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Psychological characteristics of dissociation in general population

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ABSTRACT

Dissociation is defined as the separation of those processes that should be accessible, considering that both somatoform and conversion symptoms may be understood as dissociative. In recent decades, psychological variables have been related to dissociation, such as suggestibility, fantasy, alexithymia, abnormal emotional processes, and also a particular personality profile. The aim of this paper is to study the profile associated with psychoform and somatoform dissociation. The sample consisted of 355 participants. University students employed the snowball sampling. The following instruments were used: the Dissociative Experiences Scale-II (DES-II), the Questionnaire Somatoform Dissociation (SDQ-20), the Inventory Suggestibility (IS), the Alexithymia Scale Toronto (TAS-20), the Scale Difficulties in Emotion Regulation (DERS), the revised NEO Personality Inventory (NEO-PI), and some ad hoc questions to evaluate sleep-related experiences. The results indicated that high dissociators showed higher scores on suggestibility, alexithymia, sleep- related experiences, neuroticism, openness to experience, and lower conscientiousness than low dissociators, the results being similar to those obtained by high somatizers. As a conclusion, the profile found in both types of dissociation indicated their existing relationship, and pointed out possible lines of future research and treatment.

Características psicológicas de la disociación en la población general

Palabras clave:
Disociación somatoforme
Disociación psicoforme
Perfil disociativo
Personalidad
Alexitimia
Regulación emocional
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RESUMEN

La disociación se define como la separación de procesos que deberían ser accesibles, considerándose que los síntomas somatomorfos y conversivos pueden entenderse como disociativos. En las últimas décadas se han encontrado variables psicológicas relacionadas con la disociación, como la sugestionabilidad, la fantasía, alexitimia, alteraciones en los procesos emocionales y un perfil concreto de personalidad. El objetivo de este trabajo es estudiar el perfil asociado a la disociación psicoforme y somaforme. La muestra estuvo compuesta por 355 participantes. El muestreo consistió en la bola de nieve por parte de estudiantes universitarios. Para su realización se utilizó la Escala de Experiencias Disociativas-II (DES-II), el Cuestionario de Disociación Somatoforme (SDQ-20), el Inventario de Sugestionabilidad (IS), la Escala de Alexitimia de Toronto (TAS-20), la Escala de Dificultades en la Regulación Emocional (DERS), el Inventario de Personalidad NEO revisado (NEO-PI) y preguntas elaboradas *ad hoc* para evaluar experiencias relacionadas con el sueño. Los sujetos con elevada disociación mostraron mayores puntuaciones en sugestionabilidad, alexitimia, experiencias de sueño, neuroticismo y apertura y menores en responsabilidad, de forma muy similar al grupo de sujetos de elevada somatización. Puede concluirse que el perfil hallado en ambos tipos de disociación refleja la relación existente entre ambas y señala posibles líneas de investigación y tratamiento futuros.

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Dissociation refers to the alteration of an individual's identity, with a loss of the integration of contents in consciousness (Bernstein & Putnam, 1986), being outside of voluntary control (Nemiah, 1991), and affecting memory, identity, and the perception of the environment and time (Cardeña, 1994). Currently, the prevalence of these disorders is around 1% (American Psychological Association, APA, 2014); regardless of the presence of other comorbid disorder, the overall performance of these patients is severely damaged (Mueller-Pfeiffer et al., 2012).

In the past few years, the development of assessment instruments such as the Dissociative Experiences Scale (DES; Bernstein & Putnam, 1986), along with the inclusion of studies with non-clinical population, have allowed us to consider the dissociation as a continuum. This interpretation leads to contemplate dissociation as a psychological mechanism which is present to a greater or lesser extent in the entire population (Holmes et al., 2005).

The inclusion of conversion disorders within dissociative disorders remains essential for many authors, assuming the same process of splitting of consciousness (Scaer, 2001). In this sense, dissociation would encompass the psychoform dissociation –classic dissociative symptoms, amnesia, depersonalization– and the somatoform dissociation –somatoform and conversive symptoms (Nemiah, 1991; Nijenhuis, Spinhoven, Van Dyck, Van der Hart, & Vanderlinden, 1996).

With the aim to understand dissociation, in recent decades several psychological variables have been individually studied. In the field of personality, the most common profile is characterized by higher levels of neuroticism (Kwapil, Wrobel, & Pope, 2002) and openness to experience (Groth-Marnat & Jeffs, 2002; Vannucci & Mazzoni, 2006), as well as lower levels of agreeableness and conscientiousness (Kwapil et al., 2002).

