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Research Paper

Prevalence of dissociative symptoms in adolescent psychiatric inpatients



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ABSTRACT

Introduction. – Even if dissociative disorders have been observed during adolescence, few adolescents hospitalized in psychiatry have been studied specifically for dissociative disorder symptoms.

Objective. – The purpose of the study was to assess the prevalence of dissociative symptoms and the exposure to traumas among adolescent psychiatric inpatients.

Method. – Ninety-three inpatients aged 12–20 years completed self-report measures of dissociation (Adolescent Dissociative Experience Scale, A-DES; Dissociation Questionnaire, DIS-Q), traumas recordings (DIS-Q) and a specific questionnaire giving diagnostic impressions of dissociative disorders (Adolescent Multi-dimensional Dissociation Inventory, A-MID).

Results. – Forty-three percent (DIS-Q) or 33% (A-DES) patients showed pathological dissociative symptoms. Forty-five percent received a diagnosis of a dissociative disorder (A-MID). Patients with dissociative symptoms were significantly more likely to report all types of abuse (sexual, physical and emotional) and more exposed to multiple traumas.

Conclusions. – Dissociative symptoms were highly prevalent and typically had not been previously diagnosed clinically. Results suggest a link between accumulated exposure to various types of traumas and severity of dissociation. Following this, clinical examination of adolescents should take into account post-traumatic and/or dissociative symptomatology.

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1. Introduction

Dissociative disorders, including dissociative identity disorder (formerly multiple personality disorder), were once thought to be “exotic and rare disorders, if indeed they existed at all” (Boysen & VanBergen, 2013). Several studies show that a certain number of events experienced by children can affect their psychological and somatic development (Shenk, Noll, Putnam, & Trickett, 2010); these events are therefore considered of traumatic nature (adverse childhood events) even if, from a personal point of view, there can only be trauma in a certain context determined by the relationship. Among these infantile experiences, early sexual abuse–intra and extrafamily (Finkelhor, Turner, Shattuck, & Hamby, 2013), physical abuse (MacMillan, Fleming, & Streiner et al., 2001) and emotional abuse are considered as psychopathogenic across the lifespan. Early childhood trauma seems to play a determinant role in cases of psychopathology that emerge during adolescence (Shenk et al., 2010; Kaplan, Pelcovitz, & Labruna, 1999; Atlas, Wolfson, &

Lipschitz, 1995). Other factors seem to play a role of moderator, such as individual and family resiliency, affective environment and global context (economic and social) (MacMillan et al., 2001; Brown, Schrag, & Trimble, 2005; Gilbert et al., 2012).

Among disorders strongly impacted by traumatic experiences (incest, abuse and neglect), dissociative disorders have been observed during childhood (Weiss, Sutton, & Utecht, 1985; Zoroglu, Yargic, Tutkun, Ozturk, & Sar, 1996; Jans, Schneck-Seif, Weigand et al., 2008), during adolescence (Wallach & Dollinger, 1999; Brunner, Parzer, Schuld, & Resch, 2000) and adult age (Hunter, 2006). These disorders have been identified in both outpatients (Foote, Smolin, Kaplan, Legatt, & Lipschitz, 2006) and inpatients (Tutkun, Sar, Yargic, Ozpulat, Yanik, & Kiziltan, 1998; Friedl & Draijer, 2000; Gast, Rodewald, Nickel, & Emrich, 2001). A recent article (Chiu, Meg Tseng, Chien et al., 2017) reported average prevalence rates of dissociative disorders in clinical adult populations around 20% all over the world (19.5% in Taiwan vs. 20.6% in Western studies). Sar, Önder, Kilincaslan, Zoroglu, & Alyanak, 2014 observed 45.2% of adolescents with dissociative disorders in an outpatient setting. The principal dissociative symptoms are amnesia, depersonalization, derealization, confusion of identity and identity alteration. DSM-IV-TR lists five

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diagnoses: dissociative amnesia, dissociative fugue, depersonalization disorder, dissociative identity disorder and dissociative disorder not otherwise specified. Note that the DSM-5 lists a new subcategory in the chapter trauma- and stressor-related disorders for the posttraumatic stress disorder with dissociative symptoms, in addition with the dissociative disorders chapter (dissociative identity disorder, dissociative amnesia, depersonalization/derealization disorder, other specified dissociative disorder and unspecified dissociative disorder). A small number of studies about hospitalized children (Malhotra, Singh, & Mohan, 2005) and adolescents (Atlas et al., 1995; Brunner et al., 2000) were reported but, to our knowledge, it seems that few adolescents hospitalized in psychiatry have been studied specifically for dissociative disorders and symptoms.

The purpose of the study was to assess the prevalence and the nature of dissociative symptoms in an inner-city adolescent inpatient psychiatric population. Our hypothesis is that dissociative symptoms and disorders were underestimated, especially without screening tools (self-report questionnaires). An additional issue is to check the presence in this population of adverse childhood events.

2. Method

2.1. Participants

Subjects were French-speaking adolescent inpatients, ages 12 to 20, who admitted for treatment at the Fond'Roy Psychiatric clinic (Brussels, Belgium) during the periods of research team availability. Subjects were 179 consecutive admissions (89 boys and 90 girls) to a hospital-based crisis unit. Patients who were unable to speak French and/or were intellectually disabled and/or were extremely agitated could not fill the questionnaires and thus were excluded from the study. There were no other exclusion criteria. The main reason for intake was recorded.

Patients were approached within the five days following their admission and gave their oral consent. They were not paid and did not receive any compensation for their participation. The research team was in charge of collecting the forms and verifying that they were filled correctly. This intensive follow-up explains the necessity of a specific team in place to ensure the quality of the research. The authors and clinical staff in charge of caring for the inpatients had no knowledge of the scores obtained in the tests and no knowledge of the diagnosis interpretations linked to the results of the research. The overall study design received the approval of the ethical committee of the hospital, no written consent was needed.

2.2. Instruments

We selected two screening tests: the Adolescent-Dissociative Experience Scale (A-DES) is the reference test used in the United States and the Dissociation Questionnaire (DIS-Q) is the most common one used in Europe. The A-DES is a screening instrument developed by Armstrong, Putnam, Carlson, Librero, & Smith, 1997 in order to detect dissociative behavior in children between 11–17 years of age. The A-DES is a 30-item self-report measure. Items are neutrally worded to avoid the risk of upsetting adolescents. The answer response format is a 0–10 scale, anchored at the ends with 'never' (0) and 'always' (10). The total A-DES score is equal to the mean of all item scores. The subject circles the number that best describes how often a given experience happens. On the title page, respondents are instructed not to count experiences that occur under the influence of alcohol or drugs. In North America, reliability and validity of the A-DES have been demonstrated in different studies (Armstrong et al., 1997). The A-DES has been

validated in French by a Canadian team (Philippe-Labbé, Lachance, & Sain tonge, 1999).

The DIS-Q is a 63-item self-report measure (Vanderlinden, Van Dyck, & Vertommen, 1991). The scale consists of five Likert scale choices (1 = not at all, 2 = a little bit, 3 = moderately, 4 = quite a bit, and 5 = extremely). Respondents endorsed the extent that each item is applicable to them. The total DIS-Q score is equal to the mean of all item scores. On the title page, respondents are instructed not to count experiences that occur under the influence of alcohol or drugs. Results with a French-speaking population show good criterion-related validity since it discriminates between patients and controls (Mihaescu, Vanderlinden, & Sechaud et al., 1998).

We used the Adolescent-Multidimensional Inventory of Dissociation (A-MID) as a comprehensive measure of dissociation. A-MID scores correlate highly with other measures of dissociation. As the MID, it has 218 items: 168 dissociation items and 50 validity items (Dell, 2006). The A-MID assesses 23 dissociation symptoms (these 23 scales assist diagnosis via an alternative apportionment of the A-MID's 168 dissociation items). The A-MID was chosen as a specific test, providing information entitled as "general dissociative symptoms", "partially-dissociated intrusions" and "fully-dissociated actions" based on which a statistical operation proposes different diagnoses relative to traumatic disorders. The diagnostic impressions that are generated by A-MID analysis are based on clinically sound diagnostic algorithms:

- posttraumatic stress disorder;
- dissociative disorder not otherwise specified;
- dissociative identity disorder;
- somatization;
- borderline personality disorder.

This self-report instrument is used for presenting an indication of dissociative disorders and PTSD rather than for establishing these diagnoses. The A-MID has two scoring systems:

- total score;
- severe dissociation score.

Total score ranges between 0 and 100. A score of 30 and above is considered a cut-off mark indicative of probable dissociative psychopathology.

The A-MID has undergone preliminary testing in the United States (Ruths, Silberg, Dell, & Jenkins, 2009) and Belgium (Goffinet, 2009). The A-MID found that symptoms in dissociative adolescents closely mirror the pattern found in dissociative adults.

The A-MID was first translated into French independently and a consensus on the translation was then formed. In following, back-translation to English was performed by two instructors in English. French A-MID already has good convergent construct validity measured by rho Spearman's statistic¹. Spearman's Rho between French A-MID and DIS-Q (total score) was 0.70816 and rho between French A-MID and A-DES was 0.69074 (Goffinet, 2009). Complete validation of French A-MID is ongoing.

2.3. Data analysis

Scheffe's *t*-test was used to evaluate the differences between subjects with and without a trauma history. Chi-square is a

¹ The sign of the Spearman correlation indicates the direction of association between X (the independent variable) and Y (the dependent variable). If Y tends to increase when X increases, the Spearman correlation coefficient is positive. The Spearman correlation increases in magnitude as X and Y become closer to being perfect monotone functions of each other. When X and Y are perfectly monotonically related, the Spearman correlation coefficient becomes 1.

statistical test commonly used to compare observed data with data we would expect to obtain according to a specific hypothesis. The null hypothesis states that there is no significant difference between the expected and observed result.

3. Results

3.1. Demography

The initial population selected for the study included 179 inpatients (89 boys and 90 girls, average age: 16.58 years \pm 2.12). Nineteen subjects were excluded (14 boys and 5 girls, average age: 16.86 years \pm 2.31) and 67 refused to participate (31 boys and 36 girls, average age: 16.85 years \pm 2.13). Ninety-three inpatients participated in the study (44 boys and 49 girls, average age: 16.29 years \pm 2.05). They were no significant differences between these 3 groups.

In order to support clinically a possible association between their decision to refuse the study and the presence of pathology, we consulted the medical files of all the patients who voluntarily refused to participate to enlighten our hypothesis on their diagnosis. We divided these patients in 3 groups according to their clinical diagnosis: mood disorders (27 patients including 12 boys and 15 girls, average age: 16.32 years), delusions and hallucinations (21 patients including 14 boys and 7 girls, average age: 18.14 years) and psychotraumatic anxiety (19 patients including 5 boys and 14 girls, average age: 16.05 years). In the group delusions and hallucinations, the average age of the patients was higher and boys were overrepresented. In the group psychotraumatic anxiety, girls were overrepresented.

3.2. Admission characteristics

Many convergent reasons can lead to the hospitalization of a patient, especially in the case of adolescent patients. The main reasons used by the referral sources when requesting hospitalization were ($n = 93$): suicide attempts (17.2%; $n = 16$), depression (49.5%; $n = 46$), hostility (8.6%; $n = 8$), assaultive behavior (6.5%; $n = 6$), psychoactive substance abuse (2.2%; $n = 2$), self-injury (2.2%; $n = 2$), eating disorders (3.2%; $n = 3$), delusions and/or hallucinations (10.8%; $n = 10$).

3.3. Traumatizing adverse childhood events

Ninety-three patients completed DIS-Q but 2 refused to fill the trauma part (1) of DIS-Q resulting in 91 valid questionnaires. Sixty patients (66%) report abuses (Table 1): 58% boys ($n = 25$) vs. Seventy-three percent girls ($n = 35$). Twenty-nine patients (32%) report multiple abuses (more than 1 infantile abuse) with 40% among girls and 23% among boys. In our population, incest (sexual abuse intrafamily) is two times less frequent than sexual abuse by someone outside the family circle. Sexual abuses are 3 times more frequent among young girls. Although emotional abuse is reported in similar proportions (37%) by boys and by girls, it seems that girls

Table 1
Abuse history (self-reported DIS-Q) in relation to sex.

	Type of abuse				Number of abuses				
	Phys	Sex EF	Sex IF	Emo	0	1	2	3	4
Boys ($n = 43$)	13	6	3	16	18	15	8	2	0
Girls ($n = 48$)	24	17	9	18	13	16	7	10	2
Total ($n = 91$)	37	23	12	34	31	31	15	12	2

Number of abuses: various cumulative types of abuse; Phys: physical abuse; Sex EF: extrafamilial sexual abuse; Sex IF: intrafamilial sexual abuse; Emo: emotional abuse.

report a significantly higher number of physical abuses (30% versus 50%).

The link between abuse and dissociative disorders has been explored through two scales of dissociation (Table 2). Overall, 82.1% of the patients with dissociative disorder revealed by A-DES report at least one abuse. Among the subjects who have experienced at least one event of abuse, 41.1% showed a score of dissociation above the cut-off. The DIS-Q reveals that 85% of the patients diagnosed with dissociation disorder report at least one abuse compared to 51% of the non-dissociative patients. Among the subjects who have experienced one event of abuse, 56.7% showed a score of dissociation above the cut-off.

3.4. Dissociative symptoms

Eighty-eight A-DES questionnaires out of a total of 93 were correctly filled; mean total score in our sample was 2.96 (\pm 2.17). 46 adolescents (52%) – 24 boys (59%) and 22 girls (47%) – had total scores above the clinical cut-off of 3, showing dissociative tendencies in the clinical picture. Thirty-two adolescents (36%) – 18 boys (44%) and 14 girls (30%) – had total scores above the most widely used clinical cut-off of 4 (Kisiel & Lyons, 2001) indicating then the existence of pathological dissociation (Armstrong et al., 1997). The mean DIS-Q total score in our sample ($n = 93$) reach 2.34 (\pm 0.81). Forty adolescents (43%) – 19 boys (43%) and 21 girls (43%) – had total DIS-Q scores above the clinical cut-off of 2.5 (Vanderlinden et al., 1991; Vanderlinden, Varga, Peuskens, & Pieters, 1995). These scores, above the cut-off of 2.5, clearly indicate symptoms of pathological dissociation. Therefore, we can affirm that pathological dissociation was present in more than one third of the population, even if we use the highest cut-off scores.

3.5. Dissociative disorders

As mentioned earlier, the analysis of the A-MID through Excel gives an indication of the diagnosis. Table 3 indicates the number of each category of clinical impression, the average of the total score for the A-MID and the total score for the A-DES and the DIS-Q of each category. Eighty-four A-MID questionnaires out of a total of 93 questionnaires were correctly filled. Fifty-five patients showed pathological dissociative symptoms (65% of the responders). Thirty-eight (45%) of the self-reporting patients received a diagnosis of a dissociative disorder as indicated by A-MID analysis. Patients with diagnosis combining PTSD and DID diagnosis manifest high scores on all the 3 scales. The combination of dissociative identity disorder, posttraumatic stress disorder and somatization with borderline personality disorder are diagnosed in 16 (19%) patients. These patients show the highest scores on A-DES, DIS-Q and A-MID. The number of patients presenting a pathological dissociation on the A-MID (48%) is similar to number found for the DIS-Q (44%) but significantly higher than the results found for the A-DES (36%).

Chart review revealed that, although PTSD has been recognized, none of the patients for whom dissociative symptoms and/or comorbid dissociative disorder were identified during the study had previously received a DSM-IV dissociative disorder diagnosis.

3.6. Traumatic childhood and dissociative disorders

In our present study, from a quantitative point of view, the results show that history of childhood trauma is correlated to the presence of pathological dissociation revealed by both A-DES and DIS-Q. From a qualitative point of view, each type of traumatic experience taken individually, except for emotional abuse, is correlated to the presence of pathological dissociation, particularly in the case of extrafamilial sexual abuse (Table 2).

Table 2
Abuse history for pathological dissociation as measured by A-DES and DIS-Q total scores (Chi-square analysis).

	Type of abuse (0.87)				Number of abuses (0.013 A-DES; 0.002 Dis-Q)						
	Phys	Sex EF	Sex IF	Emo	0	1	2	3	4	>1	>2
Non-dissoc A-DES (n = 58)	18 27.6%	9 15.5%	6 10.3%	17 29.3%	25 43.1%	21 36.2%	7 12.1%	5 8.6%	0 0%	12 20.7%	5 8.6%
Dissoc A-DES (n = 28)	16 57.1%	12 42.9%	6 21.4%	15 53.6%	5 17.9%	8 28.6%	7 25%	6 21.4%	2 7.1%	15 53.6%	8 28.6%
<i>P</i>	0.039*	0.037*	0.005**	0.15	0.09	0.61	0.2	0.14	0.05*	0.0032**	0.04*
Non-dissoc DIS-Q (n = 51)	15 29.4%	6 11.8%	2 3.9%	12 23.5%	25 49%	18 35.3%	7 13.7%	1 2%	0 0%	8 15.7%	1 2%
Dissoc DIS-Q (n = 40)	22 55%	16 40%	10 25%	22 55%	6 15%	13 32.5%	8 20%	11 27.5%	2 5%	21 52.5%	13 32.5%
<i>P</i>	0.0136*	0.0018**	0.0032**	0.0021**	0.0002***	0.834	0.000***	0.000***	0.12	0.0002***	0.0001***

A-DES cut-off score = 4. DIS-Q cut-off score = 2.5; % of the population identified by scores on the self-questionnaires *p < 0.05, ** < 0.005, *** < 0.0005.

Table 3
Total scores on various dissociation scales for A-MID diagnostic categories.

A-MID diagnosis	<i>n</i>	A-MID tot score	DIS-Q tot score	A-DES tot score
Non-dissociative	29	7.48	1.77	1.81
PTSD	13	13.08	1.97	1.14
PTSD + DDnos	2	28	0.97	2.44
PTSD + DID	8	30.57 ^b	2.47 ^a	4.11 ^b
PTSD + BPD	2	18.5	2.18	1.76
PTSD + soma	2	13	2.40	2.3
DID	2	23.5	2.17	2.85
PTSD + DID + soma	10	35.18 ^b	2.65 ^b	3.58 ^a
PPTSD + DID + soma + BPD	16	51.81 ^c	3.22 ^c	5.59 ^c

Non-dissociative: nor diagnosis of dissociative neither posttraumatic stress disorders; PTSD: posttraumatic stress disorder; DDnos: dissociative disorders non otherwise specified; DID: dissociative identity disorder; BPD: borderline personality disorder; soma: somatization.

^a Nearly reaching the clinical cut-off.

^b Significant value.

^c High value.

We considered the diagnoses indicated by the A-MID. In Table 4, we have regrouped patients without dissociative symptoms (n = 29), patients with PTSD (n = 17) and patients with dissociative identity disorder (n = 2). We have collected the comorbidities: 2 for PTSD and DDNOS (n = 10), 3 for PTSD, DID and somatization (n = 9) and 4 for PTSD, DID, somatization on the axis 1 and personality disorder borderline on axis 2 (n = 16). Compared to the patients without PTSD neither dissociative disorder diagnosis (n = 29), patients with PTSD and/or dissociative disorder (n = 54), according the A-MID questionnaire, were significantly more likely to report childhood sexual abuse events (7 vs. 35% for extrafamilial and 7 vs. 19% for intrafamilial), childhood physical abuse (28 vs. 46%) and overall much more cumulative (more than one) adverse childhood events (14 vs. 41%).

We then compared patients with PTSD and dissociative disorder (n = 35) with patients with PTSD without dissociative disorder (n = 17). In the group with PTSD alone, 2 out of 3 patients report a past trauma (or more) whereas 3 out of 4 patients from the group with PTSD and dissociative symptoms report at least one

Table 4
Abuse history in relation to A-MID diagnostic categories (Chi-square analysis).

A-MID diagnosis (n = 83)	Type of abuse				Number of abuses						
	Phys	Sex EF	Sex IF	Emo	0	1	2	3	4	>1	>2
Non-dissoc (n = 29)	8	2	2	5	16	9	4	0	0	4	0
PTSD non-dissoc (n = 17)	8	3	4	6	5	6	3	3	0	6	3
DID alone (n = 2)	0	0	0	1	1	1	0	0	0	0	0
PTSD + dissoc (n = 10)	4	4	1	3	3	4	1	2	0	3	2
PTSD + DID + som (n = 9)	4	6	4	3	2	2	1	2	2	5	4
PTSD + DID + Som + BD (n = 16)	9	6	1	11	3	5	2	6	0	8	6
<i>P</i>	0.329	0.0059**	0.0558	0.027*						0.1112	0.0167*

* p < 0.05, ** < 0.005, *** < 0.0005.

past trauma. The number of different types of abuse (accumulation of several psycho-traumas) is very low in the group without PTSD neither dissociative disorder: 4 patients reported 2 types of abuse and none more. In the group of PTSD without dissociative symptoms, 1 patient out of 3 reported 2 types of abuse or more while 1 out of 6 patients reported 3 types of abuse. Among the traumatized patients with dissociative symptoms, more than 40% have reported at least 2 types of abuse and 1 out of 3 patients reported at least 3 types of abuse.

4. Discussion

4.1. Demography and admission characteristics

The average age of our patients is equivalent to the average age in other similar units (Hanssen-Bauer, Heyerdahl, Hatling et al., 2011). Patients who were excluded from the study were selected on motives similar to other studies:

- mental deficiency;
- the command of the language (Sar et al., 2014).

Among the group of individuals who refused to participate, the high proportion of hallucinations and delusion, particularly for older boys, can possibly indicate a fear of intrusion revealed by the questions issued from the questionnaires. However, it seems that there were less posttraumatic disorders in that group, compared to the group who participated in the study, which could suggest a certain tendency in traumatized patients to participate willingly in clinical studies, in a potential attempt to obtain a form of recognition of their suffering.

The main reasons for admission in our unit are depression and suicide (66.7%). This observation is comparable to other European studies (Hanssen-Bauer et al., 2011; Wilson, Kelly, Morgan, Harley, & O'Sullivan, 2012). Externalized behavior indicating a mental disorder is the second most frequent reason for admissions. The proportion of admissions due to symptoms likely to be signs of a

psychotic structure represents only 10% of the admissions. None of the hospitalizations were motivated by a dissociative episode. The same observation was made in an ambulatory unit in New York: only 5% of the patients in whom a dissociative disorder was identified during the study had previously received a dissociative disorder diagnosis (Foote et al., 2006).

4.2. Traumatizing adverse childhood events

A highly significant result of our study is the large number of types of traumas reported by adolescents in their past. This number is probably underreported by the fact that certain patients might have experienced traumas that they do not wish to mention (e.g. sexual abuse) or that they do not identify as traumatic experiences (e.g. neglect). Neglect has probably been experienced by several of our patients but it is not adequately assessed by a self-report questionnaire. In addition, since it concerns a care that is not given, the patient can only evaluate the absence of care he has experienced through comparison with other adolescents. It seems evident that it is easier to attest to the presence of an event than an absence (act of omission). The structured clinical interview-dissociation could have been used but it was designed for adults; nevertheless, it seems to provide more often dissociative disorders diagnosis than self-report instruments (Sar et al., 2014).

