

Limited Prosocial Emotions in a Clinical Population of Children and Adolescents: Proposal for Core and Ancillary Characteristics

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Émotions prosociales limitées dans une population clinique d'enfants et d'adolescents; Proposition de caractéristiques essentielles et accessoires

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Abstract

Objective: Limited prosocial emotions (LPE) has been recently incorporated into international classifications as a specifier for conduct disorder in the *DSM-5* and for all disruptive behavioural disorders in the *ICD-11*. The aims of the current work were to determine (a) the accuracy of each of the characteristics used to assess the LPE specifier and (b) whether the manner in which symptoms group together supports the idea of LPE having core characteristics.

Method: Trained clinicians conducted interviews and determined LPE characteristics using responses from 74 parent/guardian and child/adolescent participants.

Results: The distribution of LPE characteristics among those participants with LPE ($n = 13$) was compared to those with only one LPE characteristic ($n = 11$). The proposal of callous lack of empathy (CLE) and shallow deficient affect (SDA) as core characteristics was supported by strong associations with the presence of the LPE specifier, larger specificity, and sensitivity indices than those for unconcerned about performance and lack of remorse or guilt, as well as by a robust aggregation in a latent class analysis.

Conclusions: CLE and SDA could be considered as core characteristics of LPE in children and adolescents.

Abrégé

Objective : Les émotions prosociales limitées (EPL) ont été récemment incorporées dans les classifications internationales à titre de spécificateur dans le trouble des conduites du *DSM-5*, et dans tous les comportements perturbateurs de la *CIM-11*. La présente étude visait à déterminer a) l'exactitude de chacune des caractéristiques utilisées pour évaluer le spécificateur des EPL et b) si la manière dont les symptômes se regroupent confirme l'idée selon laquelle les EPL ont des caractéristiques essentielles.

Méthode : Des cliniciens compétents ont mené des entrevues et déterminé les caractéristiques des EPL à l'aide des réponses de 74 parents/tuteurs et des enfants/adolescents participants.

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Résultats : La distribution des caractéristiques des EPL parmi ces participants souffrant d'EPL ($n = 13$) a été comparée avec ceux ne présentant qu'une caractéristique d'EPL ($n = 11$). La proposition d'Insensible- manque d'empathie (IME) et d'Affect peu profond ou déficient (APD) comme caractéristiques essentielles était soutenue par de fortes associations à la présence d'un spécificateur des EPL, par des indices de spécificité et de sensibilité plus importants que ceux liés à Indifférence quant à la performance et Absence de remords ou de culpabilité, et par une agrégation robuste dans l'analyse de structure latente.

Conclusions : IME et APD pourraient être considérés comme des caractéristiques essentielles des EPL chez les enfants et les adolescents.

Keywords

limited prosocial emotions, core characteristics, conduct disorder, K-SADS-PL-5

Limited prosocial emotions (LPE) is the new name for callous unemotional traits.¹ LPE was integrated as a specifier for conduct disorder (CD) in the 5th edition of the *Diagnostic and Statistical Manual (DSM-5)*.² Nevertheless, the International Classification of Diseases (ICD-11)³ incorporated it as a specifier for CD and oppositional and defiant disorder. LPE characteristics include lack of remorse or guilt (LRG), callous lack of empathy (CLE), unconcerned about performance (UAP), and shallow or deficient affect (SDA).^{2,3} To qualify for this specifier, the subject needs to display at least 2 of the 4 characteristics during the last 12 months and to manifest them in diverse settings and relationships. The inclusion of LPE as a specifier only for CD or for disruptive behavioural disorders is controversial given that it has been described in children and adolescents without these disorders⁴ in clinical⁵ and epidemiological settings.⁶

Reported characteristics of LPE show great variability among raters and informants. For instance, a large range in the percentage of subjects meeting the callous unemotional specifier threshold have been observed in both epidemiological (10% to 32% in those with CD and 2% to 7% in those without CD) and clinical samples (21% to 50% with CD and 14% to 32% in those without CD) depending on the informant.⁵ Also, a recent study that evaluated LPE in children revealed a substantial amount of variability in trait recognition across time, settings, and raters.⁷

Another source of variability can be introduced by the evaluation of LPE as a dimension or as a category. Scales and instruments that evaluate LPE are used as dimensional measures⁸ while the specifier for disruptive behavioural disorders in *DSM-5* and ICD-11 is an example of a categorical approach. For clinical and research purposes, both categorical and dimensional perspectives may be complementary⁹ for this specifier.

In the past, the lack of structured or semi-structured interviews for identifying LPE forced researchers to use a short model of the Inventory of Callous Unemotional Traits (ICU) to obtain a categorical LPE specifier.¹⁰ Nevertheless, this approach has shown limitations.¹¹ In a recent meta-analytic study, ICU showed an acceptable internal consistency and external validity for total ICU, callous, and uncaring scores, but not for unemotional scores.¹² Some authors had proposed that ICU may not be a good measure of unemotional items

related to LPE.^{13,14} In this way, the incorporation of LPE characteristics as part of the Kiddie Schedule for Affective Disorders and Schizophrenia Present and Lifetime *DSM-5* version (K-SADS-PL-5) may represent refining of a clinical identification tool and an opportunity to obtain a categorical approximation based on a multi-informant context.¹⁵ This approach could help determine which of the four LPE characteristics could be potentially considered under the concept of core or ancillary characteristics.¹⁶ The identification of core LPE characteristics may have implications in clinical decision-making.

To address this issue, the aims of the current work were to determine, using a clinical sample of children and adolescents from Latin America: (a) the accuracy of each characteristic used to assess the LPE specifier (with a cut-off of two or more characteristics) and (b) whether the manner in which symptoms group together supports the idea of LPE having core characteristics.

Method

Ethical Considerations

This research was conducted according to the Declaration of Helsinki. It was approved by the ethical review board of each of the participating venues. All participants signed the informed assent forms and parents the consent forms. Confidentiality was guaranteed using an alphanumeric code for each participant.

Study Participants

Clinical and sociodemographic characteristics of the sample have been described with more detail in previous works.^{15,17} 74 children and adolescents from 7 clinical locations in 4 participant countries (Mexico, Colombia, Chile, and Uruguay) were included. The mean age was 11.4 ($SD = 3.2$) years old and 44 (60%) were males.

Procedure

All participants included in the study were recruited from outpatient and inpatient units and were evaluated using the Spanish version of the K-SADS-PL-5,^{15,17} which includes the 4 characteristics of LPE as part of CD as described in the

Table 1. Frequency of the Absence and Presence of Each of the Limited Prosocial Emotions (LPE) Characteristics in the LPE and Subthreshold LPE (sLPE) Groups.

Characteristics		LPE	sLPE	Specificity (SE)	Sensitivity (SE)	PPV (SE)	NPV (SE)	OR	CI	P																																		
Lack of remorse or guilt	Present	8	5	0.55 (0.15)	0.62 (0.13)	0.62 (0.13)	0.55 (0.15)	1.87	0.29 to 13.15	0.68																																		
	Absent	5	6								Callous lack of empathy	Present	9	0	1 (0)	0.69 (0.13)	1 (0)	0.73 (0.11)	Inf	3.18 to Inf	0.00	Absent	4	11	Unconcerned about performance	Present	9	5	0.55 (0.15)	0.69 (0.13)	0.64 (0.13)	0.6 (0.15)	2.59	0.39 to 19.78	0.41	Absent	4	6	Shallow or deficient affect	Present	11	1	0.91 (0.09)	0.85 (0.1)
Callous lack of empathy	Present	9	0	1 (0)	0.69 (0.13)	1 (0)	0.73 (0.11)	Inf	3.18 to Inf	0.00																																		
	Absent	4	11								Unconcerned about performance	Present	9	5	0.55 (0.15)	0.69 (0.13)	0.64 (0.13)	0.6 (0.15)	2.59	0.39 to 19.78	0.41	Absent	4	6	Shallow or deficient affect	Present	11	1	0.91 (0.09)	0.85 (0.1)	0.92 (0.08)	0.83 (0.11)	41.35	3.34 to 2534.63	.00	Absent	2	10						
Unconcerned about performance	Present	9	5	0.55 (0.15)	0.69 (0.13)	0.64 (0.13)	0.6 (0.15)	2.59	0.39 to 19.78	0.41																																		
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	Absent	2	10																																									

Note. OR = odds ratio; CI, 95% = confidence interval; PPV = positive predictive value; NPV = negative predictive value; Inf = infinite; SE = standard error.