Suggestibility has been closely associated with dissociation (Giesbrecht, Lynn, Lilienfeld, & Merckelbach, 2008), gaining special relevance in the forensic (Chae, Goodman, Eisen, & Qin, 2011) and clinical fields (Woody & Browers, 1994). Empirically, the results are contradictory, finding results for (Marcusson-Clavertz, Terhune, & Cardeña, 2012) and against (Maxwell, Lynn, & Condon, 2015). To explain this discrepancy, it is hypothesized that the relationship between dissociation and suggestibility would be mediated by absorption and fantasy (Dienes et al., 2009).

One of the variables which have become increasingly important in recent years is sleep. A relationship has been found between the tendency to dissociate and different sleep-related experiences such as hypnopompic images, sense of presence, worsening of dissociative symptoms in sleeping deprivation (Kloet, Giesbrecht, & Merckelbach, 2015; Kloet, Merckelbach, Giesbrecht, & Broers, 2014), and higher frequency of lucid dreams. These findings suggest that dissociators may have an ability to manipulate the content of the dreams as an effect of their imagination and attentional capacity absorption (Fassler, Knox, & Lynn, 2006).

Within emotional characteristics, although alexithymia is considered a separate construct of dissociation component due to the externally-oriented thinking (Tolmunen et al., 2010), it seems to be more related to somatoform dissociation and conversion symptoms (Meyers, Fleming, Lancman, Perrine, & Lancman, 2013), which may indicate that alexithymia is differentially associated depending on the type of dissociation.

Finally, it has been proposed that dissociation may be a strategy of adjustment used to face higher levels of arousal, but it can lead to a maladaptation increasing the discomfort of the individuals, showing a relationship between difficulties in emotional regulation and dissociation (Powers, Cross, Fani, & Bradley, 2015). In this sense, this relationship is particularly relevant in the link between the presence of dissociative symptoms and emotional dysregulation (Meyers et al., 2013; Moulton, Newman, Power, Swanson, & Day, 2015).

For all these reasons, it becomes important to jointly study and explore the psychological profile associated with both subtypes of dissociation, being the main objective of the present study.

Method

Participants

The initial sample consisted of 389 participants recruited from the general population, although 34 were removed for the final analysis because they did not properly complete the assessment battery. Therefore, the final sample comprised 355 participants. The age of the subjects ranged from 18 and 65 years (mean age = 34.88 and standard deviation = 14.43), and there was a 40.28% of males (n = 143, mean age = 35.47, standard deviation = 14.88) and a 59.72% of females (n = 212, mean age = 34.67, standard deviation = 14.13).

Procedure

Data was collected by students from the Camilo José Cela University and the Complutense University of Madrid through the snowball sampling method. These university students were instructed with the experimental protocol, and each of them had to evaluate 3 males and 3 females after signing an informed consent. The assessment protocol was completed in two 1.30-hour sessions.

Assessment Instruments

To carry out this research, the following assessment instruments were used, in order of application:

Dissociative Experiences Scale II (DES-II; Carlson and Putnam, 1993; Icarán, Colom, & Orengo-Garcia, 1996). It is a self-reported scale of 28 items which includes the presence of a wide range of experiences and dissociative phenomena (amnesia, depersonalisation, derealisation, and absorption). Test-retest reliability ranged from .78 to .93, and the internal consistency was .93. In the sample analysed, a Cronbach's alpha of .91 was obtained.

Somatoform Dissociation Questionnaire (SDQ-20; Nijenhuis et al., 1996). This questionnaire consists of 20 items that evaluate somatoform dissociation symptoms, as tunnel vision, analgesia, localized pain, or pseudo-epileptic crisis. For the present study a Holm's (2002) translated version was used. SDQ's Spanish version has shown very good internal consistency, with a Cronbach's alpha of .866 and convergent validity with DES (Bernstein & Putnam, 1986) of .64 (González-Vázquez et al., 2017). In the present study, the instrument showed a Cronbach's alpha of .84.

Inventory of Suggestibility (IS; Gonzalez-Ordi & Miguel-Tobal, 1999). This inventory consists of 22 items and offers a general measure of suggestibility, encompassing four subscales: fantasize, absorption, emotional involvement, and suggestibility (Salguero, Ruíz, Fernández-Berrocal, & González-Ordi, 2008). The IS psychometric characteristics indicate a good test-retest reliability (.70) and a good internal consistency, with alpha = .79 (Gonzalez-Ordi & Miguel-Tobal, 1999). In this study the IS showed a Cronbach's alpha of .85.

Toronto Alexithymia Scale (TAS-20; Parker, Bagby, Taylor, Endler, & Schmitz, 1993; Martinez-Sanchez, 1996). This scale provides a global score, and also a specific score for the following factors: confusion of the emotion with bodily sensations, emotional language deficits, and externally-oriented thinking. Reliability indices in the Spanish adaptation show a good internal consistency, with a Cronbach's alpha of .78, and a test-retest reliability of .71, with a reliability of .85 in the sample used.

Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004; Hervas & Jodar, 2008). DERS consists of 28 items and assesses the difficulties in emotion regulation, providing both a total score

Table 1
Mann – Whitney's U Test between High and Low Pychoform Dissociators.

	Low dissociators		High dissociators		Mann-Whitney's *U*	Cohen's *d*
	Mean	(*SD*)	Mean	(*SD*)		
SDQ-20	20.6	(1.4)	27.7	(8.6)	377.0**	1.15
IS	30.9	(11.5)	47.2	(12.8)	453.0**	1.34
Fantasize	3.9	(3.2)	10.1	(3.7)	299.0**	1.79
Absorption	7.8	(2.8)	11.0	(2.4)	519.5**	1.22
Emotional involvement	7.0	(4.0)	9.3	(4.2)	916.5*	0.56
TAS-20	45.6	(12.4)	67.2	(11.4)	236.5**	1.81
Confusion of emotion with bodily sensations	12.5	(5.7)	23.3	(4.9)	228.5**	2.03
Emotional language	13.1	(5.1)	20.7	(4.9)	384.0**	1.51
Externally-oriented thinking	20.0	(5.2)	23.2	(6.2)	909.0*	0.55
DERS	47.1	(13.5)	80.5	(20.2)	253.0**	2.26
Desatention	8.7	(3.4)	11.6	(3.4)	752.5**	0.85
Confusion	6.4	(2.5)	10.9	(3.3)	372.5**	1.53
Rejection	11.1	(4.5)	20.1	(7.1)	399.5**	1.51
Interference	8.0	(3.4)	13.3	(4.5)	485.0**	1.33
Decontrol	12.9	(4.9)	25,5	(9.7)	345.0**	1.64
Neuroticism	56.1	(9.7)	67.1	(11.0)	513.5**	1.06
Anxiety	54.1	(8.8)	60,3	(8.5)	774.0**	0.72
Angry hostility	56.8	(12.9)	68.7	(12.4)	617.0**	0.94
Depression	53.7	(10.2)	64.0	(13.7)	618.5**	0.85
Impulsiveness	54.2	(9.4)	62.4	(11.4)	758.5**	0.78
Vulnerability	58.1	(12.6)	67.9	(15.4)	808.0*	0.70
Extraversion						
Warmth	43.3	(12.2)	36.2	(12.0)	808.0*	0.59
Gregariousness	45.0	(9.9)	37.9	(9.8)	712.0**	0.72
Excitement seeking	48.3	(11.1)	59.5	(11.8)	597.5**	0.98
Openness to experience						
Fantasy	47.1	(8.6)	54.1	(11.9)	794.0*	0.67
Agreeableness	44.5	(10.8)	32.6	(13.7)	607.5**	0.96
Trust	44.9	(10.5)	32.3	(12.4)	493.0**	1.10
Straightforwardness	48.5	(9.9)	40.4	(15.2)	836.0*	0.63
Altruism	46.8	(12.3)	37.3	(10.4)	671.0**	0.83
Compliance	43.1	(10.2)	35.2	(14.0)	833.5*	0.64
Modesty	49.7	(10.8)	43.8	(10.3)	888.5*	0.56
Conscientiousness	41.0	(11.0)	29.7	(11.4)	594.0**	1.00
Competence	42.6	(10.2)	32.1	(11.7)	619.5**	0.96
Dutifulness	45.7	(10.7)	31.8	(13.2)	531.0**	1.16
Self-discipline	40.2	(12.5)	32.5	(15.9)	812.0*	0.54
Deliberation	45.0	(9.9)	32.7	(8.8)	461.5**	1.31
Lucid dreams	2.0	(1.0)	2.5	(1.2)	1023.5*	0.45

Note. Only significant differences between groups are shown.
* $p < .05$, ** $p < .01$.

and scores on five scales: (1) attention to emotions, (2) confusion in identifying emotions, (3) rejection of emotions, (4) interference of emotion, and (5) lack of control in the regulation of emotions and feeling of overflow of emotions. In the present study, this instrument showed a Cronbach's alpha of .94.

Revised NEO Personality Inventory (NEO PI-R; Costa & McCrae, 1992; Cordero, Pamos, Seisdedos, & Costa, 1999). The inventory assesses the factors of the Big Five personality model: neuroticism (anxiety, angry hostility, depression, self-consciousness, impulsiveness, and vulnerability), extraversion (warmth, gregariousness, assertiveness, activity, excitement seeking, and positive emotions),openness to experience (fantasy, aesthetics, feelings, actions, ideas, and values), agreeableness (trust, straightforwardness, altruism, compliance, modesty, and tender-mindedness) and conscientiousness (competence, order, dutifulness, achievement striving, self-discipline, and deliberation). General reliability indices show a good internal consistency, ranging between .90 and .82 for the different factors.

