such an effect might be small.

The present study also has strengths, including the use of a large representative population, and instruments validated for use in this age group. By covering several aspects of interpersonal cognition and assessing a typical, widely anxiety-inducing and ecologically relevant situation, the use of CQ-SAIC may reveal social cognitive response tendencies not accessible by strictly specified methods, such as facial emotion recognition methods (Hollarek & Lee, 2022).

Our findings add to research on gender differences in adolescents' inter- and intrapersonal cognition and their response tendencies in age-typical stress situations. The effect of gender on the acceptance of self as anxious, and the interaction between gender, trait social anxiety and acceptance of self merit further study.

Given the importance of self-development in adolescence and noting that half of girls with high trait social anxiety reported non-acceptance of self as anxious, clinical interventions for adolescents' social anxiety might benefit from adding work modules on self-concept/image (Moscovitch, 2009), or of using self-compassion techniques (Stefan & Cheic, 2022).

In conclusion, adolescent girls and boys differ markedly in their interpersonal cognition and self-evaluations related to experiencing anxiety in a class presentation situation. Research and development of interventions for adolescents' social anxiety may need to take in account such differences and tailor interventions for boys and girls, recognizing their needs in this developmental stage.

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APPENDIX:

The CQ-SAIC instructions and items presented to subjects on own reactions (OR), peer-referent metaperception (MEPE-peer), and self-referent metaperception (MEPE-self) subscales.

Own reactions (OR subscale)

My own reactions toward the anxious peer

Question:

How would you react if you were sitting in the classroom listening to Mary's performance?

Please read each item and circle the alternative that best describes your reaction. Be sure to answer all questions.

Scale: 1 = absolutely not, 2 = hardly, 3 = likely, 4 = for certain

- a) I would laugh at Mary (1) (2) (3) (4)
 - b) I wouldn't do anything in particular (1) (2) (3) (4)
 - c) I would support Mary (1) (2) (3) (4)
 - d) I would ridicule or tease Mary (1) (2) (3) (4)
 - e) I would comfort Mary (1) (2) (3) (4)
 - f) I would be just silent (1) (2) (3) (4)
-
- a) I would think: "Mary gets nervous for no reason!" (1) (2) (3) (4)
 - b) I would think: "I hope you will make it!" (1) (2) (3) (4)
 - c) I would think: "Mary is weird, isn't she?" (1) (2) (3) (4)
 - d) I would think: "Mary is doing fine, isn't she?" (1) (2) (3) (4)
 - e) I would not think anything in particular about Mary. (1) (2) (3) (4)
 - f) I would think that being nervous is normal. (1) (2) (3) (4).
-
- a) I would understand how Mary feels (1) (2) (3) (4)
 - b) I would feel pleasure at Mary's misfortune (1) (2) (3) (4)
 - c) I would feel superior to Mary (1) (2) (3) (4)
 - d) I would feel nothing particular toward Mary (1) (2) (3) (4)
 - e) I would feel neutral about the situation (1) (2) (3) (4)
 - f) I would feel compassion and concern for Mary (1) (2) (3) (4)
-

Peer-referent metaperception (MEPE-peer subscale)	Self-referent metaperception (MEPE-self subscale)
My classmates' reactions to Mary's performance	My classmates' reactions to my performance
<p>Question: <i>How do you think your own classmates would react to Mary's performance?</i></p> <p><i>Please circle the alternative that best describes the responses of your classmates. Be sure to answer all questions.</i></p> <p><i>How many students in your class would act in the following way?</i></p> <p>Scale: no one (0)—just one (1)—some (2)—almost all (3)—all (4)</p> <p>a) Laugh at Mary (0) (1) (2) (3) (4) b) Do nothing in particular (0) (1) (2) (3) (4) c) Support Mary (0) (1) (2) (3) (4) d) Ridicule or tease Mary (0) (1) (2) (3) (4) e) Comfort Mary (0) (1) (2) (3) (4) f) Be just silent (0) (1) (2) (3) (4)</p> <p>How many students in your class would think in the following way?</p> <p>a) "Mary gets nervous for no reason!" (0) (1) (2) (3) (4) b) "I hope Mary will make it!" (0) (1) (2) (3) (4) c) "Mary is weird, isn't she?" (0) (1) (2) (3) (4) d) "Mary is doing fine, isn't she?" (0) (1) (2) (3) (4) e) Think nothing particular about Mary (0) (1) (2) (3) (4) f) Think that being nervous is normal (0) (1) (2) (3) (4)f</p> <p>How many students in your class would feel in the following way?</p> <p>a) Understand how Mary feels (0) (1) (2) (3) (4) b) Feel pleasure at Mary's misfortune (0) (1) (2) (3) (4) c) Feel superior to Mary (0) (1) (2) (3) (4) d) Feel nothing particular toward Mary (0) (1) (2) (3) (4) e) Feel neutral about the situation (0) (1) (2) (3) (4) f) Feel compassion and concern for Mary (0) (1) (2) (3) (4)</p>	<p>Question: <i>How do you think your own classmates would react to your performance when you are giving the speech yourself?</i></p> <p><i>Please circle the alternative that best describes the responses of your classmates. Be sure to answer all questions.</i></p> <p><i>How many students in your class would act in the following way?</i></p> <p>Scale: no one (0)—just one (1) —some (2)—almost all (3)—all (4)</p> <p>a) Laugh at you (0) (1) (2) (3) (4) b) Do nothing in particular (0) (1) (2) (3) (4) c) Support you (0) (1) (2) (3) (4) d) Ridicule or tease you (0) (1) (2) (3) (4) e) Comfort you (0) (1) (2) (3) (4) f) Be just silent (0) (1) (2) (3) (4)</p> <p>How many students in your class would think in the following way?</p> <p>a) "You get nervous for no reason!" (0) (1) (2) (3) (4) b) "I hope you will make it!" (0) (1) (2) (3) (4) c) "You are weird, aren't you?" (0) (1) (2) (3) (4) d) "You are doing fine, aren't you?" (0) (1) (2) (3) (4) e) Think nothing particular about you (0) (1) (2) (3) (4) f) Think that being nervous is normal (0) (1) (2) (3) (4)</p> <p>How many students in your class would feel in the following way?</p> <p>a) Understand how you feel (0) (1) (2) (3) (4) b) Feel pleasure at your misfortune (0) (1) (2) (3) (4) c) Feel superior to you (0) (1) (2) (3) (4) d) Feel nothing particular toward you (0) (1) (2) (3) (4) e) Feel neutral about the situation (0) (1) (2) (3) (4) f) Feel compassion and concern for you (0) (1) (2) (3) (4)</p>