DSM-5. These LPE characteristics were obtained from all participants regardless if they fulfilled CD criteria or not.

Interviews were done with parents and children or adolescents by trained clinicians who are child and adolescent psychiatrists and clinical psychologists with more than 10 years of clinical experience. All clinicians received a 3-day training course for the application of the K-SADS-PL-5 by the first author (FRP) where they learned how to establish the best diagnostic approach by combining the information provided by different interviewees. LPE characteristics were evaluated using the proposed questions in the interview as well as by asking both the parent/guardian and the child/adolescent about examples of situations in daily life and different scenarios (home, school, and peers) and scoring them in the summary screening section (for more information about questions regarding LPE evaluation, see the K-SADS-PL-5 interview: <http://inprf.gob.mx/clinicos/>). When significant discrepancies between informants involving any LPE characteristic were present, the interviewer asked both informants simultaneously for specific examples of the given symptom until a parent/guardian and child/adolescent agreement was reached. When necessary, this procedure was repeated with the principal investigator of each team. Together, they reached a final decision using the informant's answers and their combined clinical expertise. The presence of LPE was established using the total number of the LPE characteristics rated in the summary screening section.

Statistical Analysis

The frequency distribution for each of the LPE characteristics was calculated (Table 1). For this, participants were separated into those who had exactly one characteristic of LPE (subthreshold or sLPE) and those with 2 or more LPE. Fisher exact tests were used to compare the frequency distribution of each characteristic among LPE and sLPE participants. The odds ratio (OR) was calculated using the conditional maximum likelihood estimate (MLE) rather than the unconditional MLE as it has been recommended as the superior method.¹⁸ Specificity, sensitivity, the positive predictive value (PPV), and the negative predictive value (NPV)

were also calculated. Subsequently, we performed a latent class analysis evaluating a 1, 2, and 3 class models to evaluate the grouping of LPE characteristics' accuracy without having to adopt an arbitrary cut-off. For this, we used the whole sample ($n = 74$, including 50 non-LPE, 11 sLPE, and 13 LPE). In order to avoid local maxima, the classification for each number of classes was repeated 10 times, with each run using random starting values. Statistical significance for all tests was established using a $P < 0.05$. The software R¹⁹ was used for all analyses.

Results

More than 30% (24/74) of the participants showed at least 1 LPE characteristic. Of these, 13 (17.56%) had 2 or more LPE characteristics (mean age = 8.53 years, $SD = 3.04$, 62% male), while 61 (83.44%) presented only 1 or no LPE characteristics (mean age of 8.43 years, $SD = 4.23$, 64% male). Eleven (14.9%) participants were considered as subthreshold or sLPE (mean age = 9.27 years, $SD = 4.27$, 82% male). We found a strong association between the presence of CD and LPE (OR = 0.05, CI = 0.0009 to 0.57, $P = 0.005$) as a large percentage of the LPE sample had CD ($n = 4$, 31%) versus 1 in the sample without LPE ($n = 1$, 2%).

When comparing the presence of each characteristic in participants with LPE or sLPE, we found that CLE and SDA were almost exclusively present in participants with LPE, while LRG and UAP were consistently found in those participants with sLPE. Also, CLE and SDA showed a higher combination of specificity, sensitivity, and predictive values (Table 1).

Conditional probabilities groupings for 1, 2, and 3 class models can be found in Table 2. In the 3-class model, class 1 shows the absence of all characteristics, making it equivalent to non-LPE. Class 2 is marked by the categorical presence of CLE and SDA and to a lesser degree of LRG and UAP, which suggests a core nature for the former 2 characteristics. Class 3 is constituted by a low presence of LRG and UAP, and SDA in a minimal amount and null for CLE. In order to have a diagnosis of LPE, it is necessary to manifest 2 or more characteristics; in this sense, CLE and SDA appear to be

Table 2. Conditional Probabilities Groupings for the Limited Prosocial Emotions (LPE) Characteristics.

Characteristics	Conditional probabilities (SE)								
	Lack of Remorse or Guilt		Callous Lack of Empathy		Shallow or Deficient Affect		Unconcerned About Performance		Unconditional probability estimate (SE)
	Absence	Presence	Absence	Presence	Absence	Presence	Absence	Presence	
1 Class model	0.82 (0.05)	0.18 (0.05)	0.88 (0.07)	0.12 (0.07)	0.84 (0.08)	0.16 (0.08)	0.81 (0.05)	0.19 (0.05)	1
2 Class model	0.89 (0.04)	0.53 (0.19)	1 (0)	0.83 (0.16)	0.98 (0.03)	0.02 (0.03)	0.89 (0.04)	0.63 (0.19)	0.854 (0.04)
	0.47 (0.19)	0.12 (0.04)	0.17 (0.16)	0 (0)	0 (0)	1 (0)	0.37 (0.19)	0.11 (0.04)	0.146 (0.04)
3 Class model	0.98 (0.15)	0.02 (0.15)	1 (0)	0 (0)	1 (0)	0 (0)	0.98 (0.15)	0.02 (0.15)	0.598 (0.03)
	0.44 (0.27)	0.56 (0.27)	0 (0)	1 (0)	0 (0)	1 (0)	0.33 (0.26)	0.67 (0.26)	0.122 (0.04)
	0.67 (0.31)	0.33 (0.31)	1 (0)	0 (0)	0.86 (0.25)	0.15 (0.25)	0.67 (0.31)	0.33 (0.31)	0.281 (0.03)

Note. SE = standard error.

Table 3. Goodness-of-fit Statistics for 1, 2, and 3 Class Models Grouping Limited Prosocial Emotions (LPE) Characteristics.

Characteristics	Log-likelihood	AIC	BIC	χ^2	<i>P</i>	<i>G</i> ²	<i>P</i>
1 Class model	-130.477	268.953	278.17	533.49	0	72.802	0
2 Class model	-99.452	216.904	237.64	9.169	.164	10.752	0.096
3 Class model	-98.079	224.157	256.414	6.375	.012	8.005	0.005

Note. AIC = Akaike information criterion; BIC = Bayesian information criterion.

always present, while LRG and UAP manifest only in addition to core characteristics (which in this analysis corresponds to class 2), while in sLPE, these exist as a unique presence (which in this analysis corresponds to class 3). Finally, goodness-of-fit statistics for 1, 2, and 3 class models can be seen in Table 3. Sex and age were also tested as covariates in the model, but as they did not show any significant influence, they were not explored further.

Discussion

Based on the accuracy shown by each of the characteristics and the manner in which they grouped, we suggest that CLE and SDA may be considered as core characteristics while LRG and UAP as ancillary characteristics of LPE specifier. Research of LPE in clinical samples is scarce. Regardless, previous studies^{20,21} have found that almost half of their samples presented LPE. In the current study, we found a lower proportion (17.56%) of participants with LPE. This could be explained in part by the use of different instruments and other population characteristics. For instance, one study²⁰ focused on a dimensional diagnosis of LPE with an inpatient adolescent sample with severe conduct problems and found a higher proportion of LPE among its participants, contrary to our sample which was obtained from general psychiatric services and where LPE was evaluated in a categorical way. The latent class analysis of our study slightly underestimated this proportion (12.2%), while it overestimated the proportion of sLPE (14.9% vs. 28.1%). This could reflect that the latent class analysis provides a classification that is closer to the dimensional diagnosis

(grouping none, very few and few) rather than the classification provided by the categorical way of looking at the diagnosis.

The study of subthreshold symptoms in children and adolescent populations has gained importance in the last few years. Displaying subthreshold symptoms for any disorder as an adolescent has been associated with poorer quality of life, psychosocial impairment,²² and an increased risk for developing other psychopathology or being at risk to develop the full syndrome.^{23,24} Interestingly, in the current study, almost all sLPE participants exhibited LRG and UAP but not CLE and SDA. In this sense, we propose that the LPE construct contains core (CLE and SDA) and ancillary characteristics (LRG and UAP) since each of these groups seems to have a differential predictive value for the specifier. Future studies could confirm if the presence of a single core characteristic could be a predictor of increased risk to develop LPE, whereas the presence of an ancillary characteristic may not lead to a negative outcome.

Previous research using ICU recognized clearly UAP, LRG, CLE but not SDA.¹⁰ The differences between the study by Kimonis and the present results may be related to important methodological differences. In the referent study, information was obtained from self-report format rather than from a full interview reflecting the opinion of 2 informants as well as the clinician's judgment. Also, the study by Kimonis presents the results of an adolescent population with a mean age almost 7 years older than the one evaluated in the current study. This could mean that the predictive value of LPE characteristics changes with age, and therefore, studies should be performed to evaluate the temporal

stability of the predictive value of core characteristics. SDA evaluation with the ICU short version depends only on 1 item which had reported low internal consistency and external validity.¹² The non-reverse score in this item²⁵ and the idea that not showing emotions to others may explain the unemotional traits may be a limitation in how SDA traits are interpreted in ICU reports. These clinimetric disadvantages may be the reason why SDA has not been recognized as a relevant characteristic of LPE in the ICU. Finally, in our study, UAP was considered an ancillary characteristic. This is in contrast with the study of Kimonis, where UAP (item 3 of ICU “I care about how well I do at school or work”) best set apart adolescents along the callous unemotional continuum. Discrepancies regarding the relevance of UAP in the construct of LPE may be related to the inclusion of parents as informants, as their response helped evaluate the subjects’ performance in the home environment, something that is not currently possible in the way the item is written in the ICU and without parent’s participation.

The impact of CLE and SDA, proposed as core characteristics, has been highlighted by previous studies. CLE as a core characteristic supports a previous theory that a lack of empathy predicts violent social behaviour.²⁶ It is important to remark that SDA was proposed as the callous unemotional trait that better predicts psychopathy in adult life.^{27,28,29,30} If replicated, this construct could be evaluated in future studies using both dimensional and categorical instruments to assess LPE characteristics in clinical samples. In particular, studies should evaluate associations between core characteristics with severity of symptoms and comorbidity.

These findings are applicable only to the paediatric clinical population and are not representative of any other age groups. The small sample size, particularly for the LPE and sLPE groups, reduced the statistical power of the results. The longitudinal stability of the diagnoses may not be measured due to the cross-sectional design of the study.

Conclusion

CLE and SDA could be considered as core and LRG and UAP as ancillary characteristics for children and adolescents when evaluating LPE. The way in which K-SADS-PL-5 weighs LPE characteristics represents a complementary evaluation tool for this specifier

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References

1. Scheepers FE, Buitelaar JK, Matthys W. Conduct disorder and the specifier callous and unemotional traits in the DSM-5. *Eur Child Adolesc Psychiatry*. 2011;20(2):89-93.
2. American Psychiatric Association. Desk reference to the diagnostic criteria from DSM-5. Arlington, (TX): American Psychiatric Association, 2013.
3. World Health Organization. International classification of diseases 11th Revision. 2018. [accessed 2020 Feb 07]. <https://icd.who.int/>.
4. Herpers PC, Klip H, Rommelse NN, Greven CU, Buitelaar JK. Associations between high callous-unemotional traits and quality of life across youths with non-conduct disorder diagnoses. *Eur Child Adolesc Psychiatry*. 2016;25(5):547-555.
5. Kahn RE, Frick PJ, Youngstrom E, Findling RL, Youngstrom JK. The effects of including a callous-unemotional specifier for the diagnosis of conduct disorder. *J Child Psychol Psychiatry*. 2012;53(3):271-282.
6. McMahon RJ, Witkiewitz K, Kotler JS. Predictive validity of callous-unemotional traits measured in early adolescence with respect to multiple antisocial outcomes. *J Abnorm Psychol*. 2010;119(4):752-763.
7. Seijas R, Servera M, Garcia-Banda G, et al. Consistency of limited prosocial emotions across occasions, sources, and settings: trait- or state-like construct in a young community sample? *J Abnorm Child Psychol*. 2018;47(1):47-58.
8. Ray JV, Frick PJ, Thornton LC, Steinberg L, Cauffman E. Positive and negative item wording and its influence on the assessment of callous-unemotional traits. *Psychol Assess*. 2016;28(4):394-404.
9. Coghill D, Sonuga-Barke EJ. Annual research review: categories versus dimensions in the classification and conceptualisation of child and adolescent mental disorders - implications of recent empirical study. *J Child Psychol Psychiatry*. 2012; 53(5):469-489.
10. Kimonis ER, Fanti KA, Frick PJ, et al. Using self-reported callous-unemotional traits to cross-nationally assess the DSM-5 “with limited prosocial emotions” specifier. *J Child Psychol Psychiatry*. 2015;56(11):1249-1261.
11. Herpers PCM, Klip H, Rommelse NNJ, et al. Taxometric analyses and predictive accuracy of callous-unemotional traits regarding quality of life and behavior problems in non-

- conduct disorder diagnoses. *Psychiatry Res.* 2017; 253: 351-359.
12. Cardinale EM, Marsh AA. The reliability and validity of the Inventory of Callous Unemotional Traits: a meta-analytic review. *Assessment.* 2020;27(1):57-71.
 13. Henry J, Pingault JB, Boivin M, Rijsdijk F, Viding E. Genetic and environmental aetiology of the dimensions of Callous-Unemotional traits. *Psychol Med.* 2016;46(2):405-414.
 14. Masi G, Milone A, Brovedani P, et al. Psychiatric evaluation of youths with disruptive behavior disorders and psychopathic traits: a critical review of assessment measures. *Neurosci Biobehav Rev.* 2018; 91:21-33.
 15. De la Peña FR, Villavicencio LR, Palacio JD, et al. Validity and reliability of the kiddie schedule for affective disorders and schizophrenia present and lifetime version DSM-5 (K-SADS-PL-5) Spanish version. *BMC Psychiatry.* 2018; 18(1):193.
 16. Frazier Norbury C. Editorial: the search for core symptoms—will this help clinical decision-making? *J Child Psychol Psychiatr.* 2016;57(8):881-883.
 17. De la Peña FR, Rosetti MF, Rodriguez-Delgado A, et al. Construct validity and parent-child agreement of the six new or modified disorders included in the Spanish version of the Kiddie schedule for affective disorders and schizophrenia present and lifetime version DSM-5 (K-SADS-PL-5). *J Psychiatr Res.* 2018;101:28-33.
 18. Hauck WW. A comparative study of conditional maximum likelihood estimation of a common odds ratio. *Biometrics.* 1984;40(4):1117-1123.
 19. R Development Core Team. R: A language and environment for statistical computing (Austria): R Foundation for Statistical Computing.; 2008 [accessed 2020 Feb 07]. <http://www.R-project.org>.
 20. Jambroes T, Jansen LM, Vermeiren RR, Doreleijers TA, Colins OF, Popma A. The clinical usefulness of the new LPE specifier for subtyping adolescents with conduct disorder in the DSM 5. *Eur Child Adolesc Psychiatry.* 2016;25(8):891-902.
 21. Colins OF. The clinical usefulness of the DSM-5 specifier for conduct disorder outside of a research context. *Law Hum Behav.* 2016;40(3):310-318.
 22. Bertha EA, Balazs J. Subthreshold depression in adolescence: a systematic review. *Eur Child Adolesc Psychiatry.* 2013;22(10): 589-603.
 23. Birmaher B, Merranko JA, Goldstein TR, et al. A risk calculator to predict the individual risk of conversion from subthreshold bipolar symptoms bipolar disorder I or II in youth. *J Am Aca Child Adolesc Psychiatry.* 2018;57(10):755-763. e754.
 24. Jinnin R, Okamoto Y, Takagaki K, et al. Detailed course of depressive symptoms and risk for developing depression in late adolescents with subthreshold depression: a cohort study. *Neuropsych Dis Treat.* 2017;13:25-33.
 25. Hawes SW, Byrd AL, Henderson CE, et al. Refining the parent-reported inventory of callous-unemotional traits in boys with conduct problems. *Psychol Assess.* 2014;26(1):256-266.
 26. Blair RJ. Psychopathic traits from an RDoC perspective. *Curr Opin Neurobiol.* 2015;30:79-84.
 27. Cleckley H. *The mask of sanity: an attempt to reinterpret the so-called psychopathic personality.* England: Mosby, 1941.
 28. Neumann CS, Kosson DS, Forth AE, Hare RD. Factor structure of the Hare Psychopathy Checklist: youth version (PCL: YV) in incarcerated adolescents. *Psychol Assess.* 2006;18(2): 142-154.
 29. Yildirim BO. A treatise on secondary psychopathy: psychobiological pathways to severe antisociality. *Aggress Violent Behav.* 2016;31:165-185.
 30. Quintero LAM, Muñoz-Delgado J, Sánchez-Ferrer JC, Fresán A, Brüne M, Arango de Montis I. Facial emotion recognition and empathy in employees at a juvenile detention center. *Int J Offender Ther Comp Criminol.* 2018;62(8):2430-2446.