Sleep. To assess problems and sleep-related experiences, the following ad hoc questions were prepared for the participants: (1) sleep problems in the past two weeks, (2) daytime sleepiness in the last two weeks, and (3) frequent presence of nightmares. These three questions were stated in dichotomous terms (Yes/No). In addition, participants were also asked about: (1) hours of sleep during the day (participants should write down the average of the number of hours they sleep each day) and (2) frequency of lucid dreams (in this case, the answer in a Likert scale format, where 1 was *never* and 5 *almost always*).

Results

Differences in Psychoform Dissociation

Participants were split into two subgroups according to the clinical endpoints in DES (van Ijzendoorn & Schuengel, 1996): low dissociators (scores < 6) and high dissociators (scores > 30). The low dissociators group consisted of 117 participants and the high dissociators group consisted of 21 subjects, representing a 5.9% of the total.

Results showed that high dissociators differ significantly from low dissociators in different variables (see Table 1). High dissociators exhibited greater scores in somatoform dissociation ($U = 377.0$,

Table 2
Mann-Whitney's U test between High and Low Somatoform Dissociators.

	Low dissociators		High dissociators		Mann-Whitney's *U*	Cohen's *d*
	Mean	(*SD*)	Mean	(*SD*)		
DES	8.5	(7.6)	27.2	(13.1)	301.5**	1.15
Absorption	13.9	(11.3)	40.1	(14.6)	274.5**	2.00
Amnesia	5.0	(6.4)	17.3	(12.4)	444.0**	1.24
Depersonalization	3.8	(6.2)	17.0	(16.0)	560.5**	1.09
IS	34.9	(12.2)	50.6	(9.9)	489.5**	1.41
Fantasize	5.3	(3.9)	10.5	(2.7)	443.0**	1.55
Emotional implication	7.5	(4.0)	10.4	(4.2)	960.0*	0.70
Impressionability	7.8	(3.5)	11.3	(3.7)	721.5**	0.97
TAS-20	48.5	(13.9)	64.1	(15.9)	700.0**	1.04
Confusion of sensations	13.5	(6.2)	23.5	(7.9)	506.5**	1.40
Emotional language	14.4	(6.1)	19.2	(5.2)	873.0**	0.84
DERS	52.7	(18.9)	80.6	(16.3)	369.5**	1.58
Desatention	9.1	(3.6)	9.8	(3.0)	1209.5	
Confusion	7.1	(3.3)	9.9	(4.0)	848.0**	0.76
Rejection	12.6	(5.9)	22.2	(5.3)	342.0**	1.71
Interference	9.1	(4.1)	13.9	(4.3)	583.0**	1.14
Decontrol	14.8	(7.0)	24.7	(8.4)	486.0**	1.28
Neuroticism	58.0	(10.4)	68.7	(10.1)	654.5**	1.04
Anxiety	54.6	(9.1)	62.4	(10.5)	773.5**	0.79
Angry hostility	58.9	(12.6)	67.2	(10.8)	875.0*	0.70
Depression	56.0	(11.4)	63.7	(12.9)	970.5*	0.63
Self-consciousness	53.6	(10.0)	60.1	(12.9)	966.0*	0.56
Impulsiveness	54.9	(9.7)	64.2	(11.4)	774.0*	0.88
Vulnerability	59.5	(12.7)	67.3	(14.1)	957.0*	0.58
Extraversion						
Excitement seeking	50.9	(11.7)	58.9	(12.2)	938.0*	0.66
Openness to experience						
Fantasy	48.9	(10.1)	56.7	(11.9)	866.5*	0.70
Agreeableness						
Trust	43.3	(11.6)	35.4	(14.3)	959.0*	0.60
Conscientiousness	37.4	(11.6)	29.4	(16.4)	923.0*	0.56
Self-discipline	36.9	(13.1)	29.2	(16.6)	980.5*	0.51
Deliberation	41.7	(11.5)	33.6	(13.1)	887.5*	0.66
Sleeping hours	7.2	(1.0)	6.5	(1.2)	1028.5*	0.63
Lucid dreams	2.1	(1.0)	2.8	(1.0)	1000.0*	0.70

Note. Only significant differences between groups are shown.
* $p < .05$, ** $p < .01$.