A previous study has shown that childhood abuses reported by children and adolescents with dissociative disorder have been objectively confirmed (Coons, 1994). Two thirds (66%) of our inpatients have reported at least one traumatic event in their past, which is higher than the results found by Goren and colleagues (50%) (Goren, Phillips, Chapman, & Salo, 2012), but lower than the results found by Weine et al. (81%) (Weine, Becker, Levy, Edell, & McGlashan, 1997) using the Childhood Trauma Chart Review Scale (CTCRS), a tool that offers a more systematic and detailed analysis of a traumatic past. To improve the gathering of information, we could add this tool to our protocol in the future.

4.3. Dissociative symptoms and dissociative disorders

The average score of the results of our inpatients to the A-DES (2.96 ± 2.17) was slightly lower than the one found in Australia: Goren et al., 2012 found an average score of 3.97 ± 2.33 and Tonge et al. found 3.40 ± 2.14 (Tonge, Hughes, Pullen, Beaufoy, & Gold, 2008). However, this difference could be related to the fact that Goren's sample size was only 18 patients, with a large majority of girls. Overall, 37.2% of our patients exceed the cut-off of 4, which indicates a high level of pathological dissociation. Our results seem to be similar to the proportion of patients who reached the pathological threshold in Tonge's sample (1/3) but lower than the proportion revealed in Goren's sample (50%). Czech authors (Soukup, Papežová, Kuběna, & Mikolajová, 2010) have reported abuses in 8.6% of their patients with an average A-DES score (4.42 ± 2.18) significantly higher than the average score found for the patients who have not been abused.

The total score for the DIS-Q enabled us to identify 44% of our patients with a pathological dissociation (total score > 2.5). Eighty-five percent of these patients reported one or more episodes of abuse. Several Swedish authors have studied the prevalence of dissociative symptoms in cases of non-psychiatric populations and have found that 24.5% (Svedin, Nilsson, & Lindell, 2004), 15% (Nilsson & Svedin, 2006) and 27.7% (Nilsson, Gustafsson, Larsson, & Svedin, 2010) had experienced abuse in their past and, among these subjects, respectively 8.8%, 2.3% and 13% of them reported dissociative symptoms (DIS-Q > 2.5). These authors (Svedin et al., 2004; Nilsson, & Svedin, 2006) have also found, in two distinct groups of traumatized adolescent outpatients, the presence of dissociative symptoms in 60% and 50% of the

cases. We can establish a parallel between these Swedish studies and our present results although the patients in their sample were not inpatients.

The number of patients who manifest pathological dissociation on the A-MID is similar to the number found for the DIS-Q but slightly higher than the one found for the A-DES. We used the A-DES with a cut-off at 4, which is a strict value but offers a high level of sensitivity. However, from a clinical point of view, there is a certain number of patients ($n = 14$) who present an A-DES above 3 (used as a threshold in a recent Turkish study: Sar et al., 2014), which still indicates the presence of dissociative symptoms in the clinical picture. The DIS-Q offers a certain balance between sensitivity and specificity (Boon & Draijer, 1993).

To our knowledge, there are no studies that have as yet used the A-MID as a diagnostic tool to describe a population of adolescent inpatients. Therefore, we have not been able to compare our results. However, Ginzburg et al. estimated dissociative disorders range between 12 and 21% in adult inpatients adult (Ginzburg, Somer, Tamarkin, & Kramer, 2010).

4.4. Traumatic childhood and dissociative disorders

In our population, a large proportion of dissociative patients cumulate several diagnoses of various disorders related to trauma: 63% present a PTSD (simple or complex) and 31% received at least 3 diagnoses related to a trauma. Nineteen percent of the patients presenting a dissociative disorder combined with one potential traumatizing event present a borderline personality disorder (BPD), which, as we know, is associated with an important psychiatric comorbidity. The high A-MID global score of dissociation seems to go hand in hand with multiple diagnoses (A-MID) and explains the use of the term of chronic complex posttraumatic disorder. There are no measured differences between the levels of intensity of the dissociation for the non-dissociative patients and those with PTSD. The PTSD diagnosed by the A-MID does not reveal high scores on the scales A-DES and DIS-Q. Therefore, we can suppose that these tools do not identify specific symptoms of PTSD.

In a Korean study (Jung-Uk, Sung Hoon, & Un-Sun, 2009), traumatized adolescents had significantly higher A-DES scores than adolescents in the normal group, as well as adolescents in the normal group with self-reported trauma. The normal adolescent group reporting traumatic experiences scored significantly higher than without self-rated trauma. In our study, results indicated a higher amount of reported potentially traumatizing events in dissociative patients (both for A-DES and DIS-Q) but the surprising results concern the non-dissociative patients who have revealed, in more than 50% of the cases, the presence of at least one past trauma. This suggests that a trauma can contribute to the existence of a psychiatric pathology, dissociative or not, needing hospital care.

The amount of reported potentially traumatizing events is more important among the patients with dissociative disorders: the accumulation of traumas could lead to the exposure of various pathologies as well as a number of intense dissociative symptoms which can interfere with the ability to form a diagnosis (Fellitti, Anda, Nordenberg et al., 1998). However, in our sample, the number of traumatic events does not allow us to distinguish patients with PTSD from patients with dissociative disorder. Several traumas, including one of sexual nature, seem to participate in the existence of pathological traumatic dissociative disorders, complicating the PTSD.

Finally, the limitations of the study are related to the use of self-report questionnaires that are not as accurate as semi-structured interviews to evaluate symptoms and diagnoses. The traumatic impact should be investigated by a detailed questionnaire even if there are ethical obstacles to questioning painful experiences and

digging through the past of very fragile patients: it could lead to a temporary distress. Adolescents also have a frequent tendency to minimize or deny the severity or the existence of traumatic events because they do not identify them – due to their psychological development – as traumatic (such as emotional neglect). Assessing such denial remains difficult. The use of a specific tool to evaluate DSM diagnoses would have probably contributed to a clinical assessment of comorbidities but we had several reservations about the application of adult diagnoses to adolescents in crisis unless they are very characteristic. For example, we know that many normal subjects have experienced hallucinations during their adolescence (Kompus, Løberg, Posserud, & Lundervold, 2015) and that depressive episodes during adolescence show different characteristics.

5. Conclusion

Our study shows that a significant proportion of psychiatric adolescent inpatients have dissociative symptoms, without being diagnosed before admission. It also reveals a high level of traumatic events in the past of those adolescent inpatients, especially for those with posttraumatic and dissociative symptoms. Results of the scales measuring the intensity of dissociative symptoms are similar in both the European (DIS-Q) and American (A-DES) versions. Patients who obtained high scores to these questionnaires cumulate PTSD/dissociative disorder and signs of personality disorder. These results have to be replicated, both in adolescent outpatients and inpatients.

We emphasized the impact of traumas on adolescents' psychopathology. However, our results remain mixed with respect to polyvictimization. The accumulation of traumas and their impact on the complex psychological disorders should probably be considered from a qualitative point of view (e.g. individual resiliency) rather than a single perspective based on quantity. Future research could continue that direction, using tools as the Adolescent Resilience Questionnaire (Gartland, Bond, Olsson, Buzwell, & Sawyer, 2011).

As more and more of our fellow psychiatrists and colleagues working with adolescent patients have observed, the results underline the importance in clinical practice of taking into consideration the number of potentially traumatic events an adolescent has experienced before, seeking help on specific occasion. Longitudinal studies during adulthood would confirm the dissociative disorder diagnosis during adolescence.

We recommend to screen every adolescent inpatient for trauma-related disorders even if they are not referred for this condition. Our findings lead to treat adolescents with a special attention to their traumatic past.

Disclosure of interest

The authors declare that they have no competing interest.

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