

SELF-INJURIOUS BEHAVIOR IN CHILDREN WITH AUTISM

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Abstract: The aim of this research was to examine characteristics and predictors of self-injurious behavior (SIB) in children with autism spectrum disorders (ASD). The sample included 43 participants diagnosed with ASD. Instrument used was Behavior Problems Inventory - BPI-01 (Rojahn et al., 2002), SIB subscale. Our results show that our participants exhibit low rates of SIB and that there was no difference in the presence of SIB between children of different genders and between participants who attend mainstream schools and schools for educating children with special needs. The most frequent topography of SIB exhibited by our sample included body hitting, head hitting, pica and self-biting. We obtained that the functionality level and age are the predictors of SIB, where participants with low functioning ASD exhibit more SIB than participants with high functioning ASD. The participants of the oldest age group exhibit the least SIB, while participants from the youngest age group exhibit more SIB and participants from the eight-15 age group exhibit the most SIB. SIB can be successfully reduced or eliminated in children with ASD by using evidence-based practices and interventions and parents of children with ASD can be successfully trained on how to implement them correctly. It is of crucial value that all special educators and parents of children of ASD receive adequate training on how to reduce SIB in children with ASD, because prolonged engagement in SIB can have serious health consequences.

Key Words: autism, media, reporting

1. INTRODUCTION

Autism spectrum disorder (ASD) is a neurodevelopmental disorder characterized by impairments in social communication and restricted, repetitive patterns of behavior, interests or activities (American Psychological Association, 2013; according to Arsić et al., 2021). The term spectrum is used because of the heterogeneity in the presentation and severity of ASD symptoms, as well as in the skills and level of functioning of individuals who have ASD (APA, 2013).

Challenging behaviors are conditions that interfere with everyday activities of individuals with ASD. They may include a varying degree of problems such as irritability, destructiveness, aggression, withdrawal, lethargy, uncooperativeness, hyperactivity, and repetitive behaviors or self-injurious behavior (Rattaz et al., 2018). Children with ASD are more likely to engage in problem behavior compared to children with intellectual disability or the ones of typical development (Autism Speaks, 2018). It seems that the diagnosis of autism is associated with greater levels of challenging behaviors compared to the population with other diagnosis.

Estimates of the proportion of individuals with ASD who engage in at least one type of problem behavior is very wide, with some researchers reporting prevalence estimates as low as 8% (Kodak & Bergmann, 2020) or as high as 94% (Jang et al., 2011), while SIB estimates range from 35 to 60% (Richards et al., 2016). It is, as well, reported that children with ASD are eight times more likely to be treated for self-injuries than members of a typically developing population (Vollmer et al., 2009). Despite challenging and problem behavior not being one of the core diagnostic features of ASD itself, it is one of the main reasons for referral to service and a source of parental or caregiver stress and concern, which increases family financial strain, as well as demands on caregivers (Lecavalier et al., 2005).

SIB is a physical non-accidental act of producing injury to one's body which encompasses behaviors such as head-banging, self-pinching, self-scratching, eye-gouging, self-hitting, hair-pulling, self-biting, and many others. Studies suggest this is learned behavior that is often strengthened by usual social consequences to the children's behavior, such as attention from adults, access to preferred items or activities, or escape from undesired activities (Vollmer et al., 2009). Although it is commonly described as highly repetitive behavior that can occur at frequencies of up to dozens of instances per minute, it can also be episodic as it occurs under highly specific stimulus contexts or in bursts after long periods without problematic behavior. SIB is very common in ASD. While prevalence of SIB in individuals with ASD is reported to be as high as 50% (Richards et al., 2016), this behavior remains persistent across the life span, being both common and stable over time for individuals with ASD (Lavery et al., 2020). Despite the identification of ASD as a risk marker for SIB, there has been limited research of characteristics of SIB in children with ASD.

Identified predictors for SIB among children with ASD include younger age, greater impairment in adaptive skills, greater degree of autism or social impairment and abnormal sensory processing (Richards et al., 2017). Beside, high levels of repetitive behavior, over activity and impulsivity have consistently been identified as behavioral characteristics associated with the presence of SIB (Lavery et al., 2020). Also, individuals who exhibit SIB were significantly more likely to be non-verbal than those who did not engage in this activity. There were no significant differences between those who engage in SIB and those who did not on any other demographic characteristic (Richards et al., 2016). The identification of predictors for this behavior can be usefully by targeting early intervention approaches towards those children who are more likely to engage in SIB. Therefore, the aim of this research was to examine characteristics and predictors of SIB in children with ASD, as well as to determine the presence of SIB exhibited by children with ASD.

2. METHODOLOGY

2.1. SAMPLE

The research was conducted during January and February of 2022 on a population of children with ASD. Instruments in a paper form were distributed to special educators that work in schools for educating children with disabilities, as well as to those who work in private practices in the territory of the Republic of Serbia. All special educators were told that the participation in the research is anonymous and voluntary and that they should fill out the questionnaires for children whom they work with for at least over six months.

The sample included 43 participants diagnosed with ASD. Socio-demographic characteristics of the sample are presented in Table 1.

Table 1.

Sample characteristics

Variable	Category	f	%
Gender	Male	34	79.1
	Female	9	20.9
Age group	0-7	9	20.9
	8-15	19	44.2
	16-25	15	34.9
Functionality level	High functioning ASD	14	32.6
	Low functioning ASD	29	67.4
Type of school	Mainstream school	13	30.2
	School for educating children with special needs	30	69.8

2.2. INSTRUMENT

In order to determine the presence of SIB in our sample, we used SIB subscale of the *Behavior Problems Inventory* instrument (BPI-01, Rojahn et al., 2002). This instrument is used to determine the frequency of SIB in children with ASD. This subscale consists of 14 items that describe the different types of SIB that can be found in children with ASD on a five-step Likert type scale (0 = never, 1 = monthly, 2 = weekly, 3 = daily and 4 = hourly). The severity of SIB in each participant is calculated by adding the individual item values and by calculating the score. Each child can have the maximum of 56 points, which represents the most severe SIB and each score over 28 is an indication for severe SIB. The reliability of the used instrument was $\alpha = .87$.

2.3. STATISTICAL ANALYSIS

Statistical analysis of the obtained data was performed by using *Statistical Package for the Social Sciences* (SPSS) program. Normality of the sample distribution was checked with the Shapiro-Wilk test. The reliability of the used instrument was obtained with Cronbach alpha. In order to determine if participants exhibit high rates of SIB, we used t-test for a single sample. Man-Whitney test was performed in order to determine presence of SIB among dichotomous categorical variables, while Kruskal-Wallis test was performed in order to determine differences in SIB among polytomous categorical variables.

3. RESULTS AND DISCUSSION

In order to determine if participants exhibit high rates of SIB, we used t-test for a single sample. The results of the t-test for a single sample show that the average value on the used instrument ($N = 43$, $M = 10.21$, $SD = 11.11$) in our sample indicates that all participants statistically significantly differ from the theoretical average of 28 points ($t = -10.50$, $df = 42$, $p < .001$), which indicates that they exhibit low rates of SIB.

Our findings are consistent with the findings of Licence et al. (2020) who found that SIB is not that prevalent in children with ASD, with only 24% of children exhibiting it and of those who do engage in SIB, the rates are not high. On the contrary, Steinfeldt-Kristensen et al. (2020) found in their recent study that children with ASD exhibit high rates of SIB and that 42% of children with ASD has at least one form of SIB

Results of descriptive statistics on individual scale items are presented in Table 2.

Table 2.

Descriptive statistics on individual items (N = 43)

Item	M	SD
Self-biting (so hard that a tooth print can be seen for some time; bloodshot or breaking of skin may occur)	1.00	1.45
Hitting head with hand or other body part (e.g., face slapping, knee against forehead) or with/against objects (e.g., slamming against a wall, knocking head with a toy)	1.49	1.76
Hitting body (except for the head) with own hand or with any other body part (e.g., kicking self, slapping arms or thighs), or with/against objects (e.g., hitting legs with a stick, boxing the wall)	1.58	1.74
Self-scratching (so hard that reddening of the skin becomes visible; breaking of the skin may also occur)	.88	1.47
Vomiting and rumination (deliberate regurgitation of swallowed food with rumination)	.33	.99
Self-pinching (so hard that reddening of the skin becomes visible; breaking of the skin may occur)	.16	.57
Pica: Mouthing or swallowing of objects which should not be mouthed or swallowed for health or hygiene reasons (non-food items such as feces, grass, paper, garbage, hair)	1.26	1.71
Inserting objects in body openings (in nose, ears, or anus, etc.)	.30	.91
Pulling finger or toe nails	.40	1.01
Inserting fingers in body openings (e.g., eye poking, finger in anus)	.58	1.35
Air swallowing resulting in extended abdomen	.05	.31
Hair pulling (tearing out patches of hair)	.47	1.16
Extreme drinking (e.g., more than 3 liters per day)	.86	1.44
Teeth grinding (evidence of ground teeth)	.86	1.41

Table 2 contains a descriptive analysis of the individual items on the instrument used and as it is visible in the Table 2, most frequent SIB in our sample includes body hitting ($M = 1.58$), head hitting ($M = 1.49$), pica ($M = 1.26$) and self-biting ($M = 1.00$).

Previously conducted research shows that most common forms or topographies of SIB include head hitting, hair pulling, self-biting and self-scratching (Steenfeldt-Kristensen et al., 2020). Other research (Marković, 2019) found that the most common topographies are pica, which is manifested by 65% of the children with ASD, followed by head hitting and self-scratching, which are exhibited by almost half of the children with ASD.

Table 3 presents differences in the presence of SIB between participants of different gender, functionality level and school type.

Table 3.

Dichotomous categorical variables and presence of SIB

Variable	Category	N	Mdn	IQR
Gender	Female	9	4.00	10
	Male	34	8.00	20
Functionality level	High functioning ASD	14	2.00	6
	Low functioning ASD	29	12.00	24
Type of school	Mainstream school	13	12.00	20
	School for educating children with special needs	30	3.00	16

In order to determine presence of SIB among dichotomous categorical variables (gender, functionality level and type of school participants attend), we used Mann-Whitney test.

The results of the Mann-Whitney test indicate that participants of different genders do not differ in terms of presence of SIB ($U = 111.50$, $p = .21$), as well as participants that attend mainstream schools and schools for educating children with special needs ($U = 144.00$, $p = .18$).

Our findings regarding gender differences in SIB among children with ASD are consistent with the previously conducted research (Moseley et al., 2019; Licence et al., 2020). However, there are authors who found that children with ASD do differ in SIB when it comes to gender and that female children with ASD exhibit more SIB than male (Maddox et al., 2017; Licence et al., 2020; Schoenleber, 2015).

When it comes of type of school that children with ASD attend, our findings are consisted with previous research (Steenfeldt-Kristensen et al., 2020).

Statistically significant differences were found between participants with different functionality levels ($U = 119.50$, $p = .03$), where participants with low functioning ASD exhibit more SIB ($Mdn = 12.00$) in comparison with participants with high functioning ASD ($Mdn = 2.00$).

Severity of ASD was also found to be the biggest predictor of SIB in children with ASD (Baghdadl et al., 2003; Licence et al., 2020; Matson & Rivet, 2008; Rattaz et al., 2015), therefore our results are consistent with previous findings.

Table 4 presents the differences in the presence of SIB between participants of different age groups.

Table 4.

Descriptive measures on presence of SIB in terms of age group

Age group	N	M	SD	Mdn	IQR
0-7	9	11.89	8.57	12.00	14
8-15	19	13.05	12.78	10.00	24
16-25	15	5.60	9.08	1.00	8

In order to determine differences in SIB between participants of different age groups, Kruskal-Wallis test was performed. The results of Kruskal-Wallis test indicate that participants of different age groups statistically significantly differ in terms of SIB ($H = 6.02$, $df = 2$, $p = .05$). The participants of the oldest age group exhibit the least

SIB ($M = 5.60$), while participants from the youngest age group exhibit more SIB ($M = 11.89$) and participants from the eight to 15 age group exhibit the most SIB ($M = 13.05$).

Our research is opposite from the previously conducted research that found no age difference in the presence of SIB (Baghdadli et al., 2003; Lavery et al., 2020; Richards et al., 2016). On the other hand, Shatuck et al. (2007) found that younger children exhibit more SIB and that SIB decreases with age if children undergo treatment specialized for its reduction.

4. CONCLUSION

Our results show that our participants exhibit low rates of SIB and that there was no difference in the presence of SIB between children of different genders and between participants who attend mainstream schools and schools for educating children with special needs. The most frequent topography of SIB exhibited by our sample included body hitting, head hitting, pica and self-biting. We obtained that the functionality level and age are the predictors of SIB, where participants with low functioning ASD exhibit more SIB than participants with high functioning ASD. The participants of the oldest age group exhibit the least SIB, while participants from the youngest age group exhibit more SIB and participants from the 8-15 age group exhibit the most SIB.

Research shows that SIB can be successfully reduced or eliminated in children with ASD (Arsić et al., 2022) by using evidence-based practices and interventions (Arsić et al., 2021a) and that parents of children with ASD as well can be successfully trained on how to implement them correctly (Arsić et al., 2021b). Therefore, it is of crucial value that all special educators and parents of children of ASD receive adequate training on how to reduce SIB in children with ASD, because prolonged engagement in SIB can have serious health consequences.

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