$p < .01$), IS ($U = 453.0$, $p < .01$), fantasize ($U = 299.0$, $p < .01$), absorption ($U = 519.5$, $p < .01$), alexithymia levels ($U = 236.5$, $p < .01$), except in externally-oriented thinking, DERS and all its subscales ($U = 253, 0, p < .01$), neuroticism ($U = 513.5, p < .01$), facets of hostility ($U = 617.0$, $p < .01$), depression ($U = 618.5, p < .01$), and search of sensations ($U = 597.5$, $p < .01$), showing a large effect size (Cohen's $d > 0.08$).

On the contrary, high dissociators showed lower average scores in agreeableness ($U = 607.5$, $p < .01$), conscientiousness ($U = 594.0$, $p < .01$), trust ($U = 493.0$, $p < .01$), altruism ($U = 671.0$, $p < .01$), competence ($U = 619.5$, $p < .01$), dutifulness ($U = 531.0$, $p < .01$), and deliberation ($U = 461.5$, $p < .01$), with a large effect size (Cohen's $d > 0.08$).

In the rest of the significant differences between both groups, the effect size was low or moderate.

In relation to the presence of sleep problems, differences were found between both dissociators groups, where 22.7% of the low dissociators showed sleep problems and 65.2% of high dissociators indicated this kind of problem, $\chi^2(1) = 14.757$, $p < .001$. With regard to daytime sleepiness, the 22.7% of low dissociators indicated daytime sleepiness, while the percentage within the high dissociators was of 52.2%, $\chi^2(1) = 6.996$, $p = .008$. Finally, 5.9% of low dissociators presented frequent nightmares, while the 21.7% of the high dissociators reported this complication during sleep, $\chi^2(1) = 4.313$, $p = .038$.

Differences in Somatoform Dissociation

Based on the level of somatoform dissociation measured by the SDQ-20, two groups were formed. To this end, criteria for discriminative validity from the questionnaire in different clinical populations (Nijenhuis et al., 1996; Sar, Kundakci, Kiziltan, Bakim, & Bozkurt, 2000) were considered. In this scale, scores greater than 30 discriminate dissociative and somatoform disorders. The group of low somatoform dissociation was defined with scores on the SDQ-20 equal to 20, which was the minimum score on the scale, and comprised 177 participants. The group of high somatoform dissociation was composed for 16 participants, representing the 4.5% of the whole sample.

Results showed that participants with high scores on the SDQ-20 did significantly differ from participants with low scores in the following factors: DES total score ($U = 301.5$, $p < .01$), DES subscales, IS ($U = 489.5$, $p < .01$), s fantasize and suggestibility scales, alexithymia total score ($U = 700.0$, $p < .01$), confusion and emotional language subscales, DERS ($U = 369.5$, $p < .01$), and rejection, interference, and lack of control subscales. In all these measurements the mean score

was higher in the group of high somatoform dissociation with a large effect size (see Table 2). Regarding the personality, the group with higher somatoform dissociation showed greater scores in neuroticism ($U = 654.5$, $p < .01$) and impulsiveness ($U = 774.0$, $p < .01$), with a Cohen's d greater than 0.80. Other significant differences between groups showed a medium effect size.

Regarding the presence of sleeping problems, significant differences between both groups were found. In the low group of somatoform dissociations, 21.0% presented sleep problems, while in the high group this percentage was 88.2%, $\chi^2(1) = 32.496$, $p < .001$. There were also differences in the daytime sleepiness, in which 23.8% of the low somatizers indicated daytime sleepiness, being this percentage 58.8%, $\chi^2(1) = 8.042$, $p = .005$, in the high group. Finally, in relation to the presence of frequent nightmares, differences were found between both groups $\chi^2(1) = 28.338$, $p < .001$, being more frequent in the group of higher somatizers (64.7%) than in the lower somatizers one (11.7%).

Discussion and Conclusions

Looking at the profiles that have been obtained, the group of high dissociators presents higher scores in somatoform dissociation; in the same vein, the high somatizers' group presents higher dissociation levels. This agrees with the theoretical proposals that consider both types of symptoms as dissociative (Nijenhuis et al., 1996). This is especially relevant in the clinical practice and in the understanding of underlying processes.

As for the prevalence in the sample of participants with high dissociation scores, 5% of the sample scores are beyond the clinical cut off point for the dissociative symptomatology, being much higher than the prevalence found in other studies, placing it at 1% (American Psychological Association, APA, 2014). Although it is not possible to conclude that these participants have a dissociative pathology, this data highlights the relevance of this type of symptomatology.

In the psychoform dissociation, the profile found indicated higher levels of difficulty in emotional regulation, which was associated with rejection, lack of control, and emotional interference (but not with their neglect). This may indicate a fundamental objective in treatment, since dissociation appears to be an ineffective long-term emotional regulation strategy (Powers et al., 2015).

Regarding suggestibility, the profile of psychoform dissociation showed higher levels of suggestibility, absorption, and fantasize, but not impressionability. These results are in line with previous studies (Marcusson-Clavertz et al., 2012) supporting the hypothesis that absorption and fantasize may play a mediator role between dissociation and suggestibility (Dienes et al., 2009).

Additionally, the profile indicates higher levels in alexithymia, especially in the confusion with bodily sensations and emotional language, but not in externally-oriented thinking. These findings corroborate the differentiation between alexithymia and dissociative processes (Tolmunen et al., 2010), which mainly diverge in propensity to fantasy.

In personality, the psychoform dissociation presented a more neurotic profile, angry hostility, and depression, in line with previous literature, being more evident (Groth-Marnat & Jeffs, 2002; Marshall, Spitzer, & Liebowitz, 2000; Meyers et al., 2013). As for the other factors, the profile found indicated a higher level of excitement seeking (Ruiz, Pincus, & Ray, 1999) and fantasy (Merckelbach, Horselenberg, & Schmidt, 2002), but lower levels of warmth, gregariousness, agreeableness (Evren et al., 2013; Meyers et al., 2013) and conscientiousness (Groth-Marnat & Jeffs, 2002; Kwapil et al., 2002). This profile indicates a more vulnerable style of emotions and their regulation to achieve one's goals, lower level of rationality and planner, a grater search of emotions and fancifulness, with the perception of the world as a hostile place and with a more isolated and hard style. With regard to sleeping, results pointed out that psychoform dissociation is associated with sleep disturbances (conciliation, daytime sleepiness) and with greater presence of nightmares and lucid dreams, which is corroborated by previous studies (Knox & Jay Lynn, 2014; van der Kloet, Giesbrecht, & Merckelbach, 2015; van der Kloet, Merckelbach, Giesbrecht, & Broers, 2014).

The somatoform dissociation profile found showed higher difficulties in emotional regulation, and more specifically in rejection, lack of control, and interference, as described in the psychoform disassociation profile.

In suggestibility, the profile indicated a higher suggestibility, particularly in fantasize and suggestibility, not showing higher absorption levels. These profile differences between the two types of dissociation reveal a differentiation in the underlying processes, and therefore, it should be an objective for future research.

In alexithymia, the profile showed greater somatization scores in emotional language, but especially in confusion with bodily sensations, which is in line with previous findings (Brown, Danquarh, Miles, Holmes, & Poliakoff, 2010).

Those somatizers with a high profile in personality showed higher scores in neuroticism, anxiety, impulsiveness and, to a lesser extent, angry hostility, depression, self-consciousness, and vulnerability. According to the rest of factors analyzed, they presented higher scores in excitement seeking and fantasy, and lower scores in trust, conscientiousness, self-discipline, and deliberation, with moderate differences in all them. The profile described in somatization was similar to that obtained in dissociation, but differences between low and high scores in somatoform dissociation are less evident in the different facets explored. These data suggest that this type of dissociation is related to more anxious profiles, which is consistent with those studies that related somatoform disorders with anxiety processes, the arousal, the hypervigilance to bodily sensations, and more avoidant profiles (Baslet, 2011; Brown et al., 2010; Novakova, Howlett, Baker, & Reuber, 2015).

In terms of sleep, the profile found in somatization is the same as in the psychoform dissociation, highlighting the importance of these processes and symptoms in both types of dissociation.

It is important to highlight that the present study presents some limitations related to the data obtained from somatoform dissociation, since the questionnaire used had not been adapted to the Spanish population yet.

For future research, it should be important to evaluate the history of trauma and the sleep problems in both types of dissociation in a more comprehensively way, because they are closely related variables. Additionally, this study should be extended to clinical populations, in order to observe a possible vulnerability profile of dissociation.

Conflict of Interest

The authors of this article declare no conflict of interest.

References

American Psychiatric Association (APA). (2014). *Manual Diagnóstico y Estadístico de los Trastornos Mentales* (5th ed.). Madrid: Editorial Médica Panamericana.

Baslet, G. (2011). Psychogenic non-epileptic seizures: A model of their pathogenic mechanism. *Seizure*, *20*, 1–13. http://dx.doi.org/10.1016/j.seizure.2010.10.032

Bernstein, E., & Putnam, F. (1986). Development, Reliability and Validity of a Dissociation Scale. *Journal of Nervous and Mental Disease*, *174*, 727–735. http://dx.doi.org/10.1016/S0145-2134(08)80004-X

Brown, R. J., Danquah, A. N., Miles, E., Holmes, E., & Poliakoff, E. (2010). Attention to the body in nonclinical somatoform dissociation depends on emotional state. *Journal of Psychosomatic Research*, *69*, 249–257. http://dx.doi.org/10.1016/j.jpsychores.2010.04.010

Cardeña, E. (1994). The domain of dissociation. In S. J. Lynn, & J. Rhue (Eds.), *Dissociation* (pp. 15–31). New York, NY: Guilford.

Carlson, E. B., & Putman, F. W. (1993). An update on the Dissociative Experience Scale. *Dissociation*, *6*, 16–27.

Chae, Y., Goodman, G. S., Eisen, M. L., & Qin, J. (2011). Event memory and suggestibility in abused and neglected children: Trauma-related psychopathology and cognitive functioning. *Journal of Experimental Child Psychology*, *110*, 520–538. http://dx.doi.org/10.1016/j.jecp.2011.05.006

Cordero, A., Pamos, A., Seisdedos, N., & Costa, P. T. (1999). *Inventario de personalidad Neo Revisado (NEO-PI-R). Inventario Neo Reducido (NEO-FFI): manual profesional*. Madrid: TEA Ediciones.

Costa, P. T., & McCrae, R. R. (1992). *Inventario de Personalidad NEO Revisado (NEO-PI-R): Manual del instrumento*. Madrid: TEA Ediciones.

Dienes, Z., Brown, E., Hutton, S., Kirsch, I., Mazzoni, G., & Wright, D. B. (2009). Hypnotic suggestibility, cognitive inhibition, and dissociation. *Consciousness and Cognition*, *18*, 837–847. http://dx.doi.org/10.1016/j.concog.2009.07.009

Evren, C., Cınar, O., Evren, B., Ulku, M., Karabulut, V., & Umut, G. (2013). The mediator roles of trait anxiety, hostility, and impulsivity in the association between childhood trauma and dissociation in male substance-dependent inpatients. *Comprehensive Psychiatry*, *54*(2), 158–166. http://dx.doi.org/10.1016/j.comppsych.2012.06.013

Fassler, O., Knox, J., & Jay Lynn, S. (2006). The iowa sleep experiences survey: Hypnotizability, absorption, and dissociation. *Personality and Individual Differences*, *41*, 675–684. http://dx.doi.org/10.1016/j.paid.2006.03.007

Giesbrecht, T., Lynn, S. J., Lilienfeld, S. O., & Merckelbach, H. (2008). Cognitive Processes in Dissociation: An Analysis of Core Theoretical Assumptions. *Psychological Bulletin*, *134*, 617–647. http://dx.doi.org/10.1037/0033-2909.134.5.617

González-Ordi, H., & Miguel-Tobal, J. J. (1999). Características de la sugestionabilidad y su relación con otras variables psicológicas. *Anales de Psicología*, *15*, 57–75.

González-Vázquez, A. I., Río-Casanova, L., Seijo-Ameneriros, N., Cabaleiro-Fernández, P., Seoane-Pillado, T., Justo-Alonso, A., & Santed-Germán, M. Á. (2017). Validity and reliability of the Spanish version of the Somatoform Dissociation Questionnaire (SDQ-20). *Psicothema*, *29*, 275–280. http://dx.doi.org/10.7334/psicothema2016.346

Gratz, K. L., & Roemer, L. (2004). Multidimensional assessment of emotional regulation and dysregulation: Development, factor structure, and initial validation of the difficulties in emotion regulation scale. *Journal of Psychopathology & Behavioural Assessment*, *26*, 41–54.

Groth-Marnat, G., & Jeffs, M. (2002). Personality factors from the five-factor model of personality that predict dissociative tendencies in a clinical population. *Personality and Individual Differences*, *32*, 969–976. http://dx.doi.org/10.1016/S0191-8869(01)00101-5

Hervás, G., & Jódar, R. (2008). Adaptación al castellano de la Escala de Dificultades en la Regulación Emocional. *Clínica y Salud*, *19*, 139–156.

Holm O. (2002). SDQ-20 (Spanish translation). Retrieved from https://trastornosdisociativos.files.wordpress.com/2012/10/sobre-el-sdq.pdf.

Holmes, E. A., Brown, R. J., Mansell, W., Fearon, R. P., Hunter, E. C. M., Frasquilho, F., & Oakley, D. A. (2005). Are there two qualitatively distinct forms of dissociation? A review and some clinical implications. *Clinical Psychology Review*, *25*(1), 1–23. http://dx.doi.org/10.1016/j.cpr.2004.08.006

Icarán, E., Colom, R., & Orengo-García, F. (1996). Experiencias disociativas: una escala de medida. *Anuario de Psicología*, *70*, 69–84.

Knox, J., & Lynn, S. J. (2014). Sleep experiences, dissociation, imaginal experiences, and schizotypy: The role of context. *Consciousness and Cognition*, *23*(0), 22–31. http://dx.doi.org/10.1016/j.concog.2013.10.007

Kwapil, T. R., Wrobel, M. J., & Pope, C. A. (2002). The five-factor personality structure of dissociative experiences. *Personality and Individual Differences*, *32*, 431–443. http://dx.doi.org/10.1016/S0191-8869(01)00035-6

Marcusson-Clavertz, D., Terhune, D. B., & Cardeña, E. (2012). Individual differences and state effects on mind-wandering: Hypnotizability, dissociation, and sensory homogenization. *Consciousness and Cognition*, *21*, 1097–1108. http://dx.doi.org/10.1016/j.concog.2012.04.002

Marshall, R. D., Spitzer, R., & Liebowitz, M. R. (2000). New DSM-IV diagnosis of acute stress dissorder. *American Journal of Psychiatry*, *157*, 1890–1891.

Martínez-Sánchez, F. (1996). Adaptación española de la Escala de Alexitimia de Toronto (TAS-20). *Clínica y Salud*, *1*, 19–32.

Maxwell, R., Lynn, S. J., & Condon, L. (2015). Hypnosis, hypnotic suggestibility, memory, and involvement in films. *Consciousness and Cognition*, *33*(0), 170–184. http://dx.doi.org/10.1016/j.concog.2014.11.013

Merckelbach, H., Horselenberg, R., & Schmidt, H. (2002). Modeling the connection between self-reported trauma and dissociation in a student sample. *Personality and Individual Differences*, *32*, 695–705. http://dx.doi.org/10.1016/S0191-8869(01)00070-8

Meyers, L., Fleming, M., Lancman, M., Perrine, K., & Lancman, M. (2013). Stress coping strategies in patients with psychogenic non-epileptic seizures and how they relate to trauma symptoms, alexithymia, anger and mood. *Seizure*, *22*, 634–639.

Moulton, S. J., Newman, E., Power, K., Swanson, V., & Day, K. (2015). Childhood trauma and eating psychopathology: A mediating role for dissociation and emotion dysregulation? *Child Abuse & Neglect*, *39*, 167–174. http://dx.doi.org/10.1016/j.chiabu.2014.07.003

Mueller-Pfeiffer, C., Rufibach, K., Perron, N., Wyss, D., Kuenzler, C., Prezewowsky, C., & Rufer, M. (2012). Global functioning and disability in dissociative disorders. *Psychiatry Research*, *200*, 475–481. http://dx.doi.org/10.1016/j.psychres.2012.04.028

Nemiah, J. C. (1991). Dissociation, conversion and somatization. In A. S. Tasman, & M. Goldfinger (Eds.), *American psychiatric press review of psychiatry* (10) (pp. 248–260). Washington, DC: American Psychiatric Press.

Nijenhuis, E. R. S., Spinhoven, P., Van Dyck, R., Van der Hart, O., & Vanderlinden, J. (1996). The development and the psychometric characteristics of the Somatoform Dissociation Questionnaire (SDQ-20). *Journal of Nervous and Mental Disease*, *184*, 688–694.

Novakova, B., Howlett, S., Baker, R., & Reuber, M. (2015). Emotion processing and psychogenic non-epileptic seizures: A cross-sectional comparison of patients and healthy controls. *Seizure*, *29*, 4–10.

Parker, J. D., Bagby, R. M., Taylor, G. J., Endler, N. S., & Schmitz, P. (1993). Factorial validity of the 20-item Toronto Alexithymia Scale. *European Journal of Personality*, *7*, 221–232.

Powers, A., Cross, D., Fani, N., & Bradley, B. (2015). PTSD, emotion dysregulation, and dissociative symptoms in a highly traumatized sample. *Journal of Psychiatric Research*, *61*(0), 174–179. http://dx.doi.org/10.1016/j.jpsychires.2014.12.011

Ruiz, M. A., Pincus, A. L., & Ray, W. J. (1999). The relationship between dissociation and personality. *Personality and Individual Differences*, *27*, 239–249. http://dx.doi.org/10.1016/S0191-8869(98)00236-0

Salguero, J. M., Ruiz-Aranda, D., Fernández-Berrocal, P., & González Ordi, H. (2008). Inteligencia Emocional percibida y sugestionabilidad: efectos sobre el nivel de ansiedad en una muestra de mujeres universitarias. *Ansiedad y Estrés*, *14*, 143–158.

Sar, V., Kundakci, T., Kiziltan, E., Bakim, B., & Bozkurt, O. (2000). Differentiating dissociative disorders from otherdiagnostic groups through somatoform dissociation in Turkey. *Journal of Trauma & Dissociation*, *1*, 67–80.

Scaer, R. (2001). The Body Bears the Burden: Trauma. In *Dissociation and Disease*. Binghampton: The Haