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ORIGINAL ARTICLE

Empathic skills and theory of mind in female adolescents with conduct disorder

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Objective: Most studies on conduct disorder (CD) have focused on male adolescents, disregarding analysis of this psychopathology in women. The purpose of this study was to identify differences in empathy and theory of mind (ToM) in a group of adolescent women with CD and a control group.
Method: Thirty-six adolescent women were selected from an initial sample of 239 adolescents (CD group = 18, control group = 18). Empathy and ToM were evaluated through objective instruments. Mean comparisons and multivariate analysis were performed to ascertain differences between cases and controls and to propose a prediction model based on clinical status.
Results: Significant differences in empathic abilities and ToM were found between the groups. The model that differentiated both groups was composed of eye-reading ability, perspective taking, and personal distress.
Conclusion: These findings are consistent with previous studies. Capacity to take the other's perspective and the recognition of emotions in the face are protective factors against CD in women.

Keywords: Conduct disorder; empathy; theory of mind; women; callous unemotional traits

Introduction

Conduct disorder (CD) during childhood and adolescence is characterized by social norms violations such as theft, private property destruction, transgressions of other people's rights, physical and relational aggressions, extortion, and intimidation. The most recent description of this pathology has included a relevant clinical specifier termed callous-unemotional traits (CUT), which is associated with more serious conduct problems and worse response to treatment.[1] Adolescents with CD and CUT present limitations in prosocial emotional processing, serious difficulties in feeling guilt or remorse, and a significant decrease in their empathic abilities.[1] The prevalence of this disorder in children and adolescents is believed to range between 2% and 10%, with men being more frequently affected (male-to-female ratio 4:1). Male adolescents exhibit more aggressive behaviors, such as fighting, vandalism, and theft, while women more often seem to show relational aggressions that imply a deterioration of relationships with others, emotional manipulation, and a higher tendency to deceit, truancy, and prostitution.[1-3]

Several studies of CD have included samples of male adolescents or of both genders.[4,5] There is a dearth of research on this disorder exclusively in women. Currently, a few clinical differences have been established to distinguish the main features of CD in each gender[4-7]; however, knowledge about the differences between women with and without CD, particularly regarding empathy and social cognition processes, is scarce.

Recent studies have pointed out social cognition and empathy deficits in women with CD.[8,9] These studies have established that women with CD have a higher deficit of facial acknowledgement of happiness, sadness, and fear – emotions linked to empathic answers and prosocial behavior. Research has also described that these adolescents present slower emotional processing, which limits the decoding of such emotions and generates a delay in the empathic responses needed to understand and affectively bond with the emotional and mental states of others.[9-11] Previous findings, supported by clinical evidence, proposed the CUT specifier for CD subtypes that involve absence of guilt and lack of empathic concern for others.[12] According to this, women with CD and limitations in abilities related to the theory of mind (ToM) have important psychopathic traits and blunted prosocial responses, which involve a lack of concern for the negative consequences caused by their actions and low empathic concern.[11-13]

Hence, empirical evidence shows that deficits in emotional and empathic processing and in ToM abilities are predictive of antisocial conduct during childhood and adolescence. Specifically, empathy has been described as an inhibitory response to aggressive and antisocial conducts that may lead to prosocial behaviors, as it may have an impact over the abilities to feel (affective component) and understand (cognitive component) emotional and mental states and, therefore, to experience guilt or embarrassment when one's actions affect others negatively.[14] On the other hand, some studies suggest that deficits in empathy and, particularly, in ToM abilities in adolescents

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lead to difficulties in social adaptation, in interactions with peers, and in family and academic scenarios. In this line, children and adolescents who have difficulty "reading" the emotional states of others through eye-reading ability and difficulty understanding situations (whether affectively or cognitively) within context in their interactions with others are more likely to experience behavioral problems in their development.[15-18]

The purpose of this study was to identify and analyze possible differences in empathy and ToM between a group of female adolescents with CD and a control group. Based on empirical evidence, we hypothesize that there will be significant differences between the two groups, with the control group performing better on measures of empathy and ToM. Our second hypothesis states that women with CD might have lower empathy scores due to CUT compared to healthy controls, and, finally, that empathic dimensions and ToM variables will be predictive of CD in female adolescents.

Method

Participants

This study is part of a larger research project, "Theory of mind and empathy as predictors of conduct disorder in adolescence,"[17] conducted on a total sample of 239 adolescents (CD group = 157; no CD group = 82). Only 18 participants in the CD group were women. From this initial sample, 36 female adolescents aged 15 to 17 years were selected (18 with CF from Centro Juvenil Amigoniano, and 18 controls without CD from Instituto Técnico San Rafael). Only women who met DSM-IV-TR criteria for CD[19] were selected to compose the case group; then, the same number of controls was selected randomly.

The Conduct Disorder Module of the International Neuropsychiatric Interview (MINI)[20] was applied to the CD group. In the no-CD group, the DSM-IV-TR criteria were applied to ensure that a diagnosis of conduct disorder was not present. The clinical history of all participants was studied and subjects with evidence of psychosis, autism, neurological diseases, or any medical condition that might suggest another developmental, emotional, or behavioral disorder were excluded. Participation in the study was voluntary, and both the adolescents and their parents or legal guardians provided written informed consent.

Instruments

Conduct disorder

Clinical interviewers used the DSM-IV-TR criteria for screening[19] and confirmed the diagnosis with the Conduct Disorder module of the MINI.[20] CUTs were explored using the same instrument. The MINI is a short structured diagnostic interview that explores the main psychiatric disorders in axis I of the DSM-IV[21] and the ICD-10.[22] Validity and reliability studies have compared the MINI to the Structured Clinical Interview for DSM, Psychiatric Patients (SCID-P)[23] for the DSM-III-R[24] and the Composite International Diagnostic Interview (CIDI). The results of these studies show that the MINI has acceptably high validity and reliability and can be administered in a shorter period of time (from 11.6 to 18.7 minutes; 15 minutes on average) than the aforementioned instruments.

Empathy

The Interpersonal Reactivity Index[25] was used for multidimensional assessment of empathy. This test evaluates four dimensions of empathy – two in the cognitive component (perspective taking and fantasy) and two in the affective component (empathic concern and personal distress) – and consists of 28 items, answered on a 5-point Likert scale ranging from "Does not describe me well" to "Describes me very well." The measure has four subscales, each made up of seven different items. These subscales are:

- Perspective taking: the tendency to spontaneously adopt the psychological point of view of others;
- Fantasy: taps respondents' tendencies to transpose themselves imaginatively into the feelings and actions of fictitious characters in books, movies, and plays;
- Empathic concern: assesses "other-oriented" feelings of sympathy and concern for unfortunate others;
- Personal distress: measures "self-oriented" feelings of personal anxiety and unease in tense interpersonal settings.

The internal consistency of the dimensions ranges from 0.68 to 0.79, and test-retest reliability varies from 0.61 to 0.81 during a period of 60 to 75 days.

Theory of mind

The Faux Pas Test, based on the procedure described by Stone et al.,[26,27] consists of 20 stories, of which half contain a social *faux pas* and the other half are control stories with a minor conflict that does not constitute a *faux pas*. There are also *faux pas* detection questions and memory questions that measure the comprehension of details in the story. For example, in one story, Mary says "I don't think I've met this little boy" to a child's mother; in fact, the child is a little girl. The speaker did not say this out of any malicious intent, but out of a mistaken belief. The *faux pas* in this case lies in the fact that it may unintentionally upset parents for their little girl to be thought of as a boy. In another story, Tim is in a restaurant and spills his coffee. He turns to the waiter and says, "I've spilt my coffee. Would you be able to mop it up?" In fact, the other person is not a waiter but simply another customer. Once again, there is no malice involved; the speaker was simply mistaken. However, the *faux pas* in this case arises because it is a bit rude to ask a bystander to clean up your mess.[26] The scoring system used was the one established by Stone et al.,[26] with test-retest markers of reliability of 0.83 and evaluator reliability of 0.76.

The Reading the Mind in the Eyes Test was used to measure emotion-reading ability and the attribution of mental states of others by including their beliefs and intentions.[28] The test consists of 36 pictures of different

actors' eyes. The pictures are presented one at a time in a fixed order. Each stimulus consists of four written words describing emotions, among which the participant has to choose that which best describes what the person is thinking or feeling. One point is awarded for every correct response; the maximum total score is 36. Scoring data were obtained from studies conducted in a general Latin American population.[29]

Procedure

All adolescents were evaluated by clinical professionals affiliated with the Basic and Applied Neuroscience research group from Fundación Universitaria Luis Amigó. The clinical criteria for conduct disorder (DSM-IV-TR[18]) were applied to each adolescent. Those who did not meet the criteria were assigned to the control group, while those who met the criteria underwent the MINI[19] and were then classified in the CD group with CUT as appropriate. Then, empathy and ToM tests were administered to both groups. All assessments were performed in a single 60-minute session in a quiet and comfortable place.

Statistical analysis

SPSS version 22 was used for data analyses. The hypothesis of normality was tested by the Shapiro-Wilk method for age variables and test scores (ToM and empathy). All variables were normally distributed. Measures of central tendency were described for age and test scores, which were also compared by the Student *t*-test. Then, a multivariate analysis of covariance (MANCOVA) was performed to determine whether the empathy and ToM test scores differed according to the independent variable clinical status (CD vs. no CD). Finally, a binomial logistic regression model was constructed to establish predictors of risk for or protection against CD in female adolescents.

Results

The means and standard deviations of ToM and empathy scores are described in Table 1.

To determine whether empathy and ToM test scores differed between the CD and no-CD groups, MANCOVA was performed. CD diagnostic status (CD vs. no CD) was taken as a factor, while the Eye Test, the Faux Pas Test, and the empathy represented by the fantasy, empathic concern, perspective taking, and personal distress domains were the dependent variables.

According to Wilks's lambda statistic, MANCOVA showed that the dependent variables (empathy and ToM) were significantly affected by the independent variable, meaning that scores in the empathy and ToM test dimensions were affected by the diagnosis of CD ($F = 24.64$; $p < 0.000$). In a test of effects among subjects, the only variable that did not predict differences between the groups was the Faux Pas Test ($F = 2.69$; $p = 0.110$). The remaining dependent variables – Eye Test ($F = 52.09$; $p < 0.000$), perspective taking ($F = 43.16$; $p < 0.000$), and personal distress ($F = 16.89$; $p < 0.000$) – clearly differentiated the two groups.

A binomial logistic regression model (Table 2) was constructed to establish predictive factors according to the categorical variable clinical status (CD vs. no CD). Initially, the Introduce method was used and all variables that represented empathy and ToM measurements were included (fantasy, perspective taking, personal distress, empathic concern, Eye Test, and Faux Pas Test). Subsequently, the variables with a very high standard error or with a confidence interval including the null value were eliminated from the model. Only the variable Fantasy was thus eliminated from analysis. Then, a new regression model was applied using Wald's backwards elimination method, where the omnibus coefficient showed significant changes in the predictive test with the variables Eye Test, perspective taking, and personal distress ($\chi^2 = 43.34$; $p < 0.000$). Finally, with a more consistent filter, a model was applied again through the Introduce method, selecting the aforementioned variables. According to this model, the

Table 1 Means and standard deviations of empathy and theory of mind variables for both groups

	CD (n=18)		No CD (n=18)				
	Mean	SD	Mean	SD	*t*	p-value	*d*
Age	16.33	0.76	16.28	2.63	-0.08	0.93	
Faux pas	91.72	29.99	92.17	31.36	0.04	0.96	
Eye reading	13.74	5.40	27.91	5.94	7.21	0.000*	0.78
Perspective taking	14.44	5.04	25.17	4.74	6.57	0.000*	0.75
Fantasy	22.17	5.56	23.56	4.66	0.81	0.42	
Empathic concern	16.83	3.58	24.78	4.03	6.24	0.000*	0.73
Personal distress	15.33	3.83	21.39	4.93	4.11	0.000*	0.58

d = effect size (Cohen's); SD = standard deviation.
* $p < 0.001$.

Table 2 Binary logistic regression model for clinical status according to empathy and theory of mind test scores

	B	Standard error	Wald	p-value	Exp (B)	95%CI
Perspective taking	-0.12	0.20	4,20	0.03	0.80	0.71-0.88
Eye Test	-1.17	0.64	3.30	0.05	0.30	0.87-0.96

95%CI = 95% confidence interval.

empathy dimension perspective taking and the Eye Test were predictors of clinical status. The predictive capacity of this model was 62.4.

Discussion

The purpose of this study was to analyze differences in empathy and ToM between a group of female adolescents with CD and a control group without CD. The adolescents with CD scored very low on the empathy test compared to the control group. Specifically, significant differences were found in the cognitive dimension perspective taking ($p < 0.001$; $d = 0.78$) and the affective dimensions empathic concern ($p < 0.001$; $d = 0.75$) and personal distress ($p < 0.001$; $d = 0.58$). These empathic abilities have been described as factors that inhibit the expression of aggressive and antisocial behaviors during childhood and adolescence,[8,14,29] and their adequate development generates affective and cognitive mechanisms that allow the subject to understand other people's emotions, to adopt their perspective, and to respond affectively toward their anguish. These results validate our first and second hypotheses about the mean differences between groups, the superior performance of the control group on measures of empathy and ToM, and the lower affective empathy scores in the CD group; all of the significant differences had a large size of effect as measured by Cohen's *d* statistic.

Differences in affective empathy scores between groups were also observed, specifically in the personal distress and empathic concern dimensions; this was attributable to the poor emotional response of adolescents in the CD group toward the negative experiences and needs of others, as well as to a deficit in identifying emotionally connected facial traits. Several studies support this finding and link it to CUTs.[3,8,30-33]

On the other hand, the Faux Pas Test showed no difference between groups. Both the CD and no-CD groups performed very similarly and within the expected response rate for the general population. This runs counter to our expectation that adolescents in the CD group would score lower than controls, as suggested by previous studies.[14,18] However, there is also evidence that the development of abilities in ToM does not guarantee social adaptation.[34] Some children and adults can consistently use their ToM abilities for antisocial purposes. For example, subjects with Machiavellian personality characteristics have a tendency to manipulate interpersonal situations to their benefit, and their abilities in ToM work as a psychological mechanism that can facilitate the achievement of such strategies in their relations with others.[34] Consistent with this, subjects with Machiavellian beliefs have also been found to exhibit a kind of affective coldness without empathic concern and take advantage of their ToM abilities as a social tool they use according to their own convenience.[35-37] This may partially explain why mean Faux Pas Test scores were similar in both groups of adolescents, and suggests the CUTs of adolescents with CD can be a contributing factor to the instrumental use of their ToM abilities. This operational use of mind-reading abilities should be further explored both in healthy controls and in subjects with CD.

According to our results, the ability to take the other's perspective and to "read" the other's emotional states would probably represent predictive factors involved in the inhibition of dissocial conducts. The cognitive dimension of empathy (perspective taking) plays a significant role in the generation of behaviors that constitute an empathic response toward others' anguish, based on the capacity to "read" their emotional states. Some authors corroborate this, and suggest the primacy of perspective taking and reading of emotions in others as mechanisms that allow the activation of an emotional system compatible only with help behaviors, inhibiting hostile responses and facilitating a regular social function.[38-40] Thus, the deficits in perspective taking and eye reading exhibited by the CD subjects would increase their likelihood of displaying antisocial behavior and worsening social relations,[41,42] as often happens in adolescents with CD. The empirical evidence regarding abilities for eye reading and empathy is consistent with our findings, and suggests a close connection between these abilities and facilitation of proper social functioning. The existing evidence also argues for differences in ToM and empathy between adolescents with and without CD, aside from their probable interdependence as predictive factors in regular empathic emotional development and prosocial behavior.[42]

The findings of this study will contribute to a better understanding of CD in women and its connection to the empathic and social cognition processes. They also point to a possible line of future research, namely, further investigation on the instrumental use of abilities in ToM and CD during childhood and adolescence. A deeper exploration of CUTs and their possible effects on social and moral cognition in children and adolescents with CD may also be warranted.

Finally, the limitations of this study must be discussed. First, the small sample size may have affected the statistical power to reveal significant associations among the variables of interest, which has a direct effect on the predictive effect demonstrated in the regression model. Second, the use of social cognition measurement instruments that have not been standardized for use in the Colombian context may have led to errors in interpretation of results.

Disclosure

The authors report no conflicts of interest.

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