



# Psicología Educativa

<https://journals.copmadrid.org/psed>



## Social Self-perception in Adolescents: Accuracy and Bias in their Perceptions of Acceptance/Rejection

María Portillo and Javier Fernández-Baena

Universidad de Málaga, Spain

### ARTICLE INFO

#### Article history:

Received 23 October 2018  
Accepted 10 September 2019  
Available online 16 October 2019

#### Keywords:

Social self-perception  
Generalized perception accuracy  
Dyadic perception accuracy  
Bias  
Peer acceptance

### ABSTRACT

Social self-perception contributes to the development of social adjustment. Perception accuracy is associated with acceptance by peers, whereas inaccurate social perception has been linked to poor peer relationships, loneliness, and internalizing problems. The aim of this study was to analyze bias and both generalized and dyadic accuracy in adolescents' perceptions of acceptance and rejection, and to examine the association with age, gender, and sociometric status. Participants were 206 adolescents (50.49% girls) aged between 12 and 19 years ( $M = 14.39$ ,  $SD = 1.64$ ). A sociometric test was administered. Results show that generalized perception accuracy was influenced by age, with older adolescents being more accurate. Gender differences were observed in generalized perceptions of rejection, with girls being less accurate. Regarding sociometric status, popular and rejected adolescents tended to underestimate the extent to which they were accepted and rejected, respectively. It is concluded that adolescents' social self-perception vary according to age, gender, and sociometric status.

### La autopercepción social en los adolescentes: la precisión y los sesgos en su percepción de la aceptación/rechazo

### RESUMEN

La autopercepción social contribuye a la adaptación social. La precisión perceptiva se asocia con la aceptación entre iguales, mientras que la falta de precisión se ha relacionado con relaciones sociales pobres, soledad y problemas internalizantes. El objetivo del estudio fue analizar los sesgos y la precisión, tanto generalizada como diádica, que presentan los adolescentes al percibir la aceptación y el rechazo, así como examinar su relación con la edad, el género y el estatus sociométrico. La muestra constó de 206 adolescentes (50.49% chicas) con edades comprendidas entre 12 y 19 años ( $M = 14.39$ ,  $DT = 1.64$ ), a los que se aplicó un cuestionario sociométrico. Los resultados muestran que la precisión perceptiva generalizada se asoció con la edad, siendo los adolescentes mayores más precisos. Además, se observaron diferencias según el género en la percepción generalizada de rechazo, siendo las chicas menos precisas. En relación al estatus sociométrico, los adolescentes populares y rechazados tendían a subestimar en qué medida serían aceptados y rechazados, respectivamente. Se concluye que la autopercepción social de los adolescentes varía según la edad, el género y el estatus sociométrico.

#### Palabras clave:

Autopercepción social  
Precisión perceptiva generalizada  
Precisión perceptiva diádica  
Sesgo  
Aceptación entre iguales

### Peer Relations and Social Self-perceptions

Given the importance of schools as a socialization context for the development of interpersonal relations, researchers have paid considerable attention to the issue of social acceptance. Peer group acceptance refers to the state of being loved, recognized, or preferred as a friend or playmate by one's peers (De Bruyn, Cillessen, & Wissink, 2010; Sureda, García-Bacete, & Monjas, 2009), and it is often assessed using the peer nomination technique (e.g., Bellmore & Cillessen, 2003; Morrow et al., 2015; Sureda et al., 2009). This procedure can be used to establish the five types of social status defined by Coie, Dodge,

and Coppotelli (1982): popular, controversial, average, rejected, and neglected. Numerous studies have described the characteristic profile of each of these types and have explored the consequences of high or low acceptance or rejection, the conclusion being that popular children adapt well to school, display prosocial behavior, and enjoy a source of positive self-evaluation (Hutteman, Nestler, Wagner, Egloff, & Back, 2015; Mohanan & Booth-LaForce, 2016; Van Hoorn, Van Dijk, Meuwese, Rieffe, & Crone, 2016) whereas their rejected peers show limited social activity, lower self-esteem, and difficulties adapting school demands (Bierman, 2004; García-Bacete, Sureda, & Monjas, 2010; Martín & Muñoz de Bustillo, 2009; Mohanan & Booth-LaForce,

Cite this article as: Portillo, M. & Fernández-Baena, J. (2019). Social self-perception in adolescents: Accuracy and bias in their perceptions of acceptance/rejection. *Psicología Educativa*. Ahead of print. <https://doi.org/10.5093/psed2019a12>

Correspondence: [jfbaena@uma.es](mailto:jfbaena@uma.es) (J. Fernández-Baena).

ISSN: 1135-755X/© 2019 Colegio Oficial de Psicólogos de Madrid. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

2016). The interactionist perspective suggests that this is because social status influences the perception of feedback from others, and this information processing is crucial for correct behavioral adjustment to peer group (Crick & Dodge, 1994). In other words, social self-perception contributes to the development of social adjustment.

Social self-perception can be defined as the degree to which people's judgments of how they are seen by others is correct (Kenny, 1994). However, when considering self-perception it is helpful to make two practical distinctions. On the one hand, a distinction can be made between the accuracy of perceived acceptance or rejection (e.g., children's beliefs about whether their peers accept or reject them) and bias in the perception of acceptance or rejection, which refers to the magnitude and direction of any inaccuracies in expected acceptance or rejection (Campbell & Fehr, 1990; Smith, Van Gessel, David-Ferdon, & Kistner, 2013). For example, a child may be inaccurate in his or her perceptions of acceptance or rejection by peers, but show no consistent tendency to over- or underestimate acceptance or rejection. A distinction can also be made between generalized and dyadic perception accuracy. Generalized perception accuracy is a person's overall impression of how he or she is seen by others, whereas dyadic perception accuracy refers to that person's predictions regarding how specific others see him or her (Malloy & Cillessen, 2008). For example, a child may have a fairly good idea of the extent to which he is accepted or rejected by the peer group as a whole but be mistaken as regards the specific peers that accept or reject him; this might be the case, for example, of a popular child with low dyadic perception accuracy of acceptance. Therefore, although both types of accuracy are important, a dyadic conception provides more accurate data (Bellmore & Cillessen, 2003; Boor-Klip, Cillessen, & Van Hell, 2014; Cillessen & Bellmore, 1999).

The relationship between social perception and interpersonal relations (Cillessen & Bellmore, 1999) means that young people who perceive they are accepted will have more opportunities to test out their behavioral and social skills and to experience themselves as being accepted by peers (Badalay, Schwartz, & Hopmeyer, 2012; Bellmore & Cillessen, 2003; MacDonald & Cohen, 1995; Stephens, Lynch & Kistner, 2016). Conversely, children who either perceive rejection by others or overestimate acceptance may deprive themselves from interactions that could, in fact, provide them with real feedback, and this maladaptive behavior may then reinforce their sense of being rejected or maintain their erroneous perception (Cillessen & Bellmore, 1999; Lynch, Kistner, Stephens, & David-Ferdon, 2016; McQuade, Achufusi, Shoulberg, & Murray-Close, 2014; Stephens et al., 2016).

In addition to the relationship with social acceptance, research has also explored the association between social self-perception and gender and age. Regarding gender, Boor-Klip et al. (2014) note that the findings are mixed: whereas some studies have found greater perception accuracy among girls (Cillessen & Bellmore, 1999; Stephens et al., 2016), other authors suggest either that girls underestimate and boys overestimate their acceptance by others, or that there are no differences between the two genders (Kistner, David-Ferdon, Repper, & Joiner, 2006; Malloy, Albright, & Scarpati, 2007; Sally, Vannata, Gerhardt, & Noll, 2010). With respect to age, and consistent with the idea that self-perception is a meta-cognitive skill (Flavell, 1988), various studies have indicated that perception accuracy is greater at later stages of development (Malloy et al., 2007).

### Development across Adolescence, Social Bonds, and Social Self-perceptions

Adolescence is a period of 'social reorientation' when sensitivity to peers' evaluation, acceptance and rejection increases (Dahl, Allen, Wilbrecht, & Suleiman, 2018). Peers become a source of affection and

information for early adolescents while they offer intimacy, loyalty, love, and support in late-adolescence (Cantón, Cortés & Cantón, 2011; Papalia & Martorell, 2017). Concurrently, several changes affect brain structures and functions and it turns into faster neural networks which foster socio-cognitive abilities, such as face processing, perspective-taking, mentalising, and social decision-making in late-adolescence (Kilford, Garret & Blakemore, 2016; Kuhn, 2006; Papalia & Martorell, 2017).

These two (cognitive and socio-emocional) brain networks are interrelated and the interactions between cognitive control and affective processing also increase with age, yet areas related to emotional responses develop earlier (early adolescence) than those responsible for decision-making (late adolescence) (Kilford et al., 2016; Papalia & Martorell, 2017). This might be the reason why perception accuracy and bond quality are improved throughout adolescence: the development of cognitive abilities improves the skills required to attribute ideas, beliefs, and feelings as well as to correctly interpret expressions, turning out in adaptive responses.

Given that the majority of studies in this field have been conducted with children and pre-adolescents, the present study focused on a sample of adolescents, since adolescence constitutes a period of rapid development during which social relations acquire greater relevance in the construction of identity. The aim was to analyze bias and both generalized and dyadic accuracy in their perceptions of acceptance and rejection, and to examine the association with age, gender, and sociometric status. The study hypotheses were as follows: (a) both generalized and dyadic perceptions of acceptance and rejection will become more accurate with age, whereas bias will decrease; (b) girls will be less accurate than boys in both their generalized and dyadic perceptions of acceptance and rejection, and will underestimate the degree to which they are accepted; (c) dyadic perceptions of acceptance and rejection will be more accurate than will generalized perceptions; and (d) popular adolescents will be more accurate in their perception of acceptance, while rejected adolescents will be more accurate in their perception of rejection, and both of these groups will show less bias in their perceptions than will the other sociometric groups.

## Method

### Participants

The sample comprised 206 secondary education students (104 girls and 102 boys) recruited from across eight classes (two from each of four academic years, selected randomly). Participants were aged between 12 and 19 years ( $M = 14.39$ ,  $SD = 1.64$ ). In terms of sociometric status, the sample could be classified as follows: 14.56% popular ( $n = 30$ ), 3.39% controversial ( $n = 7$ ), 54.36% average ( $n = 112$ ), 11.65% rejected ( $n = 24$ ), and 16.01% neglected ( $n = 33$ ).

### Instruments

**Sociometric test.** Adolescents were administered a questionnaire focused on unlimited peer nominations. The questionnaire was formed by 4 questions, two of them regarding social acceptance, and the other two regarding social self-perceptions. In relation to peer acceptance, one question was asked assessing positive nominations ('Which partners do you like the most?') and another one assessed negative nominations ('Which partners do you like the least?'). Related to social self-perceptions, one question was asked assessing the number of positive nominations perceived ('Who do you think will have chosen you as a friend?'), and another one assessed the number of negative nominations perceived ('Who do you think will have chosen you among the people they like least?'). Based on this questionnaire, the following measures were calculated.

**Peer acceptance.** The sum of the positive and negative nominations (using absolute values) was taken as a measure of social impact for each adolescent, while the difference between the number of positive and negative nominations served as an indicator of social preference. These indicators (social impact and social preference) were then standardized to Z scores and combined in order to define the sociometric status of each participant (Coie et al., 1982): popular (positive social preference and high social impact), controversial (neutral social preference and high social impact), average (average positive preference and social impact), rejected (negative social preference and high social impact), and neglected (low social preference and low social impact). Table 1 shows the interval of scores used to classify the sample.

**Table 1.** Combination of Z Scores Related to Social Impact and Social Preference which Delimit the Sociometric Status

Sociometric status	Z scores			
	Social impact		Social preference	
	Min	Max	Min	Max
Popular	0.13	0.52	0.12	0.44
Average	0.10	0.32	- 0.11	0.21
Rejected	0.14	0.75	- 0.63	- 0.08
Controversial	0.20	0.52	- 0.12	0.12
Neglected	0.00	0.11	- 0.09	0.11

**Generalized perception accuracy.** Following the procedure described by Boor-Klip et al. (2014), the accuracy of generalized perceptions of acceptance was calculated by subtracting the real number of positive nominations from the predicted number of positive nominations (using absolute values in both cases). Similarly, the accuracy of generalized perceptions of rejection was calculated by subtracting the real number of negative nominations from the predicted number of negative nominations (again, using absolute values). In this way, a score close to zero indicates greater accuracy, as there would be a stronger correspondence between the number of real and predicted nominations.

**Dyadic perception accuracy.** Here we calculated for both acceptance and rejection the number of times that a predicted peer name corresponded with that of a real nomination. Dyadic perception accuracy for acceptance was calculated by subtracting the number of positive nominations received from the number of correct positive predictions (using absolute values). Similarly, dyadic perception accuracy for rejection was calculated by subtracting the number of negative nominations received from the number of correct negative predictions (using absolute values). Once again, a score close to zero indicated greater accuracy.

**Bias.** Bias in perceptions of acceptance was calculated by subtracting the real number of positive nominations from the number of positive nominations that each adolescent predicted he or she would receive. Similarly, bias in perceptions of rejection was calculated by subtracting the real number of negative nominations from the number of negative nominations that each adolescent predicted he or she would receive. A negative score therefore means that the adolescent underestimates the degree of acceptance or rejection, whereas a positive score is indicative of an overestimation. A score of zero indicates the absence of bias.

## Procedure

The parents or legal guardians of the adolescents were first informed in writing of the study objectives and procedure, it being made clear that all data would remain confidential. Once their consent had been obtained (permission was only withheld in one case) we proceeded to administer the tests in the adolescents' usual

classroom, under the supervision of a member of the research team. The evaluation took place during the third term of the academic year so as to ensure that the adolescents knew one another. The study was approved by the Andalusia Biomedical Research Ethic Committee (CEIBA).

## Data Analysis

After checking the necessary statistical assumptions (normality, homoscedasticity, and linearity) the data were analyzed using IBM SPSS Statistics 22. Normality was checked using Shapiro-Wilk test: generalized perception of acceptance and rejection as well as dyadic perception of acceptance and rejection do not show a normal distribution ( $W = .842, p < .001$ ;  $W = .692, p < .001$ ;  $W = .856, p < .001$ ;  $W = .651, p < .001$ , respectively). These results support the use of non-parametric analysis.

Differences in the accuracy of both generalized and dyadic perceptions of acceptance and rejection according to age were analyzed using a Mann-Whitney  $U$ -test and considering two age groups: early adolescence (12-14 years, 56.8%) and middle-late adolescence (15-19 years, 43.2%). A Mann-Whitney  $U$ -test was similarly applied to examine differences by gender. Finally, differences in perception accuracy according to sociometric status were analyzed by applying a Kruskal-Wallis  $H$ -test to each of the variables, followed by post hoc contrasts using a Mann-Whitney  $U$ -test and Bonferroni correction.

Differences in bias according to age, gender, and sociometric status were analyzed using chi-squared tests and considering three categories of bias for acceptance and rejection (underestimation, no bias, and overestimation), two age groups (early and middle-late adolescence), gender (boy/girl), and sociometric status (popular, controversial, average, rejected, and neglected).

## Results

### Differences in Bias and in both Generalized and Dyadic Accuracy of Perceptions according to Age and Gender

Regarding age, we found significant differences between the two groups (early vs. middle-late adolescents) in the accuracy of their generalized perceptions of acceptance, Mann-Whitney  $U = 4382.00, z = -2.01, p = .026, r = .14$ . However, no significant differences were observed in the accuracy of dyadic perceptions of acceptance, or in the accuracy of either generalized or dyadic perceptions of rejection. With respect to bias, we found no differences in the perception of acceptance,  $\chi^2(2) = 1.16, p = .559$ , or of rejection,  $\chi^2(2) = 3.27, p = .194$ . The mean scores and standard deviations for perception accuracy in the two age groups are shown in Table 2.

**Table 2.** Means and Standard Deviations for Generalized and Dyadic Accuracy in Perceptions of Acceptance and Rejection according to Age

Age group	Perception accuracy			
	Generalized acceptance	Dyadic acceptance	Generalized rejection	Dyadic rejection
	$M(SD)$	$M(SD)$	$M(SD)$	$M(SD)$
Early adolescence	1.67 (1.49)	1.71 (1.60)	1.65 (2.09)	1.45 (2.27)
Middle-late adolescence	1.25 (1.08)	1.26 (1.27)	2.22 (2.79)	1.79 (3.03)

Note. Early adolescence (12-14 years);  $n = 117$ ; middle-late adolescence (15-19 years);  $n = 89$ .

Regarding gender, we found no differences in the accuracy of either generalized or dyadic perceptions of acceptance, or in the accuracy of dyadic perceptions of rejection. However, girls were significantly less accurate than boys in their generalized perception of rejection,

**Table 3.** Means and Standard Deviations for Generalized and Dyadic Accuracy in Perceptions of Acceptance and Rejection according to Sociometric Status

Perception accuracy	Sociometric status				
	Popular <i>M</i> ( <i>SD</i> )	Average <i>M</i> ( <i>SD</i> )	Rejected <i>M</i> ( <i>SD</i> )	Controversial <i>M</i> ( <i>SD</i> )	Neglected <i>M</i> ( <i>SD</i> )
Generalized acceptance	2.50 (1.59)	1.38 (1.26)	1.13 (1.36)	1.86 (1.46)	1.12 (0.89)
Dyadic acceptance	2.77 (1.79)	1.46 (1.34)	1.38 (1.46)	2.14 (1.34)	0.55 (0.75)
Generalized rejection	2.00 (2.92)	1.46 (1.36)	3.92 (3.53)	4.00 (3.95)	2.01 (0.35)
Dyadic rejection	1.30 (3.07)	1.18 (1.72)	4.08 (3.85)	5.00 (3.46)	0.76 (1.95)

Note. Popular ( $n = 30$ ); average ( $n = 112$ ); rejected ( $n = 24$ ); controversial ( $n = 7$ ); neglected ( $n = 33$ ).

Mann-Whitney  $U = 4478.50$ ,  $z = -1.98$ ,  $p = .047$ ,  $r = .14$ . With respect to bias, there were no significant differences between boys and girls in their perception of acceptance,  $\chi^2(2) = 1.17$ ,  $p = .555$ , or of rejection,  $\chi^2(2) = .37$ ,  $p = .829$ .

### Differences in Bias and in both Generalized and Dyadic Accuracy of Perceptions according to Sociometric Status

Sociometric status was associated with significant differences in the accuracy of generalized perceptions of acceptance,  $\chi^2(4, N = 206) = 22.90$ ,  $p < .001$ . Specifically, the Mann-Whitney  $U$  analysis showed that popular adolescents were less accurate than their peers classified as average,  $U = 908.50$ ,  $z = -3.97$ ,  $p < .001$ ,  $r = .33$ , rejected,  $U = 150.00$ ,  $z = -3.75$ ,  $p < .001$ ,  $r = .51$ , or neglected,  $U = 211.00$ ,  $z = -4.05$ ,  $p < .001$ ,  $r = .51$ . Significant differences were also observed in the accuracy of dyadic perceptions of acceptance,  $\chi^2(4, N = 206) = 36.72$ ,  $p < .001$ . Once again, the Mann-Whitney  $U$  test showed that popular adolescents were less accurate than their peers classified as average,  $U = 902.00$ ,  $z = -3.99$ ,  $p < .001$ ,  $r = .34$ , rejected,  $U = 184.00$ ,  $z = -3.12$ ,  $p = .002$ ,  $r = .42$ , or neglected,  $U = 133.50$ ,  $z = -5.14$ ,  $p < .001$ ,  $r = .65$ . Table 3 shows the means and standard deviations for perception accuracy according to sociometric status.

Sociometric status was also associated with significant differences in the accuracy of generalized perceptions of rejection,  $\chi^2(4, N = 206) = 17.43$ ,  $p = .002$ . Specifically, the Mann-Whitney  $U$  analysis showed that rejected adolescents were less accurate than their peers classified as average,  $U = 765.50$ ,  $z = -3.40$ ,  $p = .001$ ,  $r = .29$ , popular,  $U = 233.00$ ,  $z = -2.24$ ,  $p = .025$ ,  $r = .31$ , or neglected,  $U = 213.50$ ,  $z = -3.02$ ,  $p = .003$ ,  $r = .40$ . Significant differences were also observed in the accuracy of dyadic perceptions of rejection,  $\chi^2(4, N = 206) = 30.56$ ,  $p < .001$ . Once again, the Mann-Whitney  $U$  test showed that rejected adolescents were less accurate than their peers classified as average,  $U = 776.00$ ,  $z = -3.49$ ,  $p < .001$ ,  $r = .30$ , popular,  $U = 209.50$ ,  $z = -2.76$ ,  $p = .025$ ,  $r = .38$ , or neglected,  $U = 202.00$ ,  $z = -3.37$ ,  $p = .001$ ,  $r = .45$ .

**Table 4.** Frequency and Percentage of Bias in the Perception of Acceptance according to Sociometric Status

Sociometric status	Bias in perceived acceptance		
	Underestimation <i>n</i> (%)	No bias <i>n</i> (%)	Overestimation <i>n</i> (%)
Popular	26 (86.67)	1 (3.33)	3 (10)
Controversial	5 (71.43)	1 (14.29)	1 (14.29)
Average	60 (53.57)	31 (27.68)	21 (18.75)
Rejected	9 (37.50)	8 (33.33)	7 (29.17)
Neglected	6 (18.18)	5 (15.15)	22 (66.67)

Note. Popular ( $n = 30$ ); average ( $n = 112$ ); rejected ( $n = 24$ ); controversial ( $n = 7$ ); neglected ( $n = 33$ ).

Regarding bias, sociometric status was associated with significant differences in the perception of both acceptance,  $\chi^2(8) = 50.875$ ,  $p < .001$ , and rejection,  $\chi^2(8) = 22.885$ ,  $p = .004$ . Tables 4 and 5 show

the frequency and percentage of bias in perceived acceptance and rejection according to sociometric status. As it can be seen, 86.67% of popular and 71.43% of controversial children tended to underestimate their acceptance whereas 66.67% of neglected ones overestimated their positive nominations. Besides, 58.33% of rejected and 85.71% of controversial children underestimated their rejection and 54.55% of neglected peers overestimated the negative nominations they had been received.

**Table 5.** Frequency and Percentage of Bias in the Perception of Rejection according to Sociometric Status

Sociometric status	Bias in perceived rejection		
	Underestimation <i>n</i> (%)	No bias <i>n</i> (%)	Overestimation <i>n</i> (%)
Popular	7 (23.33)	7 (23.33)	16 (53.33)
Controversial	6 (85.71)	1 (14.29)	0 (0)
Average	44 (39.29)	32 (28.57)	36 (32.14)
Rejected	14 (58.33)	4 (16.67)	6 (25)
Neglected	6 (18.18)	9 (27.27)	18 (54.55)

Note. Popular ( $n = 30$ ); average ( $n = 112$ ); rejected ( $n = 24$ ); controversial ( $n = 7$ ); neglected ( $n = 33$ ).

## Discussion and Conclusions

Social self-perception has been less widely studied in adolescents than among children and pre-adolescents. The present study therefore focused on a sample of adolescents and analyzed differences in bias and in the generalized and dyadic accuracy of their perceptions of acceptance and rejection according to age, gender, and sociometric status.

We began by examining the relationship between age and perception accuracy and bias. Our hypothesis was that both generalized and dyadic perceptions of acceptance and rejection would become more accurate with age, as this kind of social perception is a socio-cognitive skill which improves across adolescence (Kilford et al., 2016; Kuhn, 2006; Papalia & Martorell, 2017). Accordingly, we expected to find that bias would diminish. With regard to generalized perceptions of acceptance the results showed, in accordance with the findings by Malloy et al. (2007), Neal, Neal, and Capella (2016), and Sally et al. (2010) with samples aged under thirteen, that accuracy increased in line with cognitive development. However, we observed no significant age-related differences in the perception of rejection, although there was a trend towards less accuracy in both generalized and dyadic perceptions in the older age group (i.e., middle-late adolescence). The fact that the perception of acceptance by peers becomes more accurate as adolescence progresses could be due to the development of social cognition (Kilford et al., 2016; Kuhn, 2006; Papalia & Martorell, 2017), as well as to the nature of the relationships that begin to be established at this stage. That is, relationships are more intimate, exclusive, and characterized by shared ideas and loyalty (Cantón et al., 2011; Dahl et al., 2018; Papalia & Martorell, 2017). Conversely, the less accurate perception of rejection in the older age group may be attributable to the tendency for rejection to be

expressed less overtly as young people progress through adolescence (Bellmore & Cillessen, 2003).

Our finding of no significant association between bias and age suggests that although the accuracy of perceived acceptance increases over time, age does not appear to influence the tendency to under- or overestimate the degree of acceptance or rejection by peers (i.e., bias remains stable across adolescence).

The next stage of our analysis explored whether gender was associated with differences in bias and in the generalized and dyadic accuracy of perceptions of acceptance and rejection. We expected girls to be less accurate in their predictions (both generalized and dyadic) of peer acceptance and rejection, and specifically that they would underestimate more than boys the degree to which they were accepted. The results partially support this hypothesis. In line with the results of Bellmore and Cillessen (2003), Malloy and Cillessen (2008), and Sally et al. (2010) carried out with pre-adolescents, we found no differences between boys and girls in their ability to accurately perceive acceptance. Once again, this finding may be explained by the characteristics of friendships that are established at this stage of development (Cantón et al., 2011; Dahl et al., 2018; Papalia & Martorell, 2017). We did, however, observe a gender difference with respect to the perception of rejection, since girls were significantly less accurate than boys in perceiving generalized negative feedback from peers. This result may be understood in terms of female stereotypes, whereby girls are encouraged to pay more attention to and be more concerned about dyadic relationships. Interestingly, however, girls were no more likely than boys to underestimate acceptance or overestimate rejection by peers. This lack of gender-related bias, which contrasts with the results of Kistner et al. (2006), requires further investigation in order to determine the stability of our findings since up to date there is no agreement about the influence of gender in neither perception accuracy nor bias in previous studies with under-thirteen-age children (Boor-Klip et al., 2014). Some of them found higher perception accuracy among girls (Cillessen & Bellmore, 1999), others highlighted two possibilities: a) that girls underestimate while boys overestimate their acceptance, and b) there are no differences between girls and boys (Kistner et al., 2006; Malloy et al., 2007; Sally et al., 2010).

Finally, we examined differences in bias and in the generalized and dyadic accuracy of perceptions of acceptance and rejection according to sociometric status. Research regarding accuracy and bias in children younger than thirteen pointed out that accepted children are conscious about their status as well rejected children are, but tend to underestimate their acceptance and rejection, respectively (Boor-Klip et al., 2014; García-Bacete, Marande-Perrin, Schneider, & Cillessen, 2019; Morrow et al., 2015). Here, we expected to find (1) that dyadic perceptions of acceptance and rejection would be more accurate than generalized perceptions, (2) that popular adolescents would be more accurate in their perceptions of acceptance because of their cognitive development, and (3) that rejected adolescents would be more accurate in their perceptions of rejection. Nevertheless, the results do not support these hypotheses.

With respect to perceived acceptance, all groups except for the neglected adolescents were more accurate in their generalized than in their dyadic perceptions. This result could be due to the fact that it is more difficult to correctly predict all the specific nominations when the total number of nominations is high. Comparison of the sociometric categories revealed that popular adolescents were less accurate in both their generalized and dyadic perceptions of acceptance, a result that contrasts with the findings by Cillessen and Bellmore (1999) and MacDonald and Cohen (1995), but which is consistent with the study by Boor-Klip et al. (2014). A possible explanation for our result could be that the high number of positive nominations received by the most accepted adolescents makes it difficult for them to correctly predict both the total number of positive nominations they received and the specific peers who

made them (Boor-Klip et al., 2014); this interpretation could be also applied when nominations are limited, and would be the case of neglected children, who tended to overestimate their scarce positive and negative nominations. In fact, our results indicate that accepted adolescents underestimate the number of positive nominations they receive.

Regarding perceived rejection, we found that adolescents classified as controversial and rejected were more accurate in their generalized than in their dyadic perceptions, whereas the other groups showed the opposite pattern (i.e., more accurate dyadic than generalized perceptions). This is likely because it is easier to identify rejection by specific persons than by the peer group as a whole. The controversial and rejected adolescents are the exception because their accuracy for both generalized and dyadic perceptions is particularly low in comparison with that observed in the other groups. More specifically, the rejected adolescents were the least accurate in their perceptions of both group and dyadic rejection, possibly because it is difficult to identify negative nominations when their total number is very high (Boor-Klip et al., 2014). In addition, and in line with the previous interpretation, both controversial and rejected adolescents usually underestimate the extent to which they will be rejected by peers. This could have important repercussions for rejected and controversial adolescents, since a failure to realize the extent of their rejection may mean that they display maladjusted behavior which deprives them of peer interactions. As a result, lacking the opportunities to relate with others prevents them from the opportunity to develop the required social skills, such as empathy or perspective taking (Laible, Carlo & Roesch, 2004).

The method used in this study to assess social self-perception (i.e., an analysis of both bias and generalized and dyadic accuracy of perceptions of acceptance and rejection) overcomes the limitations associated with a single measure. However, we did not consider other potential variables of interest, such as whether the person being rated is of the same gender as the rater. A task for future research into social self-perception among adolescents would therefore be to consider perception within and between the two genders, and to investigate gender-related differences in bias. It would also be useful to explore differences between aggressive rejected and shy rejected adolescents (Ladd, 1999).

As a limitation of this paper, we are forced to underline that the previous results need to be understood with caution due to the features of certain social categories within the sample. Specifically, the number of controversial children was extremely reduced in comparison with the rest of sociometric groups. That situation is derived from the difficulties to find children who possess the particular characteristics of controversial individuals (García-Bacete, Sureda, & Monjas, 2008): both, considerable high acceptance and rejection simultaneously. Nonetheless, this fact far from discourage investigation about this uncommon status, has to promote future research in order to develop a deeper understanding of these children which helps them to establish beneficial bonds with their peers.

To conclude, the results of this study help to define the profile of social self-perception in adolescence. In particular, we found (1) that generalized perceptions of acceptance become more accurate with age, (2) that girls are less accurate in their generalized perception of rejection, (3) that accuracy is usually higher for generalized perceptions of acceptance and dyadic perceptions of rejection, and (4) that popular adolescents tend to underestimate their acceptance by peers, while rejected adolescents tend to underestimate the extent of their rejection. These results may serve as a platform for the design of interventions aimed at improving the accuracy of social self-perceptions among adolescents, the ultimate goal being to promote their social adjustment and improve their interpersonal relations. There is also a need for specific initiatives targeting those adolescents who perceive themselves as rejected by peers, so as to prevent them from shying away from interactions that would in

fact show them how certain ways of behaving might lead to greater acceptance and a stronger sense of their own competence.

### Conflict of Interest

The authors of this article declare no conflict of interest.

### References

- Badalay, D., Schwartz, D., & Hopmeyer, A. (2012). Social status, perceived social reputations, and perceived dyadic relationships in early adolescence. *Social Status and Perceptions*, 21, 482-500. <https://doi.org/10.1111/j.1467-9507.2011.00646.x>
- Bellmore, A. D., & Cillessen, A. H. N. (2003). Children's meta-perceptions and meta-accuracy of acceptance and rejection by same-sex and other-sex peers. *Personal Relationships*, 10, 217-233. <https://doi.org/10.1111/1475-6811.00047>
- Bierman, K. L. (2004). *Peer rejection, developmental process and intervention strategies*. New York, NY: The Guilford Press.
- Boor-Klip, H. J., Cillessen, A. H. N., & Van Hell, J. G. (2014). Social understanding of high-ability children in middle and late childhood. *Gifted Child Quarterly*, 58, 259-271. <https://doi.org/10.1177/0016986214547634>
- Campbell, J. D., & Fehr, B. (1990). Self-esteem and perceptions of conveyed impressions: Is negative affectivity associated with greater realism? *Journal of Personality and Social Psychology*, 58, 122-133. <https://doi.org/10.1037//0022-3514.58.1.122>
- Cantón, J., Cortés, M. R., & Cantón, D. (2011). *Desarrollo socioafectivo y de la personalidad*. Madrid, Spain: Alianza Editorial.
- Cillessen, A. H. N., & Bellmore, A. D. (1999). Accuracy of social self-perceptions and peer competence in middle childhood. *Merrill-Palmer Quarterly*, 45, 650-676.
- Coie, J., Dodge, K. A., & Coppotelli, H. (1982). Dimensions and types of social status: A cross-age perspective. *Development Psychology*, 18, 557-570. <https://doi.org/10.1037/0012-1649.18.4.557>
- Crick, N. R., & Dodge, K. A. (1994). A review and reformulation of social information-processing mechanisms in children's social adjustment. *Psychological Bulletin*, 115, 74-101. <https://doi.org/10.1037/0033-2909.115.1.74>
- Dahl, R. E., Allen, N. B., Wilbrecht, L., & Suleiman, A. B. (2018). Importance of investing in adolescence from a developmental science perspective. *Nature*, 554, 441-450. <https://doi.org/10.1038/nature25770>
- De Bruyn, E. H., Cillessen, A. H. N., & Wissink, I. (2010). Associations of popularity with bullying and victimization in early adolescence. *Journal of Early Adolescence*, 30, 543-566. <https://doi.org/10.1177/0272431609340517>
- Flavell, J. H. (1988). The development of children's knowledge about the mind: from cognitive connections to mental representations. In J. W. Astington, P. L. Harris, & D. R. Olson (Eds.), *Developing theories of mind*. Cambridge, UK: Cambridge University Press.
- García-Bacete, F. J., Marande-Perrin, G., Schneider, B. H., & Cillessen, A. H. N. (2019). Children's awareness of peer rejection and teacher reports of aggressive behavior. *Psychosocial Intervention*, 28, 37-47. <https://doi.org/10.5093/pi2018a25>
- García-Bacete, F. J., Sureda, I., & Monjas, M. I. (2008). Distribución sociométrica en las aulas de chicos y chicas a lo largo de la escolaridad [Sociometric distribution of boys and girls during all the schooling period]. *Revista de Psicología Social*, 23, 63-74. <https://doi.org/10.1174/021347408783399480>
- García-Bacete, F. J., Sureda, I., & Monjas, M. I. (2010). El rechazo entre iguales en la educación primaria: una panorámica general [Peer rejection in elementary school: A general outlook]. *Anales de Psicología*, 26, 123-136.
- Hutteman, R., Nestler, S., Wagner, J., Egloff, B., & Back, M. D. (2015). Wherever I may roam: Processes of self-esteem development from adolescence to emerging adulthood in the context of international student exchange. *Journal of Personality and Social Psychology*, 108, 767-783. <https://doi.org/10.1037/pspp0000015>
- Kenny, D. A. (1994). *Interpersonal perception: A social relations analysis*. New York, NY: Guilford.
- Kilford, E. J., Garret, E., & Blakemore, S. (2016). The development of social cognition in adolescence: An integrated perspective. *Neuroscience and Biobehavioral Reviews*, 70, 106-120. <https://doi.org/10.1016/j.neubiorev.2016.08.016>
- Kistner, J. A., David-Ferdon, C. F., Repper, K. K., & Joiner, T. E. (2006). Bias and accuracy of children's perceptions of peer acceptance: Prospective associations with depressive symptoms. *Journal of Abnormal Child Psychology*, 34, 349-361. <https://doi.org/10.1007/s10802-006-9028-9>
- Kuhn, D. (2006). Do cognitive changes accompany developments in the adolescent brain? *Perspectives on Psychological Science*, 1, 59-67. <https://doi.org/10.1111/j.1745-6924.2006.t01-2-x>
- Ladd, G. W. (1999). Peer relationships and social competence during early and middle childhood. *Annual Review of Psychology*, 50, 336-359. <https://doi.org/10.1146/annurev.psych.50.1.333>
- Laible, D. J., Carlo, G., & Roesch, S. C. (2004). Pathways to self-esteem in late adolescence: The role of parent and peer attachment, empathy, and social behaviours. *Journal of Adolescence*, 27, 703-716. <https://doi.org/10.1016/j.adolescence.2004.05.005>
- Lynch, R., Kistner, J. A., Stephens, H., & David-Ferdon, C. (2016). Positively biased self-perceptions of peer acceptance and subtypes of aggression in children. *Aggressive Behavior*, 42, 82-96. <https://doi.org/10.1002/ab.21611>
- MacDonald, C. D., & Cohen, R. (1995). Children's awareness of which peers like them and which peers dislike them. *Social Development*, 4, 182-193. <https://doi.org/10.1111/j.1467-9507.1995.tb00059.x>
- Malloy, T. E., Albright, L., & Scarpati, S. (2007). Awareness of peers' judgments of oneself: Accuracy and process of metaperception. *International Journal of Behavioral Development*, 31, 603-610. <https://doi.org/10.1177/0165025407080590>
- Malloy, T. E., & Cillessen, A. H. N. (2008). Variance component analysis of generalized and dyadic peer perceptions in adolescence. In N. A. Card, T. D. Little, & J. P. Selig (Eds.), *Modeling dyadic and interdependent data in developmental and behavioural research* (pp. 213-244). Mahwah, NJ: Erlbaum.
- Martín, E., & Muñoz de Bustillo, M. C. (2009). Un análisis contextual de la preferencia y el rechazo entre iguales en la escuela [A contextual analysis of peer acceptance and peer rejection at school]. *Psicothema*, 21, 439-445.
- McQuade, J. D., Achufusi, A. K., Shoulberg, E. K., & Murray-Close, D. (2014). Biased self-perceptions of social competence and engagement in physical and relational aggression: The moderating role of peer status and sex. *Aggressive Behavior*, 40, 512-525. <https://doi.org/10.1002/ab.21552>
- Mohanani, K. C., & Booth-LaForce, C. (2016). Deflected pathways: Becoming aggressive, socially withdrawn, or prosocial with peers during the transition to adolescence. *Journal of Research on Adolescence*, 26, 270-285. <https://doi.org/10.1111/jora.12190>
- Morrow, M. T., Hubbard, J. A., Sallee, M. L., Barhight, L. R., Lines, M. M., & Rubin, R. M. (2015). Dyadic accuracy and bias in preadolescents' perceived peer relations: Associations with aggression, depression and peer victimization. *Journal of Social and Personal Relationships*, 7, 892-916. <https://doi.org/10.1177/0265407515605907>
- Neal, J. W., Neal, Z. P., & Capella, E. (2016). Seeing and being seen: Predictors of accurate perceptions about classmates' relationships. *Social Networks*, 44, 1-8. <https://doi.org/10.1016/j.socnet.2015.07.002>
- Papalia, D., & Martorell, G. (2017). *Desarrollo humano* [Human development]. México DF, Mexico: Mc Graw-Hill.
- Sally, C. G., Vannata, K., Gerhardt, C. A., & Noll, R. B. (2010). Social self-perception accuracy: Variations as a function of child age and gender. *Self and Identity*, 9, 209-223. <https://doi.org/10.1080/15298860902979224>
- Smith, S. D., Van Gessel, C. A., David-Ferdon, C., & Kistner, J. A. (2013). Sex differences in children's discrepant perceptions of peer acceptance. *Journal of Applied Developmental Psychology*, 34(2), 101-107. <https://doi.org/10.1016/j.appdev.2012.10.002>
- Stephens, H. F., Lynch, R. J., & Kistner, J. A. (2016). Positively biased self-perceptions: Who has them and what are their effects? *Child Psychiatry Human Development*, 47, 305-316. <https://doi.org/10.1007/s10578-015-0567-6>
- Sureda, I., García-Bacete, J. F., & Monjas, I. (2009). Razones de niños y niñas de diez y once años para preferir o rechazar a sus iguales [Reasons why ten- and eleven-year-old children prefer or reject their peers]. *Revista Latinoamericana de Psicología*, 2, 305-321. <http://doi.org/10.14349/rlp.v4i2.382>
- Van Hoorn, J., Van Dijk, E., Meuwese, R., Rieffe, C., & Crone, E. A. (2016). Peer influence on prosocial behavior in adolescence. *Journal of Research on Adolescence*, 26, 90-100. <https://doi.org/10.1111/jora.12173>