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Relations between empathy and anxiety dimensions in inpatient adolescents

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ABSTRACT

Background and objectives: A better understanding of the relationships between empathy and internalizing disorders is needed to plan therapeutic interventions for children and adolescents. Several studies have revealed positive relations of internalizing symptoms to personal distress and affective empathy. However, there is a lack of studies that take into account the multidimensional nature of anxiety in its relation to empathy.

Design: Structural equation modeling was used to test the moderated mediation model of the relations between empathy, depression and anxiety dimensions and the moderating role of gender on these associations in inpatient adolescents.

Method: A total of 403 inpatient adolescents aged 12–17 years completed the Basic Empathy Scale, the Multidimensional Anxiety Scale for Children, and the Beck Depression Inventory-II.

Results: Affective empathy was positively related to all the anxiety dimensions – most strongly to separation/panic and humiliation/rejection anxiety, whereas cognitive empathy was negatively related to social and separation/panic anxiety. Relations between affective and cognitive empathy and anxiety were partly mediated by depressive symptoms. No evidence of a moderating role of gender has been found.

Conclusions: Our results suggest that processes associated with empathy may play a role in the development or maintenance of anxiety symptoms.

Anxiety symptoms are highly prevalent among adolescents (Kashani & Orvaschel, 1990; Van Oort, Greaves-Lord, Verhulst, Ormel, & Huizink, 2009) and are associated with impairment in social functioning and increased risk for anxiety disorders and other mental disorders in adulthood (Bittner et al., 2007; Gregory et al., 2007; Olino, Klein, Lewinsohn, Rohde, & Seeley, 2010). Processes associated with empathy may play a role in the development of anxiety symptoms and related social difficulties (Gambin & Sharp, 2016). Understanding, sharing in the emotions of other people, and the ability to regulate empathic arousal are particularly important for effective social functioning in adolescence, when social reorientation takes place that heightens the salience of peer relationships (Nelson, Leibenluft, McClure, & Pine, 2005; Overgaauw, 2015). The aim of our study was to investigate the relations between empathy and various dimensions of anxiety in inpatient adolescents. A better understanding of the relationships between anxiety and empathy is important in order for clinicians to plan more effective therapeutic and preventive interventions, and for researchers interested in exploring social-cognitive functioning of individuals with internalizing disorders.

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Affective and cognitive empathy and anxiety

While debate continues regarding the exact nature of empathy as a construct (e.g., whether it represents a trait-like ability or not), empathy may be viewed as a personality-like construct referring to a tendency to understand and share in another's emotional state or context (Cohen & Strayer, 1996). Models of empathy have defined two components: (a) an affective component which refers to sharing in the emotions of others and (b) a cognitive component which refers to taking the perspective and understanding the emotions of another person (e.g., Batson et al., 1991; Cohen & Strayer, 1996; Decety & Jackson, 2004). Affective empathy can lead to sympathy defined as an other-oriented emotional reaction that involves feelings of concern and sorrow for another person. However, it can be also linked to personal distress – a self-oriented, aversive emotional response and apprehension of another's emotional state or condition (Batson, Fultz, & Schoenrade, 1987; Eisenberg, 2000). Sympathy and personal distress both involve an affective reaction to the perceived emotions of another person. However, affective empathy implies experiencing the same emotion as the target person (emotion congruence), whereas in empathic concern, and in personal distress, this affective reaction may not necessarily be the same (Jolliffe & Farrington, 2006).

   Several studies demonstrated that depression is associated with higher levels of personal distress and affective empathy, and some studies revealed that it is related to lower levels of cognitive empathy (but not affective empathy) measured by performance-based tasks (Gambin & Sharp, 2016; O'Connor, Berry, Weiss, & Gilbert, 2002; Schieman & Turner, 2001; Schreiter, Pijnenborg, & Aan Het Rot, 2013; Thoma et al., 2011). However, research concerning the relationship between anxiety and empathy is limited and shows positive associations of anxiety to personal distress and affective empathy (Gambin & Sharp, 2016; Joireman, Needham, & Cummings, 2002). None of the previous studies have taken the multidimensional nature of anxiety into account, and therefore did not evaluate how various anxiety dimensions or disorders are related to empathy. Although there is clear overlap between anxiety disorders (Kroenke, Spitzer, Williams, Monahan, & Löwe, 2007), each anxiety dimension possesses unique features that can be differentiated from each other (March, Parker, Sullivan, Stallings, & Conners, 1997; Spence, 1997). Moreover, various anxiety disorders and dimensions are characterized to some extent by different etiology (McLeod, Wood, Avny, McKay, & Storch, 2011) and require different therapeutic and preventive interventions (McLeod et al., 2011). Thus, exploration of how various anxiety dimensions are related to affective and cognitive empathy could help researchers to better understand the clinical picture of anxiety disorders and stimulate new approaches to planning therapeutic interventions.

Possible mechanisms underlying relations between empathy and anxiety

Behavioral indicators of affective empathy are present from the beginning of human life (e.g., Dondi, Simion, & Caltran, 1999; Martin & Clark, 1982; Roth-Hanania, Davidov, & Zahn-Waxler, 2011), whereas the first signs of cognitive empathy are observed as early as in 8–10-month-old infants (Roth-Hanania et al., 2011). From the second year of life, throughout adolescence, and until adulthood, individuals start to better understand the emotions of other people, and generate and implement increasingly sophisticated prosocial behaviors based on empathic feelings and thoughts (Eisenberg & Miller, 1987; Knafo, Zahn-Waxler, Van Hulle, Robinson, & Rhee, 2008; McDonald & Messinger, 2011; Roth-Hanania et al., 2011). These empathy-related abilities play a crucial role in effective social functioning (Findlay, Girardi, & Coplan, 2006). However, children are able to focus on distressed others and display tender, empathic feelings for the other, as well as helping behaviors, as long as they are able to regulate their empathic arousal (Davidov & Grusec, 2006; Eisenberg, Wentzel, & Harris, 1998; Ungerer et al., 1990). Tone and Tully (2014) proposed that biological predispositions to emotion regulation difficulties, together with adverse environmental factors, put highly empathic individuals at risk for the development of depressive symptoms and anxiety. For these individuals, emotions shared with other people may be overwhelming and be accompanied by maladaptive states such as personal distress and

interpersonal guilt. This may lead to failures in social interactions and in effect worries about rejection in relationships with other people. As a result, high levels of affective empathy could contribute to the development or maintenance of symptoms of anxiety, in particular social anxiety, as well as depression that could further adversely impact the severity of anxiety symptoms (Kircanski, LeMoult, Ordaz, & Gotlib, 2017; Moffitt et al., 2007). Moreover, sharing anxiety and other negative emotions with others may lead to an increase in levels of various anxiety symptoms.

On the other hand, low levels of cognitive empathy may result in difficulties in social functioning, experiences of failure in social interactions, and a heightened risk of developing social anxiety and depression. In particular, reduced understanding of the emotional states of other people, accompanied by high levels of affective empathy, may lead to difficulties in recognizing, understanding, and interpreting intense emotions that are shared with others. In effect, low levels of cognitive empathy, together with high levels of affective empathy, may have a negative impact on social functioning and severity of anxiety and depressive symptoms. Thus, in summary, we predict that high levels of affective empathy and low levels of cognitive empathy are associated with the highest severity of anxiety symptoms, in particular social anxiety. Finally, we expect that affective and cognitive empathy will lead to anxiety symptoms directly and via the depressive symptoms.

Present study

The aim of our study was to explore the relations between various anxiety dimensions and affective and cognitive empathy in inpatient adolescents using structural equation modeling. We investigated anxiety dimensions distinguished by March et al. (1997) in children and adolescents: physical symptoms (tense/restless and somatic/autonomic), harm avoidance (anxious coping and perfectionism), social anxiety (humiliation/rejection and public performance fears), and separation/panic. We expected that affective empathy would be positively related to all the anxiety dimensions and the most strongly to the humiliation/rejection anxiety (dimension of social anxiety) that is associated with close and intimate relationships with other people that often involve affective sharing. We predicted that cognitive empathy would be negatively related to social anxiety dimensions (humiliation/rejection and performance fears). We expected that relationships between affective and cognitive empathy and anxiety symptoms would be partly mediated by depressive symptoms. Figure 1 shows our proposed model outlining the relationships between study variables. Since relations between observed variables (specific anxiety dimensions and empathy) were of primary interest in our study, we did not add any additional latent variables to our model. As our study was conducted in clinical sample, that included adolescents with elevated levels of aggressive behaviors that were shown to be related to low levels of empathy (e.g., Miller & Eisenberg, 1988) and to anxiety (Neumann, Veenema, & Beiderbeck, 2010), we investigated if aggression may be a possible confounder in our analyses. Finally, since girls typically demonstrate higher levels of empathy (Baron-Cohen, 2002; Schulte-Rüther, Markowitsch, Shah, Fink, & Piefke, 2008) and anxiety (Lewinsohn, Gotlib, Lewinsohn, Seeley, & Allen, 1998) in comparison to boys, we have investigated if the mediational model was moderated by gender (moderated mediation model has been performed). In achieving the study's aims, we focused on a sample of inpatient adolescents to include participants with a large range of scores on various anxiety dimensions and characterized by various profiles of comorbidity between anxiety, depression, and aggression. Such an approach allows us to explore unique links between specific anxiety dimensions and affective and cognitive empathy. In addition, a better understanding of how empathy and anxiety relate to one another in clinical samples has direct clinical utility.

Method

Participants

This study included a sample of 483 consecutive admissions of adolescents between the ages of 12 and 17 to the adolescent unit of a private psychiatric hospital in a major metropolitan city
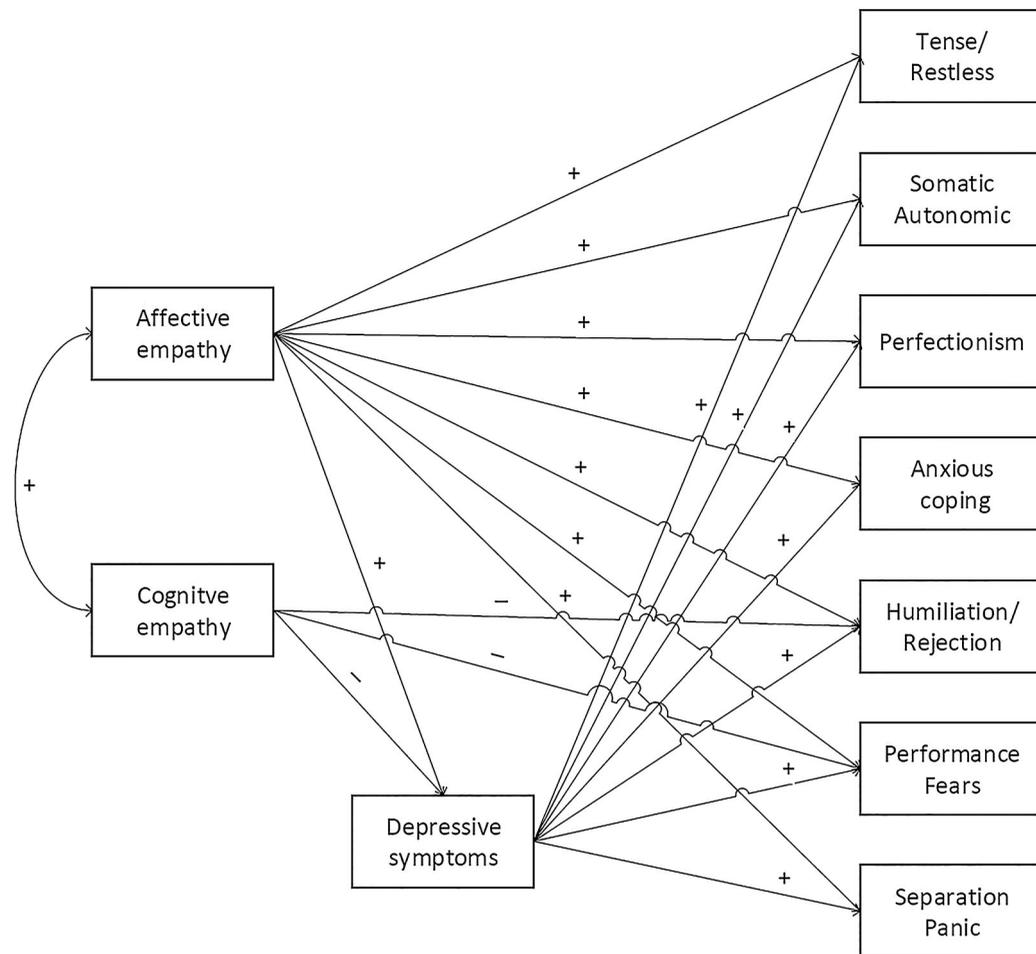
Figure 1. The proposed model in the current study (model a).
Note. "+" – positive relation, "–" – negative relation.

in the Southwestern United States between October 2008 and December 2014. Inclusion criteria for study participation consisted of: (1) any adolescent patient between 12 and 17 years of age and (2) adolescents who were sufficiently fluent in English to complete all research. Exclusion criteria for study participation comprised the following: (1) diagnosis of schizophrenia or any psychotic disorder and/or (2) diagnosis of mental retardation. Based on these criteria, patients were excluded before participation in the assessment protocol. After these exclusions, a total of 403 inpatient adolescents (260 females and 143 males) were used in subsequent analysis.

At admission, the most common diagnoses (not mutually exclusive) in this sample (based on the structured interview) were: major depressive disorder (52.7%), social phobia (24%), ADHD (23.8%), obsessive compulsive disorder (23.3%), oppositional defiant disorder (21%), specific phobia (19.8%), conduct disorder (18.3%), generalized anxiety disorder (17.8%), panic disorder (16.1%), and separation anxiety disorder (13.1%). The racial breakdown was as follows: 88.1% White/Caucasian, 3.7% Asian, 1.7% Black, 0.2% American Indian, Alaskan or native, and 6.2% multiracial or other. The sample was generally of high socioeconomic status.

Measures

The Basic Empathy Scale (BES, Jolliffe & Farrington, 2006) is a self-report measure developed to assess the multidimensional aspects of empathy and includes two subscales detecting two different components of empathic responsiveness: the Affective Empathy subscale, measuring emotional congruence with another person's emotions (11 items, e.g., *I get caught up in other people's feelings easily; After being with a friend who is sad about something, I usually feel sad.*), and the Cognitive Empathy subscale, measuring understanding another person's emotions (9 items, e.g., *When someone is feeling "down" I can usually understand how they feel; I can understand my friend's happiness when she/he does well at something.*). Adolescents were asked to rate 20 items on a 5-point Likert scale, ranging from 1 = Strongly Disagree to 5 = Strongly Agree. The Basic Empathy Scale was constructed in order to overcome shortcomings of the other existing measures of empathy (Hogan Empathy Scale (HES) (Hogan, 1969), the Questionnaire Measure of Emotional Empathy (QMEE) (Mehrabian & Epstein, 1972) and the Interpersonal Reactivity Index (Davis, 1983)) that assess related constructs such as personal distress, empathic concern, or perspective taking, but do not measure affective and cognitive empathy as the BES (Jolliffe & Farrington, 2006).

Good convergent and divergent validity have been demonstrated for both subscales of BES (Jolliffe & Farrington, 2006) in the population sample of adolescents. Internal reliability was acceptable ($a = .79$) for the cognitive empathy subscale and very good ($a = .86$) for the affective empathy for the current study.

The Multidimensional Anxiety Scale for Children. The MASC is a self-report questionnaire assessing the major dimensions of anxiety in children and adolescents aged 8–19 years. It consists of 39 items and MASC main and subfactors include (a) physical symptoms (tense/restless and somatic/autonomic), (b) harm avoidance (anxious coping and perfectionism), (c) social anxiety (humiliation/rejection and public performance fears), and (d) separation anxiety. In the current study, we focused on the MASC subfactors to assess relations between empathy and specific anxiety dimensions. Respondents rate each of the items using a four-point scale anchored with the response options: "never true about me" (score 0), "rarely true about me" (=1), "sometimes true about me" (=2), and "often true about me" (=3). The MASC is characterized by high retest reliability (March et al., 1997), favorable divergent and convergent validity (Baldwin & Dadds, 2007; March et al., 1997; Rynn et al., 2006; Villabø, Gere, Torgersen, March, & Kendall, 2012; Wei et al., 2014), and good internal reliability within the four subscales (e.g., Baldwin & Dadds, 2007; March et al., 1997). Internal reliability for the MASC subscales varied from questionable to excellent for our study: somatic symptoms – $a = .89$, tense/restless – $a = .83$, somatic/autonomic – $a = .82$, harm avoidance – $a = .74$, perfectionism – $a = .63$, anxious coping – $a = .66$, social anxiety – $a = .91$, humiliation/rejection – $a = .92$, performance fears – $a = .81$, and separation/panic – $a = .79$. T-scores for all the subscales were used in the statistical analysis.

The Beck Depression Inventory-II (BDI-II; Beck, Steer, & Brown, 1996) is a 21-item self-report measure of depressive symptoms based on DSM-IV criteria. Each item is rated on a 0–3 scale and total scores range from 0 to 63. The BDI-II has demonstrated excellent reliability and validity in samples of adolescent inpatients (Osman, Kopper, Barrios, Gutierrez, & Bagge, 2004). Internal consistency was excellent for the current study ($a = .93$).

Child Behavior Checklist (CBCL; Achenbach & Rescorla, 2001) is a parent-report questionnaire in which parents rate their adolescent's problem behaviors. The measure contains 112 problem items, each scored on a 3-point scale (0 – *not true*, 1 – *somewhat or sometimes true*, 2 – *very or often true*). The measure yields a number of scales, some empirically derived (the Syndrome Scales) and some theoretically based (the *DSM*-oriented scales). The Aggressive Behavior syndrome scale was used in the current study.

Procedures

This study was approved by the University of Houston and the Baylor College of Medicine Institutional Review Boards. All adolescents admitted to an inpatient psychiatric unit were approached

on the day of admission about participating in this study. Informed consent from the parents was collected first, and if granted, assent from the adolescent was obtained in person. Assessments occurred within the first 2 weeks of admission.

Data analytic strategy

All analyses were conducted in SPSS (version 24) and AMOS (version 24). Prior to data analysis, the data were evaluated for normality. All distributions for study variables approximated normality (skewness < |0.79| and kurtosis < |1.90|). Pearson correlations were conducted to explore relationships between the key study variables. Next, structural equation modeling was used to conduct path analysis model to examine the relationships among affective and cognitive empathy, depression and anxiety symptoms. Both the direct paths between affective and cognitive empathy and anxiety symptoms and indirect paths through depressive symptoms were explored. In evaluating the path models, the maximum likelihood chi-square statistic (χ^2) was examined, with a non-significant result indicating that there is no significant discrepancy between the model and the data. Additional fit indices were also examined, including the Tucker–Lewis Index (TLI), Bentler Comparative Fit Index (CFI), and Root-Mean-Square Error of Approximation (RMSEA). The suggested cutoff criteria for a good fit are as follows: TLI $\geq$ 0.90, CFI > 0.95 (Hu & Bentler, 1999), and RMSEA $\leq$ 0.05 (Browne & Cudeck, 1993; MacCallum, Browne, & Sugawara, 1996). To assess mediation, the present study employed a bootstrapping approach (n = 5000 bootstrap samples; Preacher & Hayes, 2008). This approach produces estimates of the standard errors of parameter estimates and a bias-corrected confidence interval of the mediation effects. All confidence intervals reported below refer to 95% bias-corrected confidence intervals.

Finally, a multiple group analysis was conducted to examine the possible moderating role of gender in our model. Specifically, an unconstrained model (one in which the paths are allowed to vary across sex) is compared with a constrained model (in which the paths are constrained to be equal across sex) to determine whether the model with constraints fits the data better than a model with no constraints. A statistically significant χ^2 difference value indicates a significant difference in model fit. If the unconstrained model is a better fit to the data, there is evidence of moderation (i.e., different relations between the included in our model variables across sex).

Results

Descriptive statistics for the female and male adolescents and the whole sample are presented in Table 1. Results of correlations between key study variables for girls and boys are presented in Table 2 and the correlations for the whole sample are presented in supplemental Table S1. Affective empathy was positively correlated with all the anxiety dimensions and depressive symptoms in female adolescents and with most of the anxiety dimensions in male adolescents. The strongest correlations (in the moderate range) were found between affective empathy and separation/panic and humiliation/rejection anxiety for both females and male adolescents. Low positive correlations were found between cognitive empathy and tense/restless and somatic autonomic anxiety in females, whereas the negative correlation between cognitive empathy and performance fears was found in boys. Other correlations between cognitive empathy and anxiety dimensions and depression were non-significant. As aggressive behaviors were not related to affective empathy (r(403) = −.025, p = .627) and to cognitive empathy (r(403) = −.027, p = .598) in our sample, we did not include it as a covariate in further analysis.

Finally, we conducted path analysis to test the relationships among study variables proposed in our model (model a, see Figure 1). Initial model resulted in significant chi-square statistic (χ^2 = 21.855, df = 5; p = .001), suggesting that there is a significant discrepancy between the model and the data. Moreover, RMSEA failed to indicate an acceptable fit (RMSEA = .092). However, TLI and

Table 1. Descriptive statistics for female and male adolescents and for the whole sample.

