Behavioral Psychology /Psicología Conductual

Behav. Psychol. **2026**; 34(5): 48306
https://doi.org/10.31083/BP48306

Original Research

Relationships and Effects of Self-Serving Cognitive Distortions and Emotional Intelligence on Adolescent Prosocial Behavior

Arcadio de Jesús Cardona-Isaza[1,*], Remedios González-Barrón[2], Inmaculada Montoya-Castilla[2]

[1]Department of Psychosocial Studies, Faculty of Psychology, Universidad del Valle, 760043 Cali, Valle del Cauca, Colombia
[2]Department of Personality, Assessment and Psychological Treatment, University of Valencia, 46010 Valencia, Spain
*Correspondence: arcadio.cardona@correounivalle.edu.co (Arcadio de Jesús Cardona-Isaza)

Academic Editor: María del Mar Gómez Pérez
Submitted: 17 November 2025 Revised: 1 March 2026 Accepted: 5 March 2026 Published: 16 September 2026

Abstract

Background: Self-serving cognitive distortions and emotional intelligence (EI) have been extensively studied. However, research examining their influence on prosocial behavior remains limited. This study aimed to analyze the differences, relationships, and effects of, self-serving cognitive distortions and EI on prosocial behavior. **Methods:** A total of 444 Colombian students aged 14 to 18 years (mean [M] = 15.66, standard deviation [SD] = 1.24) participated in the study. Self-serving cognitive distortions, self-perceived EI, and prosocial behavior were assessed. Descriptive, comparative, correlational, and predictive analyses were performed using SPSS Version 25. **Results:** Gender differences were observed in self-serving cognitive distortions, EI, and prosocial behavior. Prosocial behavior was positively associated with EI and negatively related to self-serving cognitive distortions. Predictive analyses indicated that female gender and younger age were associated with higher prosocial behavior. Self-serving cognitive distortions demonstrated weak predictive effects, whereas emotional repair emerged as the strongest predictor of prosocial behavior. **Conclusions:** Higher EI and fewer self-serving cognitive distortions are associated with greater prosocial behavior. Future research should evaluate the benefits of intervention on prosocial behavior, EI skills, and cognitive distortions through cognitive and behavioral interventions.

Keywords: adolescents; emotional intelligence; self-serving cognitive distortions; prosocial behavior

1. Introduction

Cognitive processes and their relationship with behavior represent a major area of inquiry in psychology. Evidence shows that an individual's thinking has a decisive influence on their behavior, and various mental health and behavioral interventions, including cognitive behavioral therapy, focus on modifying distorted thinking patterns to promote behavioral and emotional change (Clark, 2013). Cognitive distortions are systematic errors in thinking that influence the interpretation of events and the evaluation of one's own and others' behaviors. Evidence indicates that certain cognitive distortions, namely self-serving ones, are associated with behavioral problems (Barriga and Gibbs, 1996; Dragone et al., 2020; Peña-Fernández et al., 2013). Recent research has analyzed the role of emotional intelligence (EI) in promoting prosocial behavior among adolescents, establishing a positive association between EI and prosocial behavior, with age and gender serving as moderating factors (Cao and Chen, 2025). Self-reported EI has also been shown to predict prosocial behavior in young populations, a relationship that is further reinforced when mediated by empathy (Babić Čikeš and Tomašić Humer, 2023). Furthermore, emotional regulation skills have been associated with greater prosocial engagement during adolescence (González-Moreno and Molero Jurado, 2024). Conversely, self-serving cognitive distortions have been linked to problematic behaviors, suggesting that distorted cognitions may decrease prosociality (Brugman et al., 2024). Few studies have simultaneously examined self-serving cognitive distortions, EI, and prosocial behavior in adolescents, and the present study addresses this gap. A review of the scientific literature revealed that self-serving cognitive distortions and EI reflect complementary cognitive and emotional mechanisms underlying adolescent behavior. Specifically, self-serving cognitive distortions involve biased thinking patterns that justify maladaptive actions and have been linked to problematic behaviors and reduced prosociality (Barriga and Gibbs, 1996; Brugman et al., 2024). In contrast, EI has been shown to facilitate prosocial behavior (Cao and Chen, 2025; González-Moreno and Molero Jurado, 2024). Given these contrasting profiles, it is hypothesized that whereas EI promotes prosocial behavior, self-serving cognitive distortions, previously associated with antisocial behavior (Barriga and Gibbs, 1996), exert a negative effect on it.

Self-serving cognitive distortions represent cognitive strategies through which individuals justify or rationalize transgressive, egocentric, or aggressive behaviors while preserving a positive self-concept (Barriga and Gibbs, 1996). In contrast, social-emotional processes, such as EI, are considered protective factors that promote adaptive functioning and emotional regulation (Extremera et al.,

2020; Gallitto and Leth-Steensen, 2019). Contrary to cognitive distortions, EI supports mental health, social adjustment, and well-being (Zeidner et al., 2009). Given the relevance of self-serving cognitive distortions and EI to behavior, the present study examines both constructs and how they are associated with and influence prosocial behavior.

Promoting prosocial behavior among adolescents is becoming increasingly important given its benefits at both individual and social levels (Mesurado et al., 2019). Prosocial behavior refers to a broad category of selfless acts in favor of others that generate positive feelings and contribute to social cohesion (Dahl, 2015). Its development is shaped by factors such as education, experiences, values, morals, cognitions, and thinking styles (Declerck and Boone, 2016; Martin-Raugh et al., 2016; Xiao et al., 2019).

The development of prosocial behavior is a topic of considerable interest due to its positive effects across all stages of life (Lee et al., 2020). Its evaluation and implementation are important, as prosocial and aggressive behaviors follow distinct pathways and develop as a continuum over time (Hay et al., 2021). Prosocial behavior is related to empathy, greater social adaptation, and improved interpersonal relationships, underscoring the importance of fostering it during adolescence (Mesurado et al., 2019; Spinrad and Gal, 2018). Reasoning and social cognition, especially perspective-taking, are relevant to the development of empathy and prosocial behavior (Carlo et al., 2010).

Cognitive distortions have been identified in individuals with various mental health problems, e.g., suicidal risk (Jager-Hyman et al., 2014), anxiety (Kuru et al., 2018), and depression (Tecuta et al., 2019). Self-serving cognitive distortions are a component of maladaptive thinking styles that arise from impaired learning processes and biased emotional processing (Tiba, 2010); they are related to negative perceptions of emotions and feelings, distress, anxiety, depression, and behavioral problems (Wilson et al., 2011). Specifically, self-serving cognitive distortions are considered determinants in aggressive behaviors (Barriga et al., 2008; Dragone et al., 2020; Van der Meulen et al., 2019). Most studies on self-serving cognitive distortions in adolescents have focused on forensic or justice-involved examples (Brugman and Bink, 2011). In normative populations, research remains limited and has primarily addressed problematic behaviors (Brugman et al., 2024; Chabrol et al., 2011; Dragone et al., 2020; Van der Meulen et al., 2019) or psychometric analyses (Barriga and Gibbs, 1996; Peña-Fernández et al., 2013). This justifies further investigation on self-serving cognitive distortions in normative adolescent populations, as such research may advance understanding of the mechanisms underlying antisocial behaviors within educational environments.

Self-serving cognitive distortions include self-centred, minimization, blaming others, and assuming the worst. Self-Centred involves prioritizing one's own views, expectations, needs, rights, feelings, and desires at the expense of others. Minimization (or mislabeling) uses mechanisms such as dehumanization to justify negative behavior toward others. Blaming others refers to the attitude of attributing responsibility for one's own misconduct to other people or external circumstances. Finally, assuming the worst refers to attributing hostile intentions to others and considering one's own negative behaviors as inevitable (Barriga and Gibbs, 1996; Dragone et al., 2020; Peña-Fernández et al., 2013). Negative attributions and beliefs regarding the legitimacy of certain acts can be decisive in the expression of aggression (Kabiri et al., 2020). In contrast, individuals are capable of altering their immediate contexts through emotion regulation, creating cognitive self-incentives, predicting the consequences of their behavior, and even directing positive behavior toward prosocial ends (Bandura, 1978; Schunk and DiBenedetto, 2020).

Consistent with the foregoing, intervening in self-serving cognitive distortions among adolescents who present behavioral problems has been proposed as an important strategy for promoting mental health and social adjustment (Brazão et al., 2017; Brugman and Bink, 2011; Chabrol et al., 2011). In school contexts, self-serving cognitive distortions have been shown to increase bullying and cyberbullying, and addressing these distortions in both adolescent aggressors and observers has been recommended as means of reducing acts of aggression (Van der Meulen et al., 2019). It has also been reported that promoting empathy and prosocial behavior among adolescents in educational contexts favors interpersonal relationships and mutual helping behaviors (Spinrad and Gal, 2018). Furthermore, targeting cognitive distortions in adolescents with conduct problems has been shown to reduce distorted thinking and improve social adjustment and social skills (Brugman and Bink, 2011; Helmond et al., 2014).

Contrary to cognitive distortions, EI contributes to mental health, subjective well-being, and social adjustment (Extremera et al., 2020; Gallitto and Leth-Steensen, 2019). In the ability model, EI is defined as the capacity to reason with emotions, express emotions accurately, use emotions to enhance thinking and behavior, and attain desired emotional states and experiences (Mayer et al., 2016). It consists of four factors: perceiving emotions, understanding emotions, facilitating thought using emotions, and managing emotions (Mayer et al., 2016; Salovey and Mayer, 1990). EI contributes to adolescent development by fostering social relationships and prosocial behaviors (Frederickson et al., 2012; Gallitto and Leth-Steensen, 2019). It has also been associated with improvements in mental health, academic performance, social adjustment, and subjective well-being (Allen et al., 2014; Extremera et al., 2020; Frederickson et al., 2012; Gallitto and Leth-Steensen, 2019). Previous evidence indicates that EI is positively related to prosocial behavior (Cao and Chen, 2025; Charbonneau and Nicol, 2002; Getahun Abera, 2023; Kaltwasser et al., 2017).

It has also been reported that EI is associated with cognitive processes such as conceptualization, attention, habit formation, and cognitive control; addressing these relations constitutes an essential field of clinical psychology research (Smith et al., 2018). Recent studies analyzing adolescent behavior in virtual (Piccerillo and Digennaro, 2025) and school environments (Van Rens et al., 2025) suggest that EI, particularly emotional regulation, plays a protective role in adolescent social adaptation, as it is associated with reduced involvement in bullying and other behavioral problems.

It has been proposed that both EI and self-serving cognitive distortions affect adolescent behavior (Côté et al., 2011; Cox and Nelson, 2008). High EI has been associated with lower levels of antisocial behavior and aggression (Contreras and Cano, 2016; Garaigordobil, 2020; Hayes and Reilly, 2013; Megías et al., 2018). Furthermore, individuals with behavioral problems have been shown to exhibit lower EI and greater difficulties in self-regulation (Garofalo et al., 2020). Recent research in adolescent populations has also shown that deficits in EI are associated with greater engagement in maladaptive behaviors, including those occurring in digital contexts, thereby reinforcing the regulatory role of emotional skills during adolescence (García-Canalejas et al., 2025). Therefore, the development of emotional regulation has been identified as important, as it contributes to the management of impulsivity and supports socioemotional development (Baumeister et al., 2018; Vohs and Baumeister, 2016), while also increasing mental health and well-being (Miller et al., 2020). Evidence further suggests that adolescents with higher levels of emotional repair and respect show lower involvement in school violence and reduced substance misuse (González-Moreno and Molero Jurado, 2024).

Regarding cognitive distortions and EI, a negative association has been observed between dimensions of EI and distorted thinking (Cox and Nelson, 2008). It has also been indicated that irrational beliefs negatively affect motivational and emotional processes (Tiba, 2010) and that individual differences in the cognitive processes of attention and interpretation underlie difficulties in emotion regulation (Joormann and D'Avanzato, 2010). Cognitive distortions have further been linked to negative behaviors that include emotional aspects, such as hateful behaviors among adolescents (Pace et al., 2021).

Regarding gender differences, self-serving cognitive distortions are higher in males (Peña-Fernández et al., 2013), and females generally show better performance of EI (Cabello et al., 2016); however, it has been suggested that gender does not determine the development or performance of EI (Salavera et al., 2017). Females have also been shown to exhibit greater prosocial behavior (Van der Graaff et al., 2018).

Few studies on the relationship between self-serving cognitive distortions and prosocial behavior are available in the literature; however, existing evidence shows a negative relationship between these variables (van Langen et al., 2014). Self-serving cognitive distortions have been identified as significant predictors of behavioral problems (Chabrol et al., 2011) and have also been shown to predict various forms of aggression (Barriga et al., 2008; Dragone et al., 2020; Oostermeijer et al., 2017; Tisak and Goldstein, 2023; Van der Meulen et al., 2019; Van Leeuwen et al., 2014). Given that both self-serving cognitive distortions and EI are likely associated with prosocial behavior, the present study examined the nature of these relationships.

To our knowledge, no prior studies have examined the relationship between self-serving cognitive distortions, EI, and prosocial behavior; clarifying these relationships may inform the development of interventions to improve adolescent social adjustment and individual well-being. The present study aims to analyze the differences, relationships, and effects of self-serving cognitive distortions and EI on prosocial behavior in adolescents. The hypotheses are:

1. Compared with males, adolescent females show greater prosocial behavior and EI, whereas males exhibit greater self-serving cognitive distortions.

2. Prosocial behavior is positively related to EI and negatively associated with self-serving cognitive distortions.

3. Self-serving cognitive distortions and EI influence prosocial behavior.

2. Materials and Methods

2.1 Participants

The study included 444 Colombian adolescents aged 14–18 years (mean [M] = 15.66, standard deviation [SD] = 1.24; 45.9% females). Participants were of middle and low socioeconomic status. Grade distribution was as follows: 3.6% were enrolled in sixth and seventh grades, 38.5% in eighth and ninth grades, and 57.9% in tenth and eleventh grades. The main exclusion criterion was a diagnosed psychiatric condition. This cross-sectional study used a convenience sampling strategy. A previous power analysis was performed in G*Power (version 3.1.9.7; Heinrich Heine University Düsseldorf, Düsseldorf, North Rhine-Westphalia, Germany) to characterize the sample; the mean difference by gender had a mean effect size of 0.50, an alpha of 0.01, and a power of 0.99, and required a minimum of 175 participants. For linear regression, a minimum of 374 participants was required, based on a mean effect size of 0.15, an alpha of 0.05, and a power of 0.90. Therefore, the final sample size was sufficient to achieve statistical significance in all analyses.

2.2 Measures

(a) Sociodemographic data were collected utilizing an *ad hoc* questionnaire, which included items on age, sex, and school grade level.

(b) The *How I Think Questionnaire* (HIT-Q; Barriga and Gibbs, 1996) adapted into Spanish by Peña-Fernández

et al. (2013), is a 54-item self-report with six response options (1: Strongly disagree, 6: Strongly agree). It comprises 39 items expressing distorted attitudes or beliefs, 8 control items (anomalous responding), and 7 positive items. Higher scores on each subscale indicate greater cognitive distortion. The Self-Centred subscale includes items such as "Sometimes you have to lie to get what you want." and "You should get what you need, even if it means someone has to get hurt." The Blaming Others subscale includes items such as "People are always trying to hassle me." and "When I lose my temper, it's because people try to make me mad." The Minimization subscale includes items such as "You have to get even with people who don't show you respect." and " Everybody lies, it's no big deal." Assuming the Worst subscale includes items such as "You can't trust people because they will always lie to you." and "You should hurt people first before they hurt you." In this study, Cronbach's alpha coefficients for the subscales Self-Centred, Blaming Others, Minimizing, and Assuming the Worst were 0.77, 0.81, 0.81, 0.81, and 0.79, respectively.

