Reference values regarding measure of Basic Empathy Scale in adolescents

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Abstract

Empathy has revealed a fundamental role in fostering prosocial and altruistic behavior. Conversely, empathic dysfunction has been associated with antisocial behavior (ASB). The Basic Empathy Scale (BES) has been the most used instrument to measure empathy in studies with children and adolescents in forensic settings. Thus, we conducted a systematic review in order to establish reference values for BES in children and adolescents with conduct disorder/antisocial behavior (CD/ASB) and typical controls. Studies related to the topic were obtained from multiple databases (e.g., EBSCO, PubMed, Web of Science), through rigorous exclusion and inclusion criteria. Only papers with empirical and quantitative methodologies from scientific and academic publications were included. A total of 311 studies were identified through database searches and 15 articles were retained for this review. The findings reveal lower empathy scores in children and adolescents with CD/AB (pooled mean for the total scale = 52.32; mean for cognitive empathy = 30.86; pooled mean for affective empathy = 28.83) than controls (pooled mean for the total scale = 67.20; pooled mean for cognitive empathy = 34.04; pooled mean for affective empathy = 32.30). This review provides reference values that can be useful for the application of the BES and the interpretation of its results, both in clinical practice and in future research with children and adolescents.

Keywords: reference values, empathy, BES.

Reference values regarding measure of Basic Empathy Scale in forensic adolescents

Over the years, empathy has received several definitions. Despite the lack of consensus regarding its conceptualization, an accepted definition of empathy arises from the debate about whether empathy involves recognizing emotion or experiencing it, or both (Bennett, 1995; Chlopan et al., 1985; Jolliffe & Farrington, 2004; Reniers et al., 2011). In this way, empathy is seen as an affective construct (i.e., the sharing of the emotional state of another), a cognitive construct (i.e., the ability to understand another's emotional state), or both (Decety & Jackson, 2006; Gini et al., 2007; Jolliffe & Farrington, 2004; Rankin et al., 2005; Reniers et al., 2011; Young et al., 2008). Cohen and Strayer (1996, p. 988) refer to empathy as “the ability to understand and share in another's emotional state or context”.

In general, researchers appear to agree on certain aspects of empathy, such as: it is a factor of individual difference (Eisenberg & Strayer, 1987; Farrington et al., 2001), it influences behavior (Eisenberg et al., 1996; Kaukiainen et al., 1999), it can be measured, and people with higher levels of empathy are expected to act in a more responsive way to the perceived feelings of another (Jolliffe & Farrington, 2004). Empathy can be viewed as a dichotomous risk factor (e.g., lack of empathy), but it is better conceptualized as a continuous variable (e.g., low-high empathy). An increased understanding of the mechanisms of empathy is of great clinical and public health relevance. On one hand, empathy fosters prosocial and altruistic behavior (e.g., Batson et al., 1987). On other hand, empathic dysfunction has been associated with diverse clinical conditions, such as schizophrenia (Lee et al., 2004) and autistic spectrum disorders (Blair, 2005; Lee et al., 2004), as well as conduct disorder, antisocial personality disorder, acquired sociopathy (Jolliffe & Farrington, 2004; Miller &

Eisenberg, 1988; Spinella, 2005), and psychopathy (Blair, 2005). Besides problems in social communication/interaction, resulting in unstable and impaired relationships, a lack of empathy is often associated with callous and unemotional behavior, violence, aggression, and criminality (Blair et al., 2005; Reniers et al., 2011). For this reason, lack of empathy or low empathy is often used to explain behavioral outcomes, especially antisocial behavior (ASB), as it is postulated that those who often act antisocially have lower empathy than those who do not (Burke, 2001; Bush et al., 2000; Hogan, 1969; Jolliffe & Farrington, 2004; Marcus & Gray, 1998). High empathy is viewed as an individual protective factor, decreasing the probability of certain types of antisocial or even criminal behavior, while a lack of empathy is assumed to have a facilitating influence on these behaviors (Jolliffe & Farrington, 2004).

At the developmental level, the ability to empathize begins at an early age, with infants showing some responsiveness to other infants' distress (Martin & Clark, 1982). During the second year of life, toddlers' responses to others' distress typically transform from an overwhelming personal distress reaction to a more other oriented empathic reaction. At the same time, toddlers become capable of rather sophisticated helping behaviors (Zahn-Waxler et al., 1992). As children reach the preschool years, significant developments occur in cognitive empathy. There is evidence to suggest that these early dispositions toward empathy and prosocial behavior may be consistent and stable over time. It should be noted that the ability to empathize develops with contributions from various biologically and environmentally based factors. These factors include genetics, subserving areas of the brain such as the mirror neuron system and the limbic system, as well as facial mimicry and imitation, child temperament, parenting factors such as warmth, parent-child synchrony, and other qualities of the parent-child relationship

(Mcdonald & Messinger, 2011). If one or more of these factors function atypically, they may contribute to empathy deficits.

The most commonly used measure to assess empathy in children and adolescents is the Basic Empathy Scale (BES; Jolliffe & Farrington, 2006). This instrument has been widely used in different age-groups because it is short, easy to administer, and provides measures on both affect congruence (affective empathy) and the understanding of another's emotions (cognitive empathy). Specifically, the BES consists of 20 items measuring cognitive and affective empathy. Possible total score ranges from zero to 20, with the scores of the cognitive empathy subscale ranging from zero to nine and the scores of the affective empathy subscale ranging from zero to 11.

The wide use of BES to assess children and adolescents with conduct problems and/or antisocial behavior, especially in forensic settings, led us to systematically review its results in order to establish reference values for this scale, both for the above-mentioned children and adolescents, as well as for typical controls (whenever available). This reference values can be useful for the application of the BES and the interpretation of its results, both in clinical practice and in further research with children and adolescents.

Method

Data were taken by searching EBSCO, PubMed, and Web of Science. The reference lists of the selected studies were also reviewed in order to identify other relevant studies. The search expression was: TX ("Basic Empathy Scale" OR BES) AND AB (offend* OR "sex offend*" OR Criminal* OR Inmate* OR Prisoner* OR Violent OR Delinq* OR Antisocial OR Anti-social OR "Conduct Disorder*" OR "Conduct Problem*" OR "Disruptive Behav*" OR "Oppositional Defiant" OR "Oppositional Behav*" OR "Defiant Behav*" OR "Behavior Problem*").

Study Selection

To select the studies, the following inclusion criteria were applied: (a) empirical study – the study had to report empirical findings, including results of BES, such as mean and standard deviation (or other statistics allowing to compute variance); (b) adolescents and late adolescent (until 24 years old) with CD and/or ASB or forensic samples. These age standards were decided since they align more closely with contemporary biological patterns in adolescent growth and social role transitions have changed over time (Sawyer et al., 2018). The exclusion criteria were: (a) literature reviews; (b) case studies; (c) studies that do not provide sufficient data. The studies were selected by two independent reviewers from reading abstracts according to recommendations of PRISMA guidelines, as to reduce the probability of missing a study or errors in classification (Moher et al., 2010; Shamseer et al., 2015).

The inter-rater agreement was computed after full text assessment for study eligibility, which was also conducted by the two independent reviewers. The value found for Cohen's Kappa was .74, indicating a substantial agreement between reviewers (Landis & Koch, 1977). Disagreements were discussed and resolved by consensus.

Identification and Screening

The search resulted in 423 articles relevant to the review, published until 2021. Of these, 112 duplicates were excluded. From the analysis of the abstracts, 230 articles were excluded, and 81 articles retained for further inspection. From there, the full text of the retained studies was examined to further assess whether they met the inclusion criteria and corresponded to the aims of the review. A total of 70 studies were excluded for the following reasons: the empathy was not assessed by BES ($n = 18$); mean and/or standard deviation (or other statistics allowing to compute variance) were not provided in the study ($n = 24$); adolescents and late adolescent (until 24 years old) without CD

and/or ASB or forensic samples ($n = 7$); adults ($n = 18$); wrong publication type ($n = 2$); only a few BES items used ($n = 1$). After the full-text analysis, 11 studies were included in this systematic review and complemented with four additional records identified through other sources, making a total of 15 studies.

A flowchart of the selection process is presented in Figure 1, reporting the number of studies identified, the number of papers excluded, and the number of eligible studies that were included *per* question of interest.

|insert Figure 1 here|

Statistical analysis

Means and standard deviations were compiled from all studies in relation to BES to provide normative data for the above-mentioned instrument. Normative data serve as reference values for the assessment of empathy through the BES and can guide the application of prevention/intervention programs in normative, institutionalized and forensic samples. It should be noted that not all items of the BES or its subscales were applied in some studies. In such cases, the reported score was divided by the number of responded items and then multiplied by the number of items of the scale or respective subscale for comparison purposes. Finally, it was computed the pooled mean, pooled variance, and pooled standard deviation (square root of pooled variance) for BES total score and for each subscale (i.e., cognitive and affective empathy), *per* group.

The pooled mean is a weighted mean of means. The pooled mean was estimated by adding up the mean multiplied by the respective sample size and dividing this number by the sum of the sample sizes. The pooled variance is a method to estimate the variance of several different populations when the mean of each population may be different. The pooled mean and pooled variance provide an estimate of the variation of

higher accuracy of the variances of the individual samples. Finally, it was computed the square root of the pooled variance to have the pooled standard deviation.

Results

The systematic review included 15 studies, involving 1803 participants aged between 7 and 23 years. From each article, the mean and standard deviation of the total and subscale scores of the BES, as well as the sample size for both children/adolescents with CD/ASB and typical control were obtained. Whenever these data were missing, the authors were contacted and asked to provide them.

Studies Characteristics

All reviewed studies ($n = 15$) assessed empathy in children and adolescents with CD and/or ASB. Specifically, a total of 11 studies examined participants up to the age of 21, thus covering late adolescents, all from forensic settings, namely of the juvenile justice system (Aghajani et al., 2016, 2018, 2020; Heynen et al., 2015, 2017; Klapwijk et al., 2016a, 2016b; Pechorro et al., 2017, 2018; van der Helm et al., 2012; van der Stouwe et al., 2016), while the remaining four studies were conducted in institutions to which children and adolescents with CD/ASB are referred (Geng et al., 2012; Pijper et al., 2016; Roberts et al., 2020; Zhou et al., 2017). Of these last studies, it should be noted that the participants in the study of Pijper et al. (2016) were recruited via clinical health centers and special education schools.

A total of eight studies compared BES scores between CD/ASB groups and typical controls (Aghajani et al., 2016, 2020; Geng et al., 2012; Klapwijk et al., 2016a, 2016b; Pechorro et al., 2017, 2018; Roberts et al., 2020).

Regarding the total score of the BES, the pooled mean of the CD/ASB groups ($M_{\text{pooled}} = 52.32$, $SD_{\text{pooled}} = 10.15$, $n = 960$) is lower than that of controls ($M_{\text{pooled}} = 67.20$, $SD_{\text{pooled}} = 15.57$, $n = 620$).

The same applies to the scores of both subscales of the BES. The pooled mean of CD/ASB groups is lower both in the Affective Empathy subscale ($M_{\text{pooled}} = 28.83$, $SD_{\text{pooled}} = 6.06$, $n = 821$) and Cognitive Empathy subscale ($M_{\text{pooled}} = 30.86$, $SD_{\text{pooled}} = 5.18$, $n = 936$) than the corresponding pooled scores in controls ($M_{\text{pooled}} = 32.30$, $SD_{\text{pooled}} = 9.64$, $n = 562$ and $M_{\text{pooled}} = 34.04$, $SD_{\text{pooled}} = 6.74$, $n = 670$), for the affective and cognitive subscales, respectively). Tables 1 and 2 provide all values for means and standard deviation for all studies, together with pooled means, standard deviations, and variances.

|insert table 1 here|

|insert table 2 here|

Final Considerations

The widespread use of BES to assess children and adolescents with conduct disorders (CD) and/or antisocial behavior (ASB), not only for research, but also for clinical and forensic purposes, calls for a systematic review of the results that are being reported with this scale in order to establish reference values for these specific samples and typical control groups. This was the main objective of this study.

A total of 16 studies using the BES to assess empathy in children and adolescents with CD/ASB were identified, most also reporting data for typical controls in cross-sectional comparison designs. The reported means and variances were pooled, in order to estimate the above-mentioned reference values.

The findings suggest that children and adolescent with CD/ASB presents lower scores of empathy than controls, either for the total score of BES or for the cognitive and affective subscales. It was not intended in this study to meta-analyze the data nor estimate statistical differences between groups but taking these results into account it is probable that the higher levels of empathy shown by adolescents involved in the control

groups translate into acting more responsively to the perceived feelings of another person (Jolliffe & Farrington, 2004) than it would be expected in the case of adolescents with behavior problems. These results are in line with the existing literature in which most authors state that a lack of empathy is often associated with insensitive and emotionless behavior, problems in communication and social interaction, probably resulting in impaired relationships, as well as with violence, aggression, and crime (Blair et al., 2005; Moeller et al., 2001; Reniers et al., 2011).

There are limitations to this study. First, only data from the studies included in the searched databases were considered and there may be undetected studies. However, an additional search was carried out through the bibliographic references of the reviewed studies, and two other articles were added. Secondly, it was not possible to obtain missing information for articles that did not contain sufficient data from their respective authors, leading to the exclusion of these studies. Third, most of the included studies ($n = 8$) provide results only for male participants, and those that include participants of both genders in the sample, do not report results by gender ($n = 5$). As recommendation, it would be important in future studies to present results according to gender, to understand how empathy levels can vary, as well as results stratified by age and educational level, thus enabling the estimation of detailed norms for clinical and educational practice, as well as for research.

In conclusion, developing reference data for BES may be particularly important to draw valid conclusions on the characteristics of children and adolescent assessed in clinical or forensic settings, particularly because BES is largely used in evaluation procedures in these settings. Moreover, the data provided in this study can be used in future studies for comparisons purposes, namely for research.

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Figure 1

Flowchart of Literature Review Process. In total 16 papers are cited in the current review

Table 1

Descriptive statistics (M, SD) for all studies, and pooled means, standard deviations, and variances for experimental group

Study	Age (M/SD)	N	M (SD)	M_{pooled}	Pooled Variance	SD_{pooled}
BES – Total				52.32	103.09	10.15
Aghajani et al. (2016)	15–19 (16.83/1.32)	50	64.82 (10.46)			
Aghajani et al. (2018)	15–19 (16.87/1.35)	39	64.49 (10.58)			
Aghajani et al. (2020)	15–19 (16.76/1.20)	50	64.54 (10.14)			
Geng et al. (2012)	9–18 (n/a)	65	58.17 (7.65)			
Heynen et al. (2015)	12–19 (15.70/1.40)	128	43.20 (5.58)			
Heynen et al. (2017)	18–23 (20.45/1.43)	49	57.81 (11.27)			
Klapwijk et al. (2016)	15–19	23	59.30 (13.10)			

	(16.60/1.00)					
Klapwikk et al. (2016b)	15–19 (16.80/1.20)	32	65.20 (13.60)			
Pechorro et al. (2017)	14–18 (16.41/1.19)	103	69.96 (9.47)			
Pechorro et al. (2018)	14–18 (16.41/1.19)	103	49.96 (9.47)			
Pijper et al. (2016)	7–12 (10.28/1.31)	49	64.86 (15.13)			
Roberts et al. (2020)	11–16 (14.64/1.44)	54	65.77 (11.46)			
van der Helm et al. (2012)	n/a (17.40/1.79)	59	61.20 (13.28)			
Zhou et al. (2017)	11–21 (15.80/1.18)	156	65.13 (8.43)			
BES – Affective Empathy				28.83	36.67	6.06
Geng et al. (2012)	9–18 (n/a)	65	28.31 (4.74)			

Heynen et al. (2015)	12–19 (15.70/1.40)	128	19.80 (2.65)
Heynen et al. (2017)	18–23 (20.45/1.43)	49	32.34 (6.05)
Klapwijk et al. (2016)	15–19 (16.60/1.00)	23	25.00 (6.30)
Klapwikk et al. (2016b)	15–19 (16.80/1.20)	32	28.90 (7.70)
Pechorro et al. (2017)	14–18 (16.41/1.19)	103	34.17 (6.83)
Pechorro et al. (2018)	14–18 (16.41/1.19)	103	23.17 (6.83)
Pijper et al. (2016)	7–12 (10.28/1.31)	49	33.00 (8.47)
Roberts et al. (2020)	11–16 (14.64/1.44)	54	31.78 (6.50)
van der Helm et al. (2012)	n/a (17.40/1.79)	59	29.70 (6.71)
Zhou et al. (2017)	11–21	156	33.48 (5.71)

	(15.80/1.18)				
BES – Cognitive Empathy			30.86	26.84	5.18
Geng et al. (2012)	9–18 (n/a)	65	29.86 (4.72)		
Heynen et al. (2015)	12–19 (15.70/1.40)	128	23.40 (2.93)		
Heynen et al. (2017)	18–23 (20.45/1.43)	49	25.47 (5.22)		
Klapwijk et al. (2016)	15–19 (16.60/1.00)	23	34.30 (6.80)		
Klapwikk et al. (2016b)	15–19 (16.80/1.20)	32	36.30 (5.90)		
Pechorro et al. (2017)	14–18 (16.41/1.19)	103	35.80 (5.76)		
Pechorro et al. (2018)	14–18 (16.41/1.19)	103	26.80 (5.76)		
Pijper et al. (2016)	7–12 (10.28/1.31)	49	31.86 (6.66)		

Roberts et al. (2020)	11–16 (14.64/1.44)	54	33.99 (4.96)
van der Helm et al. (2012)	n/a (17.40/1.79)	59	31.50 (6.57)
van der Stouwe et al. (2016)	n/a (15.73/1.55)	115	35.73 (5.58)
Zhou et al. (2017)	11–21 (15.80/1.18)	156	31.64 (4.10)

Note. M = mean; SD = standard deviation; n/a = not available.

Table 2

Descriptive statistics (M, SD) for all studies, and pooled means, standard deviations, and variances for control group

Study	Age (M/SD)	N	M (SD)	M _{Pooled}	Pooled Variance	SD _{Pooled}
BES – Total				67.20	242.30	15.57
	15–19					
Aghajani et al. (2018)	(17.04/1.15)	27	74.52 (9.25)			
	15–19					
Aghajani et al. (2020)	(17.02/1.18)	31	74.65 (8.93)			
	9–18					
Geng et al. (2012)	(n/a)	195	60.94 (6.82)			
	15–19					
Klapwijk et al. (2016)	(17.10/1.20)	33	73.20 (11.10)			
	15–19					
Klapwikk et al. (2016b)	(17.20/1.20)	33	74.10 (12.80)			
	14–19					
Pechorro et al. (2017)	(16.17/1.44)	274	68.22 (19.87)			

Roberts et al. (2020)	11–16 (14.37/1.43)	27	70.53 (7.86)			
BES – Affective Empathy				32.30	92.99	9.64
Geng et al. (2012)	9–18 (n/a)	195	28.43 (4.54)			
Klapwijk et al. (2016)	15–19 (17.10/1.20)	33	36.50 (6.00)			
Klapwikk et al. (2016b)	15–19 (17.20/1.20)	33	36.10 (7.80)			
Pechorro et al. (2017)	14–19 (16.17/1.44)	274	33.79 (12.70)			
Roberts et al. (2020)	11–16 (14.37/1.43)	27	34.98 (4.78)			
BES – Cognitive Empathy				34.04	45.48	6.74
Geng et al. (2012)	9–18 (n/a)	195	32.09 (4.94)			
Klapwijk et al. (2016)	15–19 (17.10/1.20)	33	36.70 (5.10)			
Klapwikk et al. (2016b)	15–19	33	38.00 (5.00)			

	(17.20/1.20)		
Pechorro et al. (2017)	14–19 (16.17/1.44)	274	34.43 (8.59)
Roberts et al. (2020)	11–16 (14.37/1.43)	27	35.55 (3.08)
van der Stouwe et al. (2016)	n/a (15.68/1.53)	108	35.82 (5.67)

Note. *M* = mean; *SD* = standard deviations; n/a = not available.