	Male adolescents		Female adolescents		Whole sample	
	Mean	SD	Mean	SD	Mean	SD
Age in months	192.64	15.71	187.90	17.97	189.58	17.33
IQ	106.45	9.98	106.74	15.54	106.62	13.49
Affective empathy	35.10	8.41	39.30	7.86	37.81	8.30
Cognitive empathy	35.28	4.97	36.19	4.60	35.87	4.75
Tense/Restless	59.74	14.10	57.45	13.20	58.27	13.55
Somatic/Autonomic	53.41	12.39	52.20	12.77	52.63	12.63
Perfectionism	47.38	11.36	48.30	12.10	47.98	11.84
Anxious coping	48.17	10.76	45.50	11.56	46.45	11.34
Humiliation/Rejection	59.58	14.58	60.61	13.46	60.25	13.86
Performance Fears	55.83	14.61	57.30	13.69	56.77	14.03
Separation/Panic	53.60	12.79	55.38	15.25	54.75	14.43
Depressive symptoms	22.39	14.16	28.33	13.69	26.22	14.13
Aggressive behaviors	11.63	7.16	12.18	7.14	11.99	7.14

CFI indicated a good fit of the model to the data (TLI = .904, CFI = .989). Thus, we made changes to this model based on conceptual and statistical considerations. Firstly, we trimmed the pathway between depressive symptoms and anxious coping that did not reach significance. Secondly, based on modification indices we included one additional pathway between cognitive empathy and separation/panic symptoms. These two changes resulted in substantial improvement in model fit ($x^2 = 6.494$, df = 5; $p = .261$, RMSEA = .027, CFI = .999, TLI = .992). The final model (model b) is presented in Figure 2. Affective empathy was positively related to all the anxiety dimension. Cognitive empathy was negatively associated with humiliation/rejection, performance fears, and separation/panic dimensions of anxiety.

To explore mediations, the indirect effects were tested using bootstrapping. Results showed that depressive symptoms partly mediated relationships between affective empathy and (1) tense/restless (ab = .312, 95% CI [.211, .430], $p < .001$); (2) somatic/autonomic (ab = .236, 95% CI [.158, .336], $p < .001$), (3) perfectionism (ab = .076, 95% CI [.032, .135], $p = .001$), (4) humiliation/rejection (ab = .275, 95% CI [.185, .380], $p < .001$), (5) performance fears (ab = .288, 95% CI [.191, .407], $p < .001$), and (6) separation/panic (ab = .087, 95% CI [.035, .134], $p = .001$). Moreover, depressive symptoms partly mediated the relationship between cognitive empathy and (1) humiliation/rejection (ab = −.145, 95% CI [−.299, −.005], $p < .05$), (2) performance fears (ab = −.152, 95% CI [−.321, −.044], $p < .05$), and (3) separation/panic (ab = −.045, 95% CI [−.114, −.044], $p < .05$).

To examine sex as a moderator of our model, a multi-group analysis was conducted. A model in which all paths were free to vary by sex was compared to a model in which each of these paths was held equal for boys and girls. The unconstrained and fully constrained models did not differ significantly (x^2 (18) = 14.549, $p = .693$), suggesting that the relationships between model variables did not differ between boys and girls.

Table 2. Results of Pearson correlations between key study variables separately for male and female adolescents.

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
1. Cognitive empathy	–	.269**	.007	.046	.064	.051	−.075	−.216**	−.070	−.026
2. Affective empathy	.485**	–	.218**	.202*	.082	.135	.273**	.170*	.316**	.266**
3. Tense/Restless	.126*	.326**	–	.762**	.293**	.407**	.584**	.561**	.473**	.620**
4. Somatic Autonomic	.177**	.306**	.779**	–	.273**	.437**	.499**	.522**	.413**	.553**
5. Perfectionism	.197**	.303**	.259**	.257**	–	.474**	.410**	.375**	.386**	.227**
6. Anxious Coping	.104	.246**	.322**	.347**	.378**	–	.355**	.376**	.508**	.260**
7. Humiliation/Rejection	.014	.320**	.482**	.346**	.449**	.176**	–	.687**	.472**	.454**
8. Performance Fears	−.110	.133*	.456**	.309**	.296**	.222**	.636**	–	.504**	.530**
9. Separation Panic	.051	.343**	.434**	.539**	.335**	.570**	.320**	.368**	–	.328**
10. Depression	.049	.286**	.580**	.460**	.196**	−.001	.575**	.483**	.203**	–

Note: Correlations for male adolescents are presented above the diagonal, for female adolescents are below the diagonal. *$p < .05$, **$p < .01$.
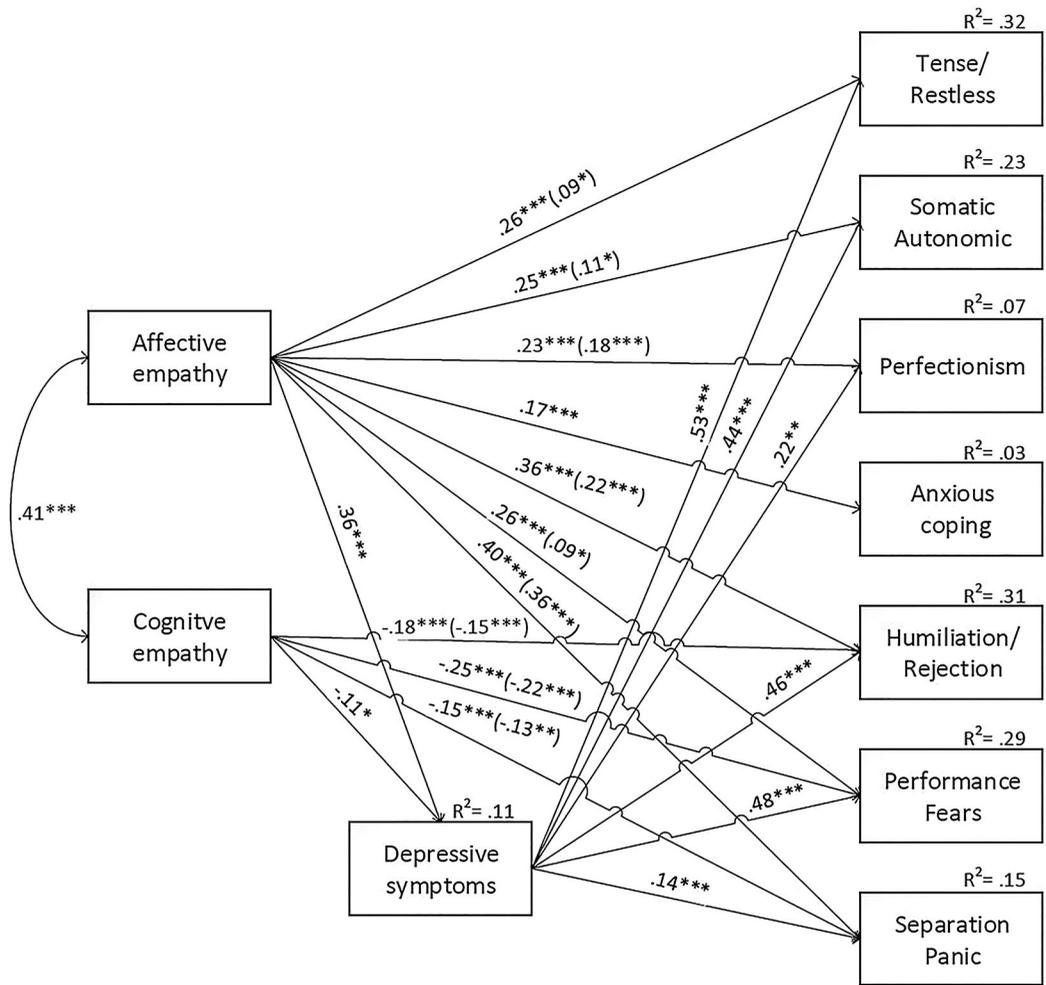
Figure 2. Final SEM model (model b).

Note. *p < .05, **p < .01, ***p < .001. Direct and total effects of the independent variables on the dependent variables are reported inside and outside of parentheses, respectively. R^2 was presented at the upper right side of the predicted variables. All correlations between the residuals of the dependent variables were significant (p < .001, standardized path coefficients varied between .17 and .33) and were freely estimated.

Discussion

Our study is the first to explore relations between various anxiety dimensions and cognitive and affective empathy in a sample of inpatient adolescents. Consistent with our predictions, the results of our model show that affective empathy is positively related to all the anxiety dimensions. It is possible that high empathic arousal and anxious feelings that patients perceive in others may lead to intensification of their own already present anxious state and arousal and thus increase anxiety symptoms. Confirming our hypothesis, one of the strongest associations in our study was found between affective empathy and humiliation/rejection anxiety. The second anxiety dimension linked the most strongly to affective empathy was separation/panic anxiety. We can assume that for some of the adolescents characterized by high levels of affective empathy, emotions shared with other people may be overwhelming making it difficult to behave in socially adequate ways in interactions with others involving affective sharing. Thus, they may experience various negative feelings (e.g., feelings of personal failure, helplessness, and guilt) and may feel anxious that they will be rejected, humiliated, or criticized by others. Affective sharing may be particularly difficult for children who are exposed to

chronic negative emotions of their parents and are overinvolved in caring for the parent (Tully & Donohue, 2016; Zahn-Waxler & Van Hulle, 2011). Empathy, that promotes building intimacy and closeness with other people, in such circumstances may contribute to relationships with parents that limit a child's autonomy and independence and lead to separation anxiety symptoms. However, further longitudinal studies are needed to test these hypotheses and disentangle what mechanisms are underlying relationships between affective empathy and various anxiety dimensions.

Moreover, our results show that cognitive empathy is significantly negatively related to social anxiety, as well as separation/panic anxiety when cognitive empathy and affective empathy are both included as predictors of anxiety symptoms: low levels of cognitive empathy together with high levels of affective empathy are associated with the highest severity of social anxiety (humiliation/rejection and performance fears) and separation/panic anxiety. We may assume that adolescents who experience high levels of empathic arousal and have difficulties to recognize, interpret, and understand intense emotions shared with other people, display difficulties in effective social functioning, and in effect are at risk of development of social anxiety and separation/panic symptoms.

Correlations between affective and cognitive empathy and anxiety dimensions were partly mediated by depressive symptoms. Relations between affective and cognitive empathy and anxiety symptoms were still significant after taking into account the influence of depressive symptoms. These results indicate that affective empathy is not only related to depression and subjective personal distress that is common to anxiety and depression (Clark & Watson, 1991), but is also uniquely associated with anxiety. Sharing in the emotions of other people may evoke in adolescents negative thoughts involving past failure that are characteristic for depression (Clark, Beck, & Stewart, 1990), as well as thoughts of anticipated harm and danger that are specific for anxiety disorders (e.g., worries about distress and failure in future interactions involving affective sharing) (Clark et al., 1990).

It is noteworthy that our study was conducted in a specific sample of patients of a private psychiatric hospital. It is possible that positive correlations between anxiety dimensions and affective empathy are stronger in this group. Thus, we cannot generalize these findings to other adolescent populations. Second, most of the adolescents underwent psychotherapeutic and psychopharmacological interventions that may have influenced the assessment of empathy and anxiety. This concern is somewhat mitigated by the fact that assessments were conducted within the first two weeks of admission, during which interventions were unlikely to have taken effect. Moreover, an additional limitation to the study was that the psychometric properties of the Basic Empathy Scale were not investigated in clinical samples in previous studies. In addition, empathy and anxiety were measured only with self-report measures that are subjective and vulnerable to biases such as social desirability or the participant's mood (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). Finally, no conclusions on cause–effect relations can be drawn based on our results given the cross-sectional nature of our findings.

Moreover, effectiveness of various interventions focused on building empathy-related abilities in individuals with anxiety disorders should be evaluated in future studies. Based on our results, we suggest that interventions focused on enhancing affective empathy may not be beneficial, or even may lead to adverse effects in individuals with anxiety disorders. Indeed, a study conducted by Klimecki, Leiberg, Ricard, and Singer (2014) showed that training in empathic resonance resulted in increases in negative affect in a population sample of women. However, compassion training cultivating feelings of warmth, love, and care toward other people was shown to strengthen positive affect and activation in brain networks associated to affiliation and reward in their study. Compassion requires an ability to understand or share in the emotions of other people; however, it also entails additional skills such as sensitivity to another's needs, non-judgment, outward attention, and orientation toward action (Goetz, Keltner, & Simon-Thomas, 2010). In addition, mindfulness-based stress reduction programs focused on paying attention and being aware in the present moment have been shown to lead to a reduction in empathic distress and increases in perspective taking abilities (Birnie, Speca, & Carlson, 2010). Thus, interventions enhancing compassion and mindful awareness could be helpful in overcoming empathic distress in individuals with anxiety disorders. Interventions

focused on building understanding of emotions and mental states of other people (e.g., mentalization-based treatment) could also be valuable for individuals with social anxiety disorders, particularly those characterized by low levels of cognitive empathy. Further studies are needed to investigate the effectiveness of such interventions in children, adolescents, and adults with various anxiety disorders.

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