HIGH ABILITIES AND SOCIAL COGNITION

ALTAS CAPACIDADES E COGNIÇÃO SOCIAL

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ABSTRACT: High abilities, multidimensionally configured, beyond a high IQ, are the result of both an early maturational and psychosocial developmental process. Therefore, a field of study of special interest is social cognition, a field that encompasses the mental processes that perceive, capture and interpret social information from the environment. The present study seeks to determine the differences between highly able students and their normatively intelligent peers. With this in mind, a purposive sample of 146 Secondary School students was obtained. A cross-sectional design with survey methodology was used. The results support the hypotheses put forward. However, the relevance of these differential aspects between high ability students and their peers is discussed.

KEYWORDS: High abilities. Social cognition. Adolescents.

RESUMO: *Altas capacidades, configuradas multidimensionalmente, além de um alto QI, são o resultado tanto de um processo precoce de maturação quanto de um processo de desenvolvimento psicossocial. Portanto, um campo de estudo de especial interesse é a cognição social, um campo que engloba os processos mentais que percebem, capturam e interpretam as informações sociais do meio ambiente. O presente estudo procura determinar as diferenças entre estudantes altamente capacitados e seus pares normativamente inteligentes. Com isto em mente, foi obtida uma amostra proposital de 146 alunos do Ensino Médio. Foi utilizado um projeto transversal com metodologia de pesquisa. Os resultados apóiam as hipóteses apresentadas. Entretanto, a relevância desses aspectos diferenciais entre os estudantes de alta capacidade e seus pares é discutida.*

PALAVRAS-CHAVE: *Altas habilidades. Cognição social. Adolescentes.*

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***RESUMEN**: Las altas capacidades, multidimensionalmente configuradas, más allá de un CI elevado, son resultado tanto de un proceso de desarrollo madurativo como psicosocial precoz. Por consiguiente, un campo de estudio de especial interés es la cognición social, un campo que engloba a los procesos mentales que perciben, captan e interpretan la información social del entorno. El presente estudio busca determinar las diferencias existentes entre el alumnado con altas capacidades comparándolo con sus pares de inteligencia normativa. Atendiendo a ello, se realizó un muestreo intencional en adolescentes, obteniendo una muestra de 146 estudiantes de Enseñanza Secundaria Se utilizó un diseño transversal con metodología de encuesta. Los resultados avalan las hipótesis planteadas. No obstante, se debate la relevancia de estos aspectos diferenciales entre el alumnado de altas capacidades y sus pares.*

***PALABRAS CLAVE** Altas capacidades. Cognición social. Adolescentes.*

Introduction

For centuries, intelligence has been the subject of numerous investigations and controversies. In particular, the first reflections on intelligence and its nature were not made by educators or psychologists but based on a philosophical basis. However, from these first philosophical approaches, specialized literature has generated different theoretical approaches and definitions of intelligence, conceptualizing it as: (a) a conception of a monolithic intelligence that describes intelligence as a unitary component; (b) a factorial approach that describes it from a series of components or attitudes; or (c) a hierarchical structure that supports an integrative approach based on the previous approaches (LÓPEZ, 2013).

Similarly, there has been a proliferation of definitions used to conceptually describe intelligence and, therefore, the phenomenon of high capabilities (AACC). On the one hand, approaches are proposed that argue that AACC are determined by an internal trait, that is, a measurable, real or concrete trait, based on a psychometric approach to the term (ROEPER, 1982). Now, other approaches affirm that the AACC would not reflect a natural fact, but a social construction, generated to categorize a population that has an exceptional performance or, failing that, performs outstandingly in any of the aspects that society or culture considered relevant (BORLAND, 2009; PFEIFFER, 2017).

Indeed, the AACC being a construct that is intrinsically linked to intelligence, evolves along with the empirical evidence in its conceptualization (BORGES; HERNÁNDEZ-JORGE, 2006; BORGES; HERNÁNDEZ-JORGE; RODRÍGUEZ-NAVEIRAS, 2016; COMES *et al.*, 2008). For this reason, a change has been evidenced in the conception of AACC, from a static conception, which related the individual as one who obtained a score relatively higher than his peers in an intelligence test, to a conception of the term as a set of

dynamically configured skills, developed throughout life and influenced by environment. In summary, the AACC constitute the function derived from a development process, conformed according to the psychosocial variables involved in it, education and the underlying neurobiological substrate (OLSZEWSKI-KUBILIUS; SUBOTNIK; WORRELL, 2015; PFEIFFER, 2015; SASTRE-RIBA, 2014)

A research area of great interest in AACC is the one that studies the differences of the group with community samples, both in cognitive aspects (RODRÍGUEZ-NAVEIRAS *et al.*, 2019) and socio-affective (HERNÁNDEZ-LASTIRI; BORGES; CADENAS, 2019; VALADEZ *et al.*, 2020). In this sense, the AACC group is presented as a population of special interest for the study of social cognition (SC), given its differential characteristics with respect to its normative intelligence peers: A faster learning rate, which would imply an early understanding and problem solving, greater use of strategies and social adaptation capacity that promote the efficient resolution of complex problems, greater self-regulation and cognitive flexibility that allow one to promote a high commitment and/or motivation towards goals, and even greater resistance to interference offered by the environment, which would allow them to be creative and competent producers of alternatives. However, these characteristics are usually linked to the concept of asynchrony, giving rise to a mismatch between cognitive and socio-emotional development (PFEIFFER, 2017; RENZULLI, 1990; SASTRE-RIBA, 2014; VALADEZ; BETANCOURT; ZAVALA, 2006).

According to what has been exposed, SC is described as a field of study that allows encompassing the mental processes (psychological, neuropsychological and social) that perceive, capture and interpret the social information of the environment, giving rise to a response based on the context, which would allow to have complex social structures (ADOLPHS, 1999; 2001). Although this author's proposal is shared and approved, it is a concept that has generated controversies and various theories that have differentiated or integrated social and cognitive approaches (BEER; OCHSNER, 2006; CONDOR; ANTAKI, 2000; HUMFRESS *et al.*, 2002). Likewise, a division of SC has been established into four differentiated domains: (a) understanding of others, which includes Theory of Mind (ToM) and empathy, characterized by allowing the understanding of internal and external mental states; (b) self-understanding or understanding of oneself; (c) Self-control, a process that allows the regulation and revaluation of impulses; (d) the interaction produced between the interface of the internal and external world (LIEBERMAN, 2007).

The first domain would present special importance for the understanding of others, empathy and ToM. In this sense, the first studies that addressed the conceptualization of ToM

were carried out in animals and allowed it to be characterized as the ability to predict the behavior of others from the attribution of mental states (PREMACK; WOODRUFF, 1978). Subsequently, studies in humans began, developing a test that allowed the understanding of this mental state called "false belief", the test of Sally and Anne (WIMMER, 1983). On the other hand, the first investigations that would address the conceptualization of empathy presented opposite approaches, constituting a cognitive and an affective perspective. From the first, empathy was understood as a process that implies understanding the situation from the point of view of the other person (HOGAN, 1969). In the second it would imply the ability to feel what the other person perceives in emotional terms (STOTLAND, 1969). Later, Davis (1983) proposes an integrative and multidimensional model, conceptualizing it as a skill that allows identifying the mental states of the rest and differentiating them from their own, collecting a definition encompassing affective and cognitive aspects.

The second domain, proposed by Lieberman (2007), pays special attention to self-understanding, a set of skills that allow us to represent ourselves, regulate our behavior and differentiate ourselves from the rest. Along these lines, well-being and mental health become relevant in the development of ideal mental functioning. Historically, the conceptualization of the term well-being has been subject to various concepts (e.g., self-knowledge, happiness, quality of life, mental health) (GARCÍA-ALANDETE, 2014; VÁZQUEZ *et al.*, 2009). In this line, this term has given rise to two conceptual currents: (a) a hedonic perspective or emotional aspect that encompasses pleasant and happy states of mind, relating it to the so-called emotional well-being; and (b) a eudamonic perspective, which includes the cognitive aspect of the concept, encompassing the achievement of vital goals and the desire to feel fulfilled, relating to psychological well-being (RYAN; DECI, 2001). Accordingly, various authors have integrated concepts such as mental health and well-being, considering them, together with other social variables, as predictors of correct performance in the social sphere (GALDERISI *et al.*, 2015; VÁZQUEZ *et al.*, 2009).

Finally, from the model proposed by Lieberman (2007), another aspect that constitutes the SC construct would correspond to the interaction produced between the internal and external world, that is, social competence, made up of social skills (SS), described as adaptive and/or conflict resolution behaviors that allow adaptation to the social environment, whether with a basic, advanced or instrumental character (GOLDSTEIN, 1980). The learning of these skills is determined by starting a huge learned character, mediated by a process of social interaction (BANDURA; MCCLELLAND, 1977). Likewise, numerous studies have been proposed that show relationships between SS and ToM, establishing reciprocal interactions

between their respective components. (ADOLPHS, 2001; AGUILAR *et al.,* 2016; DECETY, 2010; LIEBERMAN, 2007).

In accordance with what was initially stated, antagonistic and contradictory positions are presented regarding the state of emotional and psychosocial adjustment of people with AACC (MARTIN; BURNS; SCHONLAU, 2010). On the one hand, there are investigations that propose from a harmonic hypothesis in the AACC where an equal or greater psychological adjustment, mentalistic functioning, SS and empathy have been evidenced in these individuals compared to their normative intelligence peers (BORGES; HERNÁNDEZ-JORGE; RODRÍGUEZ -NAVEIRAS, 2011; LEIVA, 2007; LÓPEZ; SOTILLO, 2009; RODRÍGUEZ-NAVEIRAS *et al.*, 2019). On the other hand, other research concludes that people with AACC show increased vulnerability to emotional adjustment problems, which would produce changes in the normal psychological functioning of said population in terms of well-being and/or mental health (BAILEY, 2011; RAMIRO *et al.*, 2016).

Therefore, the objective of this research is to analyze the existing differences for the variables influenced by the SC construct, establishing a comparison between the students with AACC and their peers in the community sample.

In this sense, considering that the nature of SC is mainly influenced by cognitive aspects, notable in the group with AACC, it is hypothesized that a performance of these students greater than or equal to that of their peers with normative intelligence, in the dimensions involved in the CS.

Method

Design

This was done through survey methodology, cross-sectional design.

Participants

The sample studied is made up of 146 adolescents, of which 65 were women, aged between 12 and 18 years, belonging to seven educational centers and a private entity specialized in the comprehensive development of adolescents with AACC, in the autonomous community of Canary Islands.

The selection of the subsample object of the present study was carried out through an intentional sampling, using the score of the intelligence tests used in the research (CATTELL; CATTELL; WEISS, 2017; HERRANZ, 2017), thus obtaining two groups: (a) the first, which

makes up the community sample, made up of the participants who obtained scores corresponding to the 45th and 55th percentiles in any of the tests, at each educational level; and (b) the group, of highly capable students, with participants who obtained scores above the 90th percentile, at each educational level, in addition, with participants with a positive diagnosis. The distribution of participants by course and group is presented in Table 1.

Table 1 – Descriptive statistics of the participants of the general sample

Course	N		Age		DT	
Group	Community sample	AACC	Community sample	AACC	Community sample	AACC
1ºESO	14	22	13.00	12.74	0.604	0.453
2ºESO	8	12	13.87	13.60	0.589	0.418
3ºESO	32	22	14.83	14.51	0.448	0.754
4ºESO	19	17	16.00	15.71	1.023	0.518
Total	73	73	14.68	14.10	1.243	1.259

Source: Devised by the authors

Instruments

The tests used are described below. All of them are scaled into Spanish and have authorization for use from the authors. Similarly, the reliability calculated for the sample is presented (see Table 2).

Table 2 – Reliabilities of the tests and their scales, calculated for the sample

Test	α	Scale	α
Health Questionnaire	0.896	-	-
Herranz G factor	0.680	-	-
Kidscreen-27	0.872		
		physical well-being	0.784
		Psychological well-being	0.520
		Autonomy and relationship with parents	0.794
		Social and peer support	0.828
		School environment	0.762
Interpersonal Reactivity Index	0.788		
		Perspective taking	0.709
		Fantasy	0.692
		Empathic concern	0.666
		Personal discomfort	0.709
Goldstein Social Skills	0.937		
		First social skills	0.677
		Advanced social skills	0.514
		Skills related to feelings	0.738
		Abilities alternative to aggression	0.776
		Skills to cope with stress	0.810
		Planning skills	0.785
Strange Stories of Happé	0.782		
		Mental stories	0.379
		Physical stories	0.637
		Unlinked stories	0.814

Note. It was not possible to calculate the reliability of the intelligence test: g-R factor. Non-Verbal Intelligence Test - Revised. The test only indicates the total score obtained by scale and test. In this study, intelligence tests were used as a criterion for categorizing adolescents for the study groups, together with positive diagnoses of AACC.

Source: Devised by the authors

Herranz G factor, developed as a reduced version of the Computerized Test for the Measurement of General Intelligence (TIMIG) by Herranz (2017). The test measures the general factor of intelligence. This test, generated from the item response theory (IRT), is configured through a continuous scale that uses multiple-choice questions with four response alternatives. In view of this, in the present investigation, said scale was adapted according to the level of difficulty. However, of the 169 items that comprise it, 40 were used. The original study reports a Cronbach's alpha between 0.684 and 0.912, depending on the subscales used.

G-R Factor Non-Verbal Intelligence Test - Revised (CATTELL; CATTELL; WEISS, 2017). The test measures the general intelligence factor on a continuous scale that uses multiple-choice questions with five alternative answers. This test presents an internal consistency between 0.74 and 0.83, in its scale for high school students.

Health Questionnaire (GHQ-12), prepared by Goldberg (1988); Spanish adaptation of Sánchez-López and Dresch (2008). This test asks about the presence of emotional symptoms (depression and anxiety). It is used as a screening to detect recent mental disorders. The test has 12 items and uses a Likert-type scale from 0 to 3. A higher score would imply a greater degree of emotional symptoms. A score of 12 or higher would indicate the existence of a possible emotional disturbance. This test presents a high internal consistency, its value is 0.86.

Kidscreen-27, developed as a shortened version of the Kidscreen-52 by Ravens-Sieberer *et al.* (2008). The test presents 27 items, which are distributed in five dimensions: (a) Physical well-being; (b) Psychological well-being; (c) Autonomy and parents; (d) Friends and social support; (e) School environment. The test uses a Likert-type scale from 1 to 5. In addition, it provides a health profile, through the interpretation of their respective dimensions. The test presents a high internal consistency, ranging between 0.80 and 0.84.

Interpersonal Reactivity Index, developed by Davis (1980); Spanish adaptation of Mestre *et al.* (2004). This instrument assesses the global concept of empathy from a multidimensional perspective that includes two emotional factors and two cognitive factors. These cognitive and emotional dimensions, respectively, are: (a) Perspective taking; (b) Fantasy; (c) Empathic concern; (d) Personal malaise. The test maintains a Likert-type scale

from 1 to 5, with 28 items. The test presents an internal consistency that ranges between 0.56 and 0.70.

Social Skills Scale (GOLDSTEIN *et al.*, 1980; Spanish adaptation by TOMAS (1995)). The test is made up of 50 items, represented in six groups: (a) First Basic Skills; (b) Advanced Social Skills; (c) Skills related to Feelings; (d) Alternative Skills to Aggression; (e) Skills to cope with Stress; (f) Planning Skills. It is made up of a Likert-type scale from 1 to 5. The test has a high internal consistency, its value is 0.92.

Strange Stories of Happé (HAPPÉ, 1994; Spanish adaptation by AGUILAR *et al.* 2014). The test is composed of 24 stories, designed to assess advanced mental skills, through the intentionality of non-explicit communicative expressions. Stories can be divided into three factors: Physical Stories, Mental Stories, and Unlinked Stories. The responses are coded on a Likert-type scale from 0 to 2. The test has an internal consistency of 0.78. The reliability of the coding carried out for the sample is shown (see Table 3).

Table 3 – Inter-judge reliability of Strange Stories of Happé test

Item	κ	Item	κ	Item	κ	Item	κ	Item
1	0.896	7	0.964	13	0.963	19	1	13
2	0.872	8	0.821	14	1	20	0.901	14
3	0.932	9	0.966	15	0.956	21	1	15
4	0.875	10	0.891	16	0.904	22	1	16
5	0.939	11	1	17	1	23	0.847	17
6	0.876	12	0.924	18	0.892	24	1	18

Note. All test items were corrected by two judges. The inter-judge reliability was carried out to guarantee the correct categorization of the answers given in the Strange Stories of Happé test, ensuring the stability of the classification criteria proposed by their authors. Reliability was calculated from Cohen's Kappa coefficient (κ).

Source: Devised by the authors

Procedure

First, this research was approved by the Research Ethics and Animal Welfare Committee of the University of La Laguna (registration CEIBA2021-0441).

Subsequently, the entities were contacted, from which authorization was requested, as well as the parents and/or legal guardians, who signed an informed consent. In this way, the voluntary nature and the preservation of anonymity were guaranteed, complying with Organic Law 3/2018, of 5 of December, on the Protection of Personal Data and guarantee of digital rights.

The administration of the questionnaires was carried out in the educational centers or entities, collectively and in the presence of the evaluators. The instruments used were

completed in a computerized format through Google Forms. The test administration protocol is presented (see Table 4).

Table 4 – Test administration protocol

Instrument	Order	Duration
General Health Questionnaire (GHQ-12)	1º	5-10
Factor G de Herranz	2º	30-40
Kidscreen-27	3º	10-15
Interpersonal Reactivity Index (IRI)	4º	10
Goldstein Social Skills	5º	10
Strange Stories of Happé	6º	30-40

Note. One of the two intelligence tests used in the present study was used as a categorization criterion: (a) Herranz's G factor; (b) Factor g-R Non-Verbal Intelligence Test - Revised. The tests were administered, always, in second place.

Source: Devised by the authors

Analysis of data

To test the hypothesis of the absence of differences in the variables of social cognition studied, a multivariate analysis of variance (MANOVA) has been carried out, as well as a Student's t-test for independent samples, which will make it possible to determine the influence of intelligence on the study variables. The analyzes were carried out with the SPSS program, in its trial version and the Jamovi program, in its version 1.6.7.

Results

Mental health

To test whether there are differences in mental health between the two groups, a Student's t test of the GHQ-12 test was applied (GOLDBERG; WILLIAMS, 1988; SÁNCHEZ-LÓPEZ; DRESCH, 2008). Descriptive statistics can be seen in Table 5.

Table 5 – GHQ-12 descriptions by group

Group	N	Average	DT
Community sample	73	13.01	7.056
AACC	73	12.25	6.964

Source: Devised by the authors

No significant differences were obtained between both groups ($t = 0.661$ $p > 0.05$), resulting in a very small effect size ($d = 0.108$). However, both groups exceed the cut-off

point indicated by the authors of the adequate mental health test (score of 12 or less), indicating the existence of a possible emotional disorder.

Well-being

To determine if there are differences in well-being between both groups of students, a MANOVA analysis was performed in relation to the five dimensions of well-being proposed in the Kidscreen-27 test (RAVENS-SIEBERER *et al.*, 2008). Descriptive statistics are shown in Table 6.

Table 6 – Descriptive statistics of the Kidscreen-27 by group

Scale	Group	N	Average	DT
Physical well-being	Community sample	73	16,26	3,701
	AACC	73	16,34	3,667
Psychological well-being	Community sample	73	23,38	3,247
	AACC	73	22,64	3,970
Autonomy and relationship with parents	Community sample	73	26,97	5,310
	AACC	73	27,79	4,708
Social and peer support	Community sample	73	16,93	2,810
	AACC	73	15,03	3,559
School environment	Community sample	73	14,36	2,810
	AACC	73	14,74	3,028

Source: Devised by the authors

Compliance with the assumption of equality of variance-covariance matrices was verified, accepting the null hypothesis that there are no differences between the observed covariance matrices of the dependent variables between the groups (see Table 7).

Table 7 – Box test of the equality of covariance matrices

Test	M of Box	F	gl1	gl2	Sig.
Kidscreen-27	16.29	1.046	15	83489.684	0.403

Source: Devised by the authors

Homoscedasticity was checked with the Levene statistic, the assumption being fulfilled in all scales (see Table 8).

Table 8 – Homoscedasticity Kidscreen-27

Scale	Levene statistic	gl1	gl2	Sig.
Physical well-being	0.263	1	144	0.609
Psychological well-being	1.662	1	144	0.199
Autonomy and relationship with parents	0.520	1	144	0.472

Social and peer support	2.200	1	144	0.140
School environment	0.000	1	144	0.991

Source: Devised by the authors

Likewise, the contrast was significant (λ of Wilks=0.868, $F_{(5.140)}$=4.251, p=0.001, η^2 partial=0.132, ß=0.957). However, the individual ANOVA results show only significant differences in the Social Support and Peers scale, with a medium effect size. Table 9 shows the inter-subject tests for Kidscreen-27.

Table 9 – Intersubject effects tests on Kidscreen-27

Scale	$F_{1.146}$	Sig.	η^2 partial	ß
Physical well-being	0.018	0.893	0.000	0.052
Psychological well-being	1.519	0.220	0.010	0.232
Autonomy and relationship with parents	0.979	0.324	0.007	0.166
Social and peer support	12.853	0.000	0.082	0.945
School environment	0.629	0.429	0.004	0.124

Source: Devised by the authors

Empathy

In order to study whether there were significant differences for both groups in relation to the dimensions of the Interpersonal Reactivity Index test (DAVIS, 1980), a MANOVA was performed. Descriptive statistics are presented in Table 10.

Table 10 – Descriptive statistics of the Interpersonal Reactivity Index by group

Scale	Group	N	Average	DT
Perspective taking	Community Sample	73	16.01	4.486
	AACC	73	15.93	5.796
Fantasy	Community Sample	73	14.78	5.546
	AACC	73	14.64	5.616
Empathic concern	Community Sample	73	17.08	4.521
	AACC	73	17.75	4.612
Personal discomfort	Community Sample	73	10.48	4.429
	AACC	73	11.64	5.373

Source: Devised by the authors

It is verified that the assumption of equality of variance-covariance matrices is fulfilled (see Table 11).

Table 11 – Box test of the equality of covariance matrices

Test	M of Box	F	gl^1	gl^2	Sig.
Interpersonal Reactivity Index	13.949	1.353	10	99136.255	0.196

Source: Devised by the authors

However, the contrast was not significant (λ of Wilks=0.983, $F_{(4.141)}$=0.606, p=0.659, η^2 partial=0.017).

Social skills

To determine if there were significant differences in the different dimensions proposed from the Social Skills Scale (GOLDSTEIN, 1980; TOMAS, 1995) a MANOVA was performed. Descriptive statistics are shown in Table 12.

Table 12 – Descriptive statistics of the Social Skills Scale by group

Scale	Group	N	Average	DT
First social skills	Community sample	73	24,07	3,928
	AACC	73	22,27	3,497
Advanced social skills	Community sample	73	16,81	2,701
	AACC	73	17,11	2,923
Skills related to feelings	Community sample	73	20,09	3,852
	AACC	73	18,85	3,665
Alternative abilities to aggression	Community sample	73	25,71	4,287
	AACC	73	26,16	4,899
Skills to cope with stress	Community sample	73	33,36	5,987
	AACC	73	32,85	5,737
Planning skills	Community sample	73	23,51	4,321
	AACC	73	23,05	4,027

Source: Devised by the authors

Likewise, the Test of Box of the equality of covariance matrices is carried out and the fulfillment of the equality assumption is concluded (see Table 13).

Table 13 – Box test of the equality of covariance matrices

Test	M of Box	F	gl1	gl2	Sig.
Goldstein Social Skills	21.020	0.956	21	76266.974	0.516

Source: Devised by the authors

Homoscedasticity was calculated with the Levene statistic, resulting in all homoscedastic scales (see Table 14).

Table 14 – Goldstein's Social Skills Homocedasticity

Scale	Levene statistic	gl1	gl2	Sig.
First social skills	1.093	1	144	0.298
Advanced social skills	1.086	1	144	0.299
Skills related to feelings	0.349	1	144	0.556
Alternative abilities to aggression	0.529	1	144	0.468
Skills to cope with stress	0.099	1	144	0.753
Planning skills	0.623	1	144	0.431

Source: Devised by the authors

The contrast was significant (λ of Wilks=0.855, $F_{(6.139)}$=3.928, p=0.001, η^2 partial=0.145, ß=0.965).

The individual results of the ANOVA show significant differences in the dimensions "First social skills" and "Skills related to feelings", with a medium and low effect size, respectively. Inter-subject effects tests for the Goldstein Social Skills Scale are presented (see Table 15).

Table 15 – Tests of inter-subject effects in Goldstein's Social Skills

Scale	$F_{1.146}$	Sig.	η^2 partial	ß
First social skills	117.541	0.004	0.056	0.825
Advanced social skills	3.315	0.519	0.003	0.098
Skills related to feelings	56.719	0.047	0.027	0.512
Alternative abilities to aggression	7.459	0.554	0.002	0.091
Skills to cope with stress	9.377	0.602	0.002	0.081
Planning skills	7.459	0.514	0.003	0.100

Source: Devised by the authors

Theory of mind

To determine if there are significant differences in the dimensions proposed by the Strange Stories of Happé test (AGUILAR *et al.*, 2014; HAPPÉ, 1994), a MANOVA was performed. Descriptive statistics are shown in Table 16.

Table 16 – Descriptive statistics of Strange Stories of Happé by group

Scale	Group	N	Average	DT
Mental stories	Community Sample	73	9.93	2.244
	AACC	73	11.79	2.007
Physical stories	Community Sample	73	10.23	3.116
	AACC	73	11.56	2.838
Disconnected stories	Community Sample	73	14.04	3.327
	AACC	73	14.82	2.653

Source: Devised by the authors

Likewise, the fulfillment of the assumption of equality of variance-covariance matrices is accepted (see Table 17).

Table 17 – Box test of the equality of covariance matrices

Test	M of Box	F	gl1	gl2	Sig.
Strange Stories of Happé	6.651	1.083	6	150239.189	0.370

Source: Devised by the authors

Homoscedasticity was calculated with the Levene statistic, resulting in all homoscedastic scales (see Table 18).

Table 18 – Homoscedasticity Strange Stories of Happé by Group

Scale	Levene statistic	gl1	gl2	Sig.
Mental stories	0.028	1	144	0.867
Physical stories	0.375	1	144	0.541
Disconnected stories	3.339	1	144	0.070

Source: Devised by the authors

The contrast was significant (λ of Wilks=0.832, $F_{(3.142)}$=9.582, p<0.001, η^2 partial=0.168, ß=0.997).

The individual ANOVA results show significant differences in the factor of "Mental Histories" and "Physical Histories", with a large and low effect size, respectively (see Table 19).

Table 19 – Inter-subject effects tests in Strange Stories of Happé

Scale	$F_{1.146}$	Sig.	η^2 partial	ß
Mental stories	27.955	0.000	0.163	1.000
Physical stories	7.256	0.008	0.048	0.763
Disconnected stories	2.458	0.119	0.017	0.344

Source: Devised by the authors

Discussion

High capacities, multidimensionally configured, beyond a high IQ, are the result of both a maturational and early psychosocial development process. This conceptualization has given rise to a growing interest in studying the possible differences of this group with community samples, considering both the cognitive (LEIVA, 2007; RODRÍGUEZ-NAVEIRAS *et al.*, 2019; SASTRE-RIBA, 2008) and the socio-affective aspects (HERNÁNDEZ-LASTIRI; BORGES; CADENAS, 2019; VALADEZ *et al.*, 2020).

In accordance with what was previously proposed, given the eminently cognitive character that is mediated from the SC construct, the objective of this research has been to analyze the existing differences for the variables influenced by the SC construct, establishing a comparison between the students with AACC and their normative intelligence peers.

Social cognition, despite being a widely studied field, with a wide range of explanatory theories (ADOLPHS, 1999; 2001; BEER; OCHSNER, 2006; CONDOR; ANTAKI, 2000; HUMFRESS *et al.*, 2002; LIEBERMAN, 2007), is constituted as a very broad construct, which entails taking into consideration various factors and processes in its study. A first aspect to address, according to Lieberman (2007), would be self-knowledge, understood as the set of skills that allow self-representation, allowing differentiation from other people, as well as the ability to regulate one's own behavior. In this line, well-being and mental health are related to the development of ideal mental functioning (GARCÍA-ALANDETE, 2014; VÁZQUEZ *et al.*, 2009).

The results of the GHQ-12 allow us to conclude that there are no differences between both groups in terms of mental health, as expected, and in contrast to the research that affirms that students with AACC present a greater degree of vulnerability compared to their peers (BAILEY, 2011; RAMIRO *et al.*, 2016). However, both groups exceed the cut-off score established by the authors, indicating that the sample could present symptoms associated with possible emotional disorders, including depression and/or anxiety.

However, there were no significant differences in well-being, measured through the Kidscreen-27, with the exception of the dimension of “Social Support and Peers”, which reflects a lower adjustment of the students with AACC, reporting the perception of less support received and/or a poorer quality of interaction with their peers by these students with AACC.

A second aspect, proposed by Lieberman (2007), would be the understanding of others, understood as those skills that allow us to predict, know, understand, and even come to feel or infer the mental states of others. The results obtained in empathy, through the Interpersonal Reactivity Index (IRI) (DAVIS, 1980) allow us to conclude that there are no significant differences in this variable between the students with AACC and the community sample, both in its cognitive and affective aspects.

However, there are significant differences in ToM, in favor of AACC students in the dimensions "Mental stories" and "Physical stories", showing, respectively, firstly, a greater ability of AACC students to infer mental states, showing higher advanced mental abilities and, secondly, increased memory and text comprehension skills. It should be noted that in the

Strange Stories of Happé test, the "Physical Stories" and the "Disconnected Stories" act as a control, since they involve reasoning about physical and memory states, respectively, which is of special interest in population groups with superior and problematic cognitive performance in ToM (AGUILAR *et al.,* 2014).

The third aspect, proposed by Lieberman (2007), would be the interaction produced between the internal and external world, understood as those skills that allow satisfactory social interaction. The results in this variable, measured through Goldstein's Social Skills (1980) indicate that students with AACC perceive a significantly lower performance of the dimensions: “First social skills” and “Skills related to feelings”, which would produce difficulties for establish a first contact with their peers and difficulties to express, understand and know their own and others' feelings (GOLDSTEIN, 1980).

The results obtained in the present research are in line with those discovered by Leiva (2007), who despite observing a higher mental performance in students with AACC, concluded that their socio-emotional development and social adaptation do not support greater socio-emotional and of social adaptation. It should be noted that despite perceiving a lower social performance of students with AACC on certain scales of the Kidscreen-27 and the Goldstein Social Skills test, which questions the ability to socially adjust with their peers and requires further research in this terrain.

By way of synthesis, the relationship between SC and AACC is still presented as an area of study that needs more research, since, although SC is posed as a construct that aims to explain the processes that underlie understanding the relationships with the environment, starting from the self and interpersonal relationships, it is mediated by both cognitive and affective variables of a nature (LIEBERMAN, 2007). The results obtained indicate that the high-ability students, compared to the community sample, do not show differences in self-knowledge, a worse performance in some aspects of the interaction produced between the internal and external world, while it is presented greater ability in ToM, which clearly has a cognitive component, an aspect in which these students give their best results.

One of the main limitations of the present study is that it has not considered another aspect of SC, that is, variables such as self-control, self-concept and executive functions. In future research, it would be desirable to include these variables, which would allow us to know, to a greater degree, the influence of intelligence on the construct of SC.

In future research, it would be interesting to replicate the study, achieving a larger sample size or performing a cross-validation with another similar sample or from another geographical area.

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