(c) The *Trait Meta-Mood Scale* (TMMS-24; Salovey et al., 1995) Spanish adaptation by Fernández-Berrocal et al. (2004), is a 24-item measure based on Mayer and Salovey's (1997) ability model assessing attention, clarity, and emotional repair. A 5-point Likert scale is used (1: Strongly disagree, 5: Strongly agree). Each subscale is composed of 8 items. The attention subscale includes items such as "I pay a lot of attention to feelings." and "I usually spend time thinking about my emotions." The clarity subscale includes items such as "I often notice my feelings in different situations." and "I can always tell how I feel." The emotional repair subscale includes items such as "I try to think positive thoughts, even if I feel bad." and "When I am angry, I try to change my mood." Higher scores indicate greater EI. In this study, Cronbach's alpha for Attention, Clarity, and Repair was 0.85, 0.87, and 0.86, respectively.

(d) *The Prosocial Behavior Scale* (PBS; Caprara and Pastorelli, 1993). Consists of 15 items that assess Prosocial Behavior using a Likert scale with 3 response alternatives (1: Never, 3: Often). The items refer to helping, sympathetic, and trusting behaviors. The scale includes items such as "I try to make people happier when they are sad." and "I help others with their tasks." High scores in the PBS indicate greater prosocial behavior. In this study, Cronbach's alpha for the scale was 0.72.

2.3 Procedure

Data collection procedures were carried out in accordance with the guidelines of the Declaration of Helsinki (World Medical Association, 2013). Informed consent was obtained from both the participants and their legal guardians. Prior to data collection, all adolescents and their families were informed about the study's aims, objectives, and procedures. Participation was voluntary, anonymous, and uncompensated. Data collection was performed directly by the investigators on paper-based forms and was completed during tutoring hours at the participating schools. The evaluation lasted approximately 30 minutes.

2.4 Statistical Analysis

Statistical analyses were performed using SPSS (IBM SPSS Statistics for Windows, Version 25.0, IBM Corp., Armonk, NY, USA). Descriptive statistics, including the M, SD, and reliability estimates, were first calculated alongside participants' sociodemographic characteristics. Second, between-group comparisons by gender were conducted using Student's *t*-tests. Cohen's d was used to calculate the effect sizes for the *t*-tests (Cohen, 1988). Third, Pearson correlations were used to estimate the associations between variables. Finally, multiple regression analysis was used to assess the effects of self- servingcognitive distortions and EI on prosocial behavior. Hierarchical entry order of predictors was defined *a priori* based on theoretical considerations. Sociodemographic variables were entered first, followed by cognitive distortions, and finally, EI as the most direct predictor. Prior to conducting the regression analyses, the assumptions of multicollinearity and common-method bias were examined. Specifically, multicollinearity was assessed using variance inflation factors (VIF), and potential common-method bias was evaluated using Harman's single-factor test (Podsakoff et al., 2003). Statistical significance was set at $p < 0.05$ for all analyses.

3. Results

Descriptive results show that 37% of males and 43% of females reported low self-serving cognitive distortions. High distortions were observed in 6% of males and 2% of females. In turn, low emotional attention was reported by 23% of males and 42% of females. Regarding emotional clarity, 43% of males indicated low ability and 10% high ability; in females, 55% noted low ability and 6% high ability. Low emotional repair was observed in 20% of males and 38% of females. Additionally, high repair was observed in 13% of females and 22% of males. In prosocial behavior, 9.6% of males obtained low scores and 50.8% obtained medium scores; in females, 5.9% obtained low scores and 50% obtained medium scores. High scores were obtained by 39.6% of males and 44.1% of females.

Gender comparisons showed statistically significant differences across most variables. Specifically, males scored moderately higher on emotional clarity ($d = 0.54$), emotional repair ($d = 0.42$), and total EI ($d = 0.45$). In contrast, females scored lower on distortions with significant differences and moderate effect sizes in minimization ($d = 0.42$), blaming others ($d = 0.30$), assuming the worst ($d = 0.24$), and total self-serving cognitive distortions ($d = 0.30$). Additionally, females reported slightly higher prosocial behavior with a small effect size ($d = 0.19$). Significant differences with a small effect size are also observed in prosocial behavior (Table 1).

Table 1. Differences in variables by gender.

Variables	Female (n = 204)		Male (n = 240)		t(442)	p-value	Cohen's d
	M	*SD*	*M*	*SD*			
Self-serving cognitive distortions							
Self-centred	2.40	0.82	2.55	0.88	1.80	0.070	0.17
Blaming others	2.02	0.78	2.27	0.87	3.07	0.002	0.30
Minimizing	1.87	0.75	2.22	0.90	4.37	<0.001	0.42
Assuming the worst	2.41	0.76	2.61	0.84	2.57	0.011	0.24
Total, HIT-Q	2.19	0.71	2.42	0.80	3.19	<0.001	0.30
EI							
Attention	26.08	7.14	26.57	6.70	0.74	0.460	0.07
Clarity	23.27	6.79	26.88	6.50	5.70	<0.001	0.54
Repair	26.25	6.94	29.21	6.89	4.49	<0.001	0.42
Total, EI	75.61	16.30	82.67	15.02	4.74	<0.001	0.45
Prosocial behavior	2.47	0.25	2.42	0.27	–2.09	0.038	0.19

Note. d = 0.20 small; d = 0.50 medium; d = 0.80 large. Coding for the grouping variable: Female (1), male (0).

EI, emotional intelligence; M, mean; SD, standard deviation; HIT-Q, How I Think Questionnaire.

Table 2. Descriptive statistics and correlations between self-serving cognitive distortions, EI, and prosocial behavior (n = 444).

	Variables	*M*	*SD*	1	2	3	4	5	6	7	8	9	10
1	Self-centred	2.48	0.86	-									
2	Blaming others	2.16	0.84	0.77**	-								
3	Minimizing	2.06	0.85	0.77**	0.82**	-							
4	Assuming the worst	2.52	0.81	0.75**	0.79**	0.78**	-						
5	Total, distorsions	2.31	0.76	0.89**	0.93**	0.92**	0.91**	-					
6	Attention	26.35	6.90	–0.10*	–0.08	–0.07	–0.07	–0.08	-				
7	Clarity	25.22	6.86	–0.09	–0.12*	–0.12*	–0.13**	–0.13**	0.41**	-			
8	Repair	27.85	7.06	–0.22**	–0.13**	–0.15**	–0.22**	–0.20**	0.25**	0.49**	-		
9	Total, EI	79.43	15.99	–0.18**	–0.14** –0.15**	–0.19**	–0.18**	0.72**	0.82**	0.76**	-		
10	Prosocial behavior	2.44	0.26	–0.32**	–0.34**	–0.36**	–0.36**	–0.38**	0.04	0.14**	0.28**	0.21**	-

Note. The range for EI variables is 1–40, for self-serving cognitive distortions 1–6, and for prosocial behavior 1–30. *p < 0.05. **p < 0.01.

EI, emotional intelligence; M, mean; SD, standard deviation.

Correlation analyses indicate that prosocial behavior is positively related to emotional clarity and emotional repair, as well as negatively related to self-serving cognitive distortions. Additionally, both emotional clarity and emotional repair were negatively associated with self-serving cognitive distortions (Table 2).

A hierarchical multiple regression analysis was performed to predict prosocial behavior. The sociodemographic variables gender and age were entered in the first step, self-serving cognitive distortions in the second step, and EI variables in the third step. Multicollinearity diagnostics indicated acceptable VIF values for all predictors in the final model (range: 1.03–4.12), suggesting no severe multicollinearity. To assess potential common-method bias, Harman's single-factor test was performed using all questionnaires items to an unrotated in an exploratory factor analysis (Podsakoff et al., 2003). The first factor accounted for only 16.37% of the total variance, well below the recommended threshold of 50%, indicating that common-method bias was unlikely to substantially affect the results (Kaiser-Meyer-Olkin (KMO) = 0.854; χ^2 = 20137.21; p < 0.001).

The model with the sociodemographic variables was significant (R^2 = 0.01; F = 3.14; p = 0.044), but only the gender (female) variable contributed to the explained variance (β = 0.09; t = 2.00; p = 0.046). In the second step, the addition of self-serving cognitive distortions yielded a significant model (R^2 = 0.15; F = 13.25; p < 0.001). Assuming the worst was a significant negative predictor of prosocial behavior (β = −0.19; t = −2.40; p = 0.017), whereas minimization (β = −0.17; t = −1.94; p = 0.052) and age (β = −0.09; p = 0.051) showed only marginal associations. In the third step, the inclusion of EI variables produced a significant model (R^2 = 0.21; F = 12.98; p < 0.001); however, only emotional repair contributed significantly to the explained variance (β = 0.26; t = 4.98; p < 0.001). Both gender (female; β = 0.09; p = 0.046) and age (β = −0.10; p

Table 3. Hierarchical regression for prosocial behavior prediction.

Variable	B	95% CI for B		*SE B*	*β*	R^2	ΔR^2	*f*
		LL	*UL*					
Step 1								
Constant	26.43***	23.35	29.50	1.56				
Gender +	0.47	0.01	0.98	0.25	0.09*	0.01	0.01*	0.01
Age	–0.13	–0.33	0.05	0.10	–0.07			
Step 2								
Constant	30.19***	27.17	33.19	1.53		0.15	0.14***	0.16
Gender	0.02	–0.03	0.06	0.02	0.03			
Age	0.02	–0.04	0.00	0.009	–0.09			
Self-centred	–0.03	–0.49	0.43	0.23	–0.01			
Blaming others	–0.11	–0.64	0.43	0.27	–0.03			
Minimizing	–0.52	–1.04	0.01	0.27	–0.17			
Assuming the worst	–0.62	–1.12	–0.11	0.26	–0.19*			
Step 3								
Constant	2.75	2.44	3.07	0.16		0.21	0.06***	0.27
Gender	0.05	0.00	0.10	0.02	0.09*			
Age	–0.02	–0.04	–0.009	0.01	–0.10*			
Self-centred	0.01	–0.03	0.06	0.02	0.04			
Blaming others	–0.03	–0.08	0.02	0.03	–0.09			
Minimizing	–0.05	–0.09	0.003	0.03	–0.16			
Assuming the worst	–0.04	–0.09	0.01	0.02	–0.13			
Attention	–0.02	–0.05	0.02	0.02	–0.04			
Clarity	0.01	–0.03	0.05	0.02	0.02			
Repair	0.09***	0.06	0.13	0.02	0.26***			

Note. β = standardized beta. Effect size: f: 0.02 small, f: 0.15 medium, f: 0.35 large. +Coding for the grouping variable: Female (1), male (0). *$p < 0.05$, ***$p < 0.001$.

B, unstandardized beta; CI, confidence interval; LL, lower limit; UL, upper limit; SE, standard error.

= 0.019) were significant predictors in the final model, with younger age associated with higher levels of prosocial behavior. Taken together, these findings indicate that female gender, younger age, and elevated emotional repair are significant predictors of prosocial behavior. Self-serving cognitive distortions, specifically minimization and assuming the worst, were associated with prosocial behavior exclusively in the intermediate model (Step 2), but these associations lost statistical significance upon inclusion of variables in the final model (Table 3). Fig. 1 illustrates the final hierarchical regression model (Step 3), depicting only the statistically significant predictors of prosocial behavior.

4. Discussion

Prosocial behavior is a topic of considerable interest in psychology, as its development promotes well-being, social adjustment, and interpersonal relationships across different stages of life (Hay et al., 2021; Lee et al., 2020). This study was based on the premise that prosocial behavior may be facilitated by the development of EI skills and the correction of self-serving cognitive distortions. Accordingly, it aimed to analyze differences, relationships, and predictive effects of self-serving cognitive distortions and EI on prosocial behavior in adolescents. Results indicated gender differences in the variables evaluated, and demonstrated that prosocial behavior was positively related to emotional clarity and emotional repair, and negatively related to self-serving cognitive distortions. Predictive analyses showed that self-serving cognitive distortions were initially associated with prosocial behavior. However, upon inclusion of emotional repair, these associations were attenuated, which highlights the stronger influence of emotional regulation on prosocial behavior. These findings further support the idea that cognitive and emotional mechanisms jointly contribute to prosocial tendencies in adolescents. Nevertheless, the pattern of nonsignificant associations for specific dimensions indicates that not all self-serving cognitive distortions or EI skills equally affect prosocial behavior. This suggests that certain factors, such as lower distortion in assuming the worst and greater emotional regulation capacity, may be more closely linked to the specific cognitive and emotional processes underlying prosocial behavior.

Hypothesis 1 was partially supported. This indicates that, when compared by gender, adolescent females exhibited greater prosocial behavior, whereas males showed a

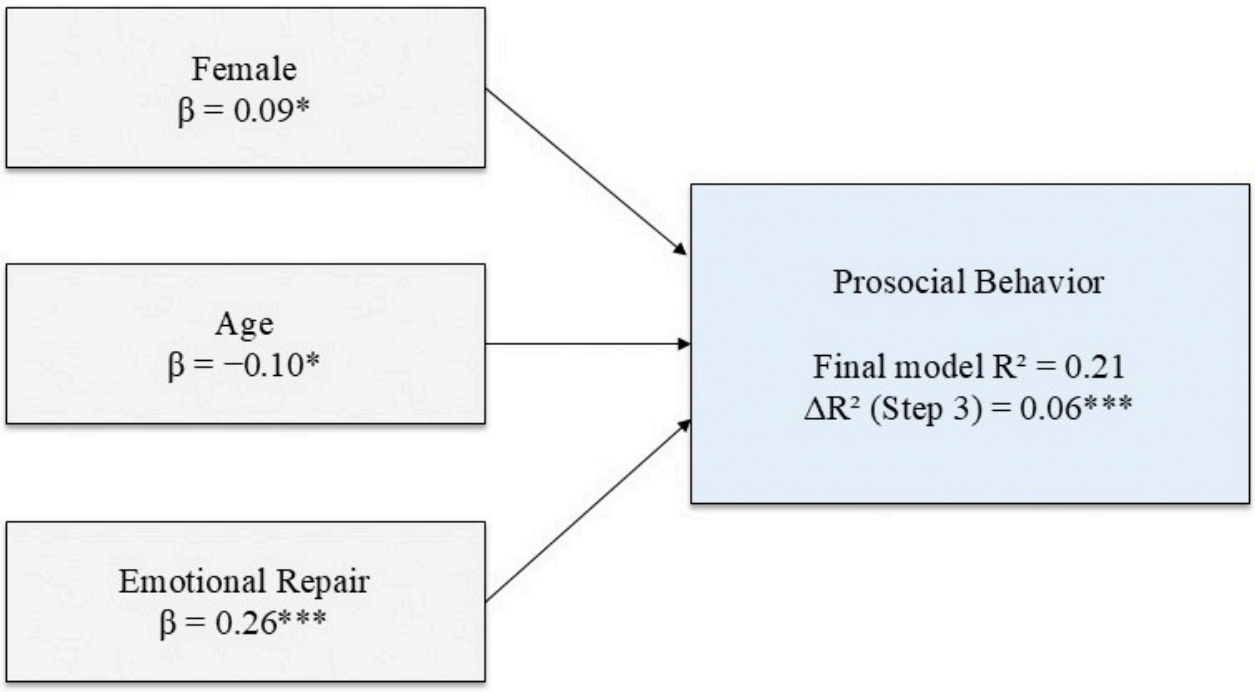

Fig. 1. Final hierarchical regression model predicting prosocial behavior. *Note. Standardized beta coefficients (β) from the final hierarchical regression model (Step 3) are presented. Only statistically significant predictors are displayed. R^2 corresponds to the total variance explained by the final model. ΔR^2 represents the incremental variance explained by EI variables in Step 3. *$p < 0.05$; ***$p < 0.001$.

higher levels of self-serving cognitive distortions. Specifically, males scored higher on several self-serving cognitive distortion subscales, with small to moderate effect sizes, including minimization ($d = 0.42$), blaming others ($d = 0.30$), assuming the worst ($d = 0.24$), and total distortions ($d = 0.30$). These results are consistent with previous findings that indicate that males show greater self-serving cognitive distortions (Peña-Fernández et al., 2013), and further support the notion that higher levels of distortion may help explain the higher prevalence of behavioral problems observed in males (Dragone et al., 2020; Peña-Fernández et al., 2013). Consistent with prior research, female adolescents reported slightly higher levels of prosocial behavior, although the magnitude of this difference was small ($d = 0.19$). This study uses a measure of prosocial behavior that refers to helpful, agreeable, and trusting behaviors. The observed gender differences in prosocial behavior may be partially attributable to differences in empathy development, which previous research has found to be higher in females and associated with moral and cognitive development (Van der Graaff et al., 2018).

In this study, males scored higher than females on EI variables, particularly emotional clarity ($d = 0.54$) and emotional repair ($d = 0.42$), as well as on total EI ($d = 0.45$). These findings diverge from expectations, as females generally tend to perform better on EI measures than males (Cabello et al., 2016). According to the EI ability model (Mayer and Salovey, 1997; Mayer et al., 2016), socioemotional competencies are learned. Therefore, it is possible that individual or social factors specific to the male adolescent sample in the current study may have favored higher EI performance relative to females. The results of this study support the idea that gender does not determine the development or performance of EI and other aspects that may influence social and emotional development should be considered (Salavera et al., 2017). For example, it has been observed that conflict resolution skills, extroversion, openness, empathy, and fewer emotional problems may favor EI (Garaigordobil, 2020). Hypothesis 2 was partially supported, predicting that prosocial behavior would be positively related to EI and negatively related to self-serving cognitive distortions. Correlational analyses showed that prosocial behavior was positively associated with emotional clarity ($r = 0.14$; $p < 0.01$), emotional repair ($r = 0.28$; $p < 0.01$), and total EI ($r = 0.26$; $p < 0.01$), but not with emotional attention ($r = 0.04$; $p = 0.321$). The absence of a significant association between emotional attention and prosocial behavior suggests that mere awareness or perception of emotions may not directly translate into prosocial action. Instead, emotional regulation and repair appear to play a more central role in transforming emotional understanding into behavior that benefits others. This observation is consistent with models emphasizing that emotion regulation serves as the functional bridge between affective experience and

prosocial behavior (Baumeister et al., 2018). The association between prosocial behavior and emotional repair has been observed in previous studies (Moroń et al., 2018). In this study, prosocial behavior (encompassing helping, sympathy, and trust) was moderately related to EI. The relationship between EI and prosocial behavior appears to be stronger when specific prosocial behaviors are assessed. In this regard, low associations with EI, civic behaviors, and altruism in adolescents have been reported previously (Charbonneau and Nicol, 2002). By contrast, when assessing prosocial behavior tendencies (encompassing obliging, public, anonymous, direct, emotional, and altruistic dimensions) and EI, a significant association was observed (Getahun Abera, 2023). Such observation underscores the need to assess the relationship between and prosocial behavior, referring to specific prosocial behavioral tendencies and their contextual conditions. Similarly, it highlights the importance of analyzing expected prosocial behaviors by gender and cultural context (Xiao et al., 2019).

Associative analyses further showed that prosocial behavior was moderately and negatively related to total self-serving cognitive distortions ($r = -0.38$; $p < 0.01$), minimization ($r = -0.36$; $p < 0.01$), blaming others ($r = -0.34$; $p < 0.01$), and assuming the worst ($r = -0.36$; $p < 0.01$), as well as with self-centred ($r = -0.32$; $p < 0.01$), indicating that greater levels of self-serving cognitive distortions were related to lower prosocial tendencies. This result is consistent with previous evidence suggesting that self-serving cognitive distortions are associated with antisocial tendencies and reduced adaptive interpersonal functioning (Dragone et al., 2020; Peña-Fernández et al., 2013). Similarly, total EI was positively associated with prosocial behavior ($r = 0.21$; $p < 0.01$) and negatively associated with the total measure of self-serving cognitive distortions ($r = -0.18$; $p < 0.01$), suggesting an inverse relationship between emotional competencies and distorted cognitive patterns. These observations are also consistent with research indicating that EI is associated with lower antisocial tendencies and greater adaptive social functioning (Contreras and Cano, 2016; Garaigordobil, 2020; Megías et al., 2018). This suggests that emotional competencies may promote prosocial engagement and mitigate maladaptive thoughts and behaviors (Baumeister et al., 2018; Garofalo et al., 2020). Hypothesis 3 was partially supported, predicting that self-serving cognitive distortions and EI would be related to prosocial behavior. In Step 2 of the hierarchical regression model, which included self-serving cognitive distortions, the model explained 15% of the variance in prosocial behavior ($R^2 = 0.15$), with assuming the worst emerging as a negative predictor ($\beta = -0.19$; $p < 0.017$). However, when EI variables were introduced in Step 3, the explained variance increased to $R^2 = 0.21$ ($\Delta R^2 = 0.06$), with emotional repair ($\beta = 0.26$; $p < 0.001$), along with female gender ($\beta = 0.09$; $p < 0.05$) and younger age ($\beta = -0.10$; $p < 0.05$) emerging as predictors. In this final model, the effects of cognitive distortions were no longer statistically significant These findings suggest that the predictive contribution of self-serving cognitive distortions is reduced when emotional regulation processes are considered, highlighting the stronger unique association between emotional repair and prosocial behavior in the final model.

Self-serving cognitive distortions allow individuals to justify negative behavior toward others through dehumanization and the attribution of hostile intentions, thereby validating negative behavior (Dragone et al., 2020; Peña-Fernández et al., 2013). Emotional repair was the strongest predictor of prosocial behavior and refers to the ability to regulate and control positive and negative emotions, as well as to employ strategies to identify and either reduce or intensify an emotional response (Mayer et al., 2016). Such results suggest that lower cognitive distortions and greater emotional repair are associated with higher levels of prosocial behavior, with emotional regulation showing the strongest predictive value. This is also consistent with previous observations demonstrating that self-serving cognitive distortions are significant predictors of aggression (Dragone et al., 2020; Oostermeijer et al., 2017; Tisak and Goldstein, 2023; Van der Meulen et al., 2019; Van Leeuwen et al., 2014), and that prosocial behavior is positively associated with emotional repair (Moroń et al., 2018). The development of emotional regulation or repair is inferred to facilitate prosocial behavior; additionally, prior research has indicated that it contributes to aggression management, socioemotional development, and mental health (Baumeister et al., 2018; Miller et al., 2020; Vohs and Baumeister, 2016). The lack of a significant predictive effect for self-centred distortions and blaming others may indicate that these distortions are more closely associated with problematic behaviors than with the inhibition of prosocial acts. Thus, their link to prosocial tendencies may be indirect, mediated by other deficits such as empathy or emotional regulation. Future research should evaluate these indirect pathways using mediation or structural models to clarify these dynamics. In relation to the findings reported here on age and gender, recent meta-analyses indicate that EI and prosocial behavior in adolescents are significantly and positively associated and that this association varies according to age and gender. Furthermore, these relationships may be influenced by culture (Cao and Chen, 2025). In the present study, females reported higher levels of prosocial behavior than males, a finding consistent with other studies (Gómez-Tabares, 2019). However, the current findings regarding age do not align consistently with previous research, which suggests that prosocial behavior develops during childhood, stabilizes in early adolescence, and either remains stable or increases throughout late adolescence (Cao and Chen, 2025; Gómez-Tabares, 2019). As reported here, younger age was a significant predictor of higher prosocial behavior, suggesting a slight developmental decline during adolescence. This inconsistency with previous literature may

be attributable to the inclusion of self-serving cognitive distortions in the regression model employed here, as prosocial behavior is more typically assessed in relation to variables such as empathy. Furthermore, the questionnaires used to assess prosocial behavior in this study may be more sensitive to the behaviors and experiences of younger adolescents, which could have contributed to the observed age-related results. Based on the present study, it may be hypothesized that lower levels of self-serving cognitive distortions in adolescents are associated with greater prosocial, altruistic, and helping behavior, whereas the presence of self-serving cognitive distortions is associated with reduced helping behavior. This study also shows that emotional repair helps prosocial behavior. Evidence from previous studies shows that the ability to regulate emotions is associated with socioemotional development, social adjustment, mental health, and well-being (Baumeister et al., 2018; Miller et al., 2020; Vohs and Baumeister, 2016). These findings evidence that negative attributions and beliefs manifested as forms of cognitive distortions are related to prosocial behavior (Kabiri et al., 2020; van Langen et al., 2014). and that emotional repair favors a behavioral orientation toward prosocial conduct (Bandura, 1978; Schunk and DiBenedetto, 2020).

According to this study, self-serving cognitive distortions are associated with prosocial behavior; however, their influence appears to be attenuated when emotional regulation, particularly emotional repair, is considered. As such, interventions targeting self-serving cognitive distortions among normative adolescents, as in school contexts, may reduce problematic behaviors (Van der Meulen et al., 2019). For adolescents presenting with behavior problems, interventions for self-serving cognitive distortions may support social adjustment and reduce aggression (Brazão et al., 2017; Brugman and Bink, 2011; Chabrol et al., 2011). Importantly, interventions targeting cognitive distortion have been used for the treatment of mental health conditions through cognitive restructuring, such as suicidal risk, anxiety, and depression (Clark, 2013; Jager-Hyman et al., 2014; Kuru et al., 2018; Tecuta et al., 2019).

A further consideration is the importance of developing EI skills in adolescents, particularly emotional repair, to facilitate prosocial behavior (Mayer et al., 2016). Prior research has indicated that EI may promote prosocial behaviors (Charbonneau and Nicol, 2002; Frederickson et al., 2012; Gallitto and Leth-Steensen, 2019; Getahun Abera, 2023; Kaltwasser et al., 2017). Given evidence suggesting that EI may be related to cognitive factors such as conceptualization, attention, habit formation, and cognitive control, further research exploring its applications within the framework of cognitive therapy is warranted (Smith et al., 2018). Finally, promoting prosocial behavior in children and adolescents is of fundamental importance, as the developmental pathways underlying prosocial behavior are established in these stages (Hay et al., 2021; Lee et al., 2020).

Limitations

The present study has several limitations. First, its cross-sectional design precludes evaluation of the stability of the measures over time. Secondly, the use of self-report questionnaires introduces potential biases, such as social desirability. Currently, to assess EI of ability, performance-based measures are recommended (Mayer et al., 2016); moreover, the measure of prosocial behavior herein employed was limited to the facets of helpfulness, sympathy, and trust. Other measures allow assessment of a broader range of prosocial behavioral tendencies such as public, anonymous, emotional, and direct behaviors (Xiao et al., 2019). It is important to verify gender differences in EI performance using ability-based measures such as the Mayer-Salovey-Caruso Emotional Intelligence Test, which assesses emotion perception through task-based items, the facilitation of thoughts through emotion, and the understanding and management of emotions (Mayer et al., 2016). Although the associations observed among the study variables were consistent with theoretical expectations, future studies using explanatory and longitudinal designs are needed to elucidate the underlying mechanisms of these relationships in normative adolescent populations. This is especially important given the unexpected findings in this study, including higher EI scores among males, the nonsignificant predictive effects of self-centred and blaming of others on prosocial behavior, and the central role of emotional regulation in prosociality.

5. Conclusions

Due to the importance of prosocial behavior for individual and social well-being (Marshall et al., 2020; Martin-Raugh et al., 2016; Petruța and Stănculescu, 2025), the role of EI in socioemotional development (Contreras and Cano, 2016; Garaigordobil, 2020; Hayes and Reilly, 2013; Megías et al., 2018), and of the impact of self-serving cognitive distortions on problematic behaviors and aggression (Dragone et al., 2020; Tisak and Goldstein, 2023), further investigation into the relationships among these constructs and their effects on adolescent prosocial behavior is warranted. Likewise, it is important to develop promotion and prevention interventions that foster prosocial behavior and EI, as well as to evaluate strategies aimed at correcting self-serving cognitive distortions in adolescents (Clark, 2013).

Availability of Data and Materials

The data from this study are available at https://osf.io/vr6p5/overview?view_only=39b090e228234fb2a59c08028dbf69f7.

Author Contributions

All authors designed the research study. IM managed the project's funding and supervised the overall development of the study. AC performed the data collection, and

RG, IM, and AC conducted the data analysis. IM provided methodological and conceptual guidance. AC and IM wrote the first draft of the manuscript, and all authors contributed to the manuscript revisions. All authors read and approved the final manuscript and have participated sufficiently in the work to be accountable for all its aspects.

Ethics Approval and Consent to Participate

The study was conducted according to the guidelines of the Declaration of Helsinki and approved by the Ethics Committee of the University of Valencia (approval number: N0 1102812-07/11/2019). The informed consent for this study was signed by each of the adolescents and their parents or guardians after learning about the study's objectives, procedures, rights, and conditions of participation. Participants and their guardians were informed of the possible publication of the study and asked for their written consent.

Acknowledgment

The authors thank each of the adolescents who participated in the study and their families. We would also like to thank the directors and teachers of the educational institutions that supported the project.

Funding

This work was supported by Ministerio de Ciencia, Innovación y Universidades (Spain) (Grant numbers PSI2017-84005-R).

Conflicts of Interest

The authors declare no conflicts of interest.

References

Allen V, MacCann C, Matthews G, Roberts RD. Emotional Intelligence in Education: From Pop to Emerging Science. In Pekrun R, Linnenbrink-Garcia L (eds.) International Handbook of Emotions in Education (pp. 162–182). Routledge: New York. 2014.

Babić Čikeš A, Tomašić Humer J. Ability and Trait Emotional Intelligence: Do They Contribute to the Explanation of Prosocial Behaviour? European Journal of Investigation in Health, Psychology and Education. 2023; 13: 964–974. https://doi.org/10.3390/ejihpe13060073

Bandura A. The self system in reciprocal determinism. American Psychologist. 1978; 33: 344–358. https://doi.org/10.1037/0003-066x.33.4.344

Barriga AQ, Gibbs JC. Measuring cognitive distortion in antisocial youth: Development and preliminary validation of the "how I think" questionnaire. Aggressive Behavior. 1996; 22: 333–343. https://doi.org/10.1002/(sici)1098-2337(1996)22:5<333::aid-ab2>3.0.co;2-k

Barriga AQ, Hawkins MA, Camelia CRT. Specificity of cognitive distortions to antisocial behaviours. Criminal Behaviour and Mental Health: CBMH. 2008; 18: 104–116. https://doi.org/10.1002/cbm.683

Baumeister RF, Tice DM, Vohs KD. The Strength Model of Self-Regulation: Conclusions From the Second Decade of Willpower Research. Perspectives on Psychological Science: a Journal of the Association for Psychological Science. 2018; 13: 141–145. https://doi.org/10.1177/1745691617716946

Brazão N, Rijo D, Salvador MDC, Pinto-Gouveia J. The effects of the growing pro-social program on cognitive distortions and early maladaptive schemas over time in male prison inmates: A randomized controlled trial. Journal of Consulting and Clinical Psychology. 2017; 85: 1064–1079. https://doi.org/10.1037/ccp0000247

Brugman D, Bink MD. Effects of the EQUIP peer intervention program on self-serving cognitive distortions and recidivism among delinquent male adolescents. Psychology, Crime & Law. 2011; 17: 345–358. https://doi.org/10.1080/10683160903257934

Brugman D, van der Meulen K, Gibbs JC. Moral judgment, self-serving cognitive distortions, and peer bullying among secondary school adolescents. Journal of Moral Education. 2024; 53: 412–432. https://doi.org/10.1080/03057240.2023.2209289

Cabello R, Sorrel MA, Fernández-Pinto I, Extremera N, Fernández-Berrocal P. Age and gender differences in ability emotional intelligence in adults: A cross-sectional study. Developmental Psychology. 2016; 52: 1486–1492. https://doi.org/10.1037/dev0000191

Cao X, Chen J. The Association between Emotional Intelligence and Prosocial Behaviors in Children and Adolescents: A Systematic Review and Meta-Analysis. Journal of Youth and Adolescence. 2025; 54: 607–624. https://doi.org/10.1007/s10964-024-02062-y

Caprara GV, Pastorelli C. Early emotional instability, prosocial behaviour, and aggression: some methodological aspects. European Journal of Personality. 1993; 7: 19–36. https://doi.org/10.1002/per.2410070103

Carlo G, Mestre MV, Samper P, Tur A, Armenta BE. Feelings or cognitions? Moral cognitions and emotions as longitudinal predictors of prosocial and aggressive behaviors. Personality and Individual Differences. 2010; 48: 872–877. https://doi.org/10.1016/j.paid.2010.02.010

Chabrol H, van Leeuwen N, Rodgers RF, Gibbs JC. Relations between self-serving cognitive distortions, psychopathic traits, and antisocial behavior in a non-clinical sample of adolescents. Personality and Individual Differences. 2011; 51: 887–892. https://doi.org/10.1016/j.paid.2011.07.008

Charbonneau D, Nicol AAM. Emotional intelligence and prosocial behaviors in adolescents. Psychological Reports. 2002; 90: 361–370. https://doi.org/10.2466/pr0.2002.90.2.361

Clark DA. Cognitive Restructuring. In Hofmann SG (ed.) The Wiley Handbook of Cognitive Behavioral Therapy (pp. 23–42). Wiley Blackwell: Hoboken. 2013. https://doi.org/10.1002/9781118528563.wbcbt02

Cohen J. Statistical power analysis for the behavioral sciences. 2nd edn. Lawrence Erlbaum Associates: Hillsdale. 1988.

Contreras L, Cano MC. Social Competence and Child-to-Parent Violence: Analyzing the Role of the Emotional Intelligence, Social Attitudes, and Personal Values. Deviant Behavior. 2016; 37: 115–125. https://doi.org/10.1080/01639625.2014.983024

Cox JE, Nelson DB. Quantifying Emotional Intelligence: The Relationship Between Thinking Patterns and Emotional Skills. The Journal of Humanistic Counseling, Education and Development. 2008; 47: 9–25. https://doi.org/10.1002/j.2161-1939.2008.tb00044.x

Côté S, Decelles KA, McCarthy JM, Van Kleef GA, Hideg I. The Jekyll and Hyde of emotional intelligence: emotion-regulation knowledge facilitates both prosocial and interpersonally deviant behavior. Psychological Science. 2011; 22: 1073–1080. https://doi.org/10.1177/0956797611416251

Dahl A. The Developing Social Context of Infant Helping in Two U.S. Samples. Child Development. 2015; 86: 1080–1093. https://doi.org/10.1111/cdev.12361

Declerck CH, Boone C. Neuroeconomics of prosocial behavior: The compassionate egoist. Academic Press: London. 2016.

Dragone M, Esposito C, De Angelis G, Affuso G, Bacchini D. Pathways Linking Exposure to Community Violence, Self-serving Cognitive Distortions and School Bullying Perpetration: A Three-Wave Study. International Journal of Environmental Research and Public Health. 2020; 17: 188. https://doi.org/10.3390/ijerph17010188

Extremera N, Sánchez-Álvarez N, Rey L. Pathways between Ability Emotional Intelligence and Subjective Well-Being: Bridging Links through Cognitive Emotion Regulation Strategies. Sustainability. 2020; 12: 2111. https://doi.org/10.3390/su12052111

Fernández-Berrocal P, Extremera N, Ramos N. Validity and reliability of the Spanish modified version of the Trait Meta-Mood Scale. Psychological Reports. 2004; 94: 751–755. https://doi.org/10.2466/pr0.94.3.751-755

Frederickson N, Petrides K, Simmonds E. Trait emotional intelligence as a predictor of socioemotional outcomes in early adolescence. Personality and Individual Differences. 2012; 52: 323–328. https://doi.org/10.1016/j.paid.2011.10.034

Gallitto E, Leth-Steensen C. Moderating effect of trait emotional intelligence on the relationship between parental nurturance and prosocial behaviour. Journal of Adolescence. 2019; 74: 113–119. https://doi.org/10.1016/j.adolescence.2019.04.008

Garaigordobil M. Intrapersonal Emotional Intelligence during Adolescence: Sex Differences, Connection with other Variables, and Predictors. European Journal of Investigation in Health, Psychology and Education. 2020; 10: 899–914. https://doi.org/10.3390/ejihpe10030064

García-Canalejas M, Chamizo-Nieto MT, Rey L. Problematic Smartphone Use in Adolescents: Are Their Emotional Abilities and Fear of Missing out Influenced? Behavioral Psychology/Psicología Conductual. 2025; 33: 42770. https://doi.org/10.31083/bp42770

Garofalo C, Neumann CS, Mark D. Associations Between Psychopathy and the Trait Meta-Mood Scale in Incarcerated Males: A Combined Latent Variable- and Person-Centered Approach. Criminal Justice and Behavior. 2020; 47: 331–351. https://doi.org/10.1177/0093854819891460

Getahun Abera W. Emotional Intelligence and Pro-Social Behavior as Predictors of Academic Achievement Among University Students. Community Health Equity Research & Policy. 2023; 43: 431–441. https://doi.org/10.1177/0272684X211033447

Gómez-Tabares AS. Prosocialidad. Estado actual de la investigación en Colombia. Revista Colombiana De Ciencias Sociales. 2019; 10: 188–218. https://doi.org/10.21501/22161201.3065

González-Moreno A, Molero Jurado MDM. Prosocial behaviours and emotional intelligence as factors associated with healthy lifestyles and violence in adolescents. BMC Psychology. 2024; 12: 88. https://doi.org/10.1186/s40359-024-01559-2

Hay DF, Paine AL, Perra O, Cook KV, Hashmi S, Robinson C, et al. Prosocial and Aggressive Behavior: A Longitudinal Study. Monographs of the Society for Research in Child Development. 2021; 86: 7–103. https://doi.org/10.1111/mono.12427

Hayes JM, Reilly GO. Psychiatric disorder, IQ, and emotional intelligence among adolescent detainees: A comparative study. Legal and Criminological Psychology. 2013; 18: 30–47. https://doi.org/10.1111/j.2044-8333.2011.02027.x

Helmond P, Overbeek G, Brugman D, Gibbs JC. A Meta-Analysis on Cognitive Distortions and Externalizing Problem Behavior. Criminal Justice and Behavior. 2014; 42: 245–262. https://doi.org/10.1177/0093854814552842

Jager-Hyman S, Cunningham A, Wenzel A, Mattei S, Brown GK, Beck AT. Cognitive Distortions and Suicide Attempts. Cognitive Therapy and Research. 2014; 38: 369–374. https://doi.org/10.1007/s10608-014-9613-0

Joormann J, D'Avanzato C. Emotion regulation in depression: Examining the role of cognitive processes. Cognition & Emotion. 2010; 24: 913–939. https://doi.org/10.1080/02699931003784939

Kabiri S, Shadmanfaat SMS, Smith H, Cochran J. A Social Learning Model of Antisocial Coaching Behavior. International Journal of Offender Therapy and Comparative Criminology. 2020; 64: 860–879. https://doi.org/10.1177/0306624X19899608

Kaltwasser L, Hildebrandt A, Wilhelm O, Sommer W. On the relationship of emotional abilities and prosocial behavior. Evolution and Human Behavior. 2017; 38: 298–308. https://doi.org/10.1016/j.evolhumbehav.2016.10.011

Kuru E, Safak Y, Özdemir İ, Tulacı R, Özdel K, Özkula N, et al. Cognitive distortions in patients with social anxiety disorder: Comparison of a clinical group and healthy controls. The European Journal of Psychiatry. 2018; 32: 97–104. https://doi.org/10.1016/j.ejpsy.2017.08.004

Lee EE, Bangen KJ, Avanzino JA, Hou B, Ramsey M, Eglit G, et al. Outcomes of Randomized Clinical Trials of Interventions to Enhance Social, Emotional, and Spiritual Components of Wisdom: A Systematic Review and Meta-analysis. JAMA

Psychiatry. 2020; 77: 925–935. https://doi.org/10.1001/jamapsychiatry.2020.0821

Marshall SL, Ciarrochi J, Parker PD, Sahdra BK. Is Self-Compassion Selfish? The Development of Self-Compassion, Empathy, and Prosocial Behavior in Adolescence. Journal of Research on Adolescence: the Official Journal of the Society for Research on Adolescence. 2020; 30: 472–484. https://doi.org/10.1111/jora.12492

Martin-Raugh MP, Kell HJ, Motowidlo SJ. Prosocial knowledge mediates effects of agreeableness and emotional intelligence on prosocial behavior. Personality and Individual Differences. 2016; 90: 41–49. https://doi.org/10.1016/j.paid.2015.10.024

Mayer JD, Caruso DR, Salovey P. The Ability Model of Emotional Intelligence: Principles and Updates. Emotion Review. 2016; 8: 290–300. https://doi.org/10.1177/1754073916639667

Mayer JD, Salovey P. What is emotional intelligence? In Sluyter DJ (ed.) Emotional Development and Emotional Intelligence: Educational Implications (pp. 3–34). Basic Books: New York. 1997.

Megías A, Gómez-Leal R, Gutiérrez-Cobo MJ, Cabello R, Fernández-Berrocal P. The relationship between aggression and ability emotional intelligence: The role of negative affect. Psychiatry Research. 2018; 270: 1074–1081. https://doi.org/10.1016/j.psychres.2018.05.027

Mesurado B, Guerra P, Richaud MC, Rodriguez LM. Effectiveness of prosocial behavior interventions: A meta-analysis. In Gargiulo PÁ, Mesones-Arroyo HL (eds.) Psychiatry and Neuroscience Update: From Translational Research to a Humanistic Approach. Volume III (pp. 259–271). Springer: Cham. 2019. https://doi.org/10.1007/978-3-319-95360-1_21

Miller AL, Lo SL, Bauer KW, Fredericks EM. Developmentally informed behaviour change techniques to enhance self-regulation in a health promotion context: a conceptual review. Health Psychology Review. 2020; 14: 116–131. https://doi.org/10.1080/17437199.2020.1718530

Moroń M, Glinka K, Doktor A. Acknowledging Feelings to Enhance Prosociality: Emotional Awareness and Prosocial Behaviors in Adolescence. The New Educational Review. 2018; 51: 269–280. https://doi.org/10.15804/tner.2018.51.1.22

Oostermeijer S, Smeets KC, Jansen LMC, Jambroes T, Rommelse NNJ, Scheepers FE, et al. The role of self-serving cognitive distortions in reactive and proactive aggression. Criminal Behaviour and Mental Health: CBMH. 2017; 27: 395–408. https://doi.org/10.1002/cbm.2039

Pace U, D'Urso G, Zappulla C. Hating among adolescents: Common contributions of cognitive distortions and maladaptive personality traits. Current Psychology. 2021; 40: 3326–3331. https://doi.org/10.1007/s12144-019-00278-x

Peña-Fernández ME, Andreu Rodríguez JM, Barriga Á, Gibbs J. Psychometrical properties of the "How I Think" Questionnaire (HIT-Q) in adolescents. Psicothema. 2013; 25: 542–548. https://doi.org/10.7334/psicothema2013.38

Petruța RTR, Stănculescu E. The benefits of a school intervention for prosocial behaviour and psychological well-being in early adolescents. Current Psychology. 2025; 44: 5216–5226. https://doi.org/10.1007/s12144-025-07353-6

Piccerillo L, Digennaro S. Adolescent Social Media Use and Emotional Intelligence: A Systematic Review. Adolescent Research Review. 2025; 10: 201–218. https://doi.org/10.1007/s40894-024-00245-z

Podsakoff PM, MacKenzie SB, Lee JY, Podsakoff NP. Common method biases in behavioral research: a critical review of the literature and recommended remedies. The Journal of Applied Psychology. 2003; 88: 879–903. https://doi.org/10.1037/0021-9010.88.5.879

Salavera C, Usán P, Jarie L. Emotional intelligence and social skills on self-efficacy in Secondary Education students. Are there gender differences? Journal of Adolescence. 2017; 60: 39–46. https://doi.org/10.1016/j.adolescence.2017.07.009

Salovey P, Mayer JD. Emotional Intelligence. Imagination, Cognition and Personality. 1990; 9: 185–211. https://doi.org/10.2190/dugg-p24e-52wk-6cdg

Salovey P, Mayer JD, Goldman SL, Turvey C, Palfai TP. Emotional attention, clarity, and repair: Exploring emotional intelligence using the Trait Meta-Mood Scale. In Pennebaker JW (ed.) Emotion, Disclosure, and Health (pp. 125–154). American Psychological Association: Washington. 1995. https://doi.org/10.1037/10182-006

Schunk DH, DiBenedetto MK. Motivation and social cognitive theory. Contemporary Educational Psychology. 2020; 60: 101832. https://doi.org/10.1016/j.cedpsych.2019.101832

Smith R, Killgore WDS, Alkozei A, Lane RD. A neurocognitive process model of emotional intelligence. Biological Psychology. 2018; 139: 131–151. https://doi.org/10.1016/j.biopsycho.2018.10.012

Spinrad TL, Gal DE. Fostering prosocial behavior and empathy in young children. Current Opinion in Psychology. 2018; 20: 40–44. https://doi.org/10.1016/j.copsyc.2017.08.004

Tecuta L, Tomba E, Lupetti A, DiGiuseppe R. Irrational Beliefs, Cognitive Distortions, and Depressive Symptomatology in a College-Age Sample: A Mediational Analysis. Journal of Cognitive Psychotherapy. 2019; 33: 116–127. https://doi.org/10.1891/0889-8391.33.2.116

Tiba AI. A grounded cognition perspective on irrational beliefs in rational emotive behavior therapy. Journal of Cognitive and Behavioral Psychotherapies. 2010; 10: 87–99.

Tisak MS, Goldstein SE. Criminality, cognitive distortions, empathy, and legitimacy of laws: Behaviors and perspectives of youth offenders. Current Psychology. 2023; 42: 7049–7059. https://doi.org/10.1007/s12144-021-02121-8

Van der Graaff J, Carlo G, Crocetti E, Koot HM, Branje S. Prosocial Behavior in Adolescence: Gender Differences in Development and Links with Empathy. Journal of Youth and Adolescence. 2018; 47: 1086–1099. https://doi.org/10.1007/s10964-017-0786-1

van der Meulen K, Brugman D, Hoyos O, del Barrio C. Peer bullying, self-serving cognitive distortions and school moral climate perception in Spanish and Dutch secondary school students. Journal for the Study of Education and Develop-

ment: Infancia Y Aprendizaje. 2019; 42: 337–373. https://doi.org/10.1080/02103702.2019.1578923

Van Langen M, Stams G, Van Vugt E, Wissink I, Asscher J. Explaining Female Offending and Prosocial Behavior: The Role of Empathy and Cognitive Distortions. Laws. 2014; 3: 706–720. https://doi.org/10.3390/laws3040706

van Leeuwen N, Rodgers RF, Gibbs JC, Chabrol H. Callous-unemotional traits and antisocial behavior among adolescents: the role of self-serving cognitions. Journal of Abnormal Child Psychology. 2014; 42: 229–237. https://doi.org/10.1007/s10802-013-9779-z

van Rens SM, Lemelin C, Kloosterman PH, Summerfeldt LJ, Parker JDA. Bullying in High School Youth: Relationships with Trait Emotional Intelligence. Canadian Journal of School Psychology. 2025; 40: 61–75. https://doi.org/10.1177/08295735241311080

Vohs KD, Baumeister RF. Handbook of Self-Regulation: Research, Theory, and Applications. 3rd edn. Guilford Publications: New York. 2016.

Wilson CJ, Bushnell JA, Rickwood DJ, Caputi P, Thomas SJ. The role of problem orientation and cognitive distortions in depression and anxiety interventions for young adults. Advances in Mental Health. 2011; 10: 52–61. https://doi.org/10.5172/jamh.2011.10.1.52

World Medical Association. World Medical Association Declaration of Helsinki: Ethical principles for medical research involving human subjects. Journal of the American Medical Association. 2013; 310: 2191–2194. https://doi.org/10.1001/jama.2013.281053

Xiao SX, Hashi EC, Korous KM, Eisenberg N. Gender differences across multiple types of prosocial behavior in adolescence: A meta-analysis of the prosocial tendency measure-revised (PTM-R). Journal of Adolescence. 2019; 77: 41–58. https://doi.org/10.1016/j.adolescence.2019.09.003

Zeidner M, Matthews G, Roberts RD. What We Know About Emotional Intelligence: How It Affects Learning, Work, Relationships, and Our Mental Health. MIT Press: Cambridge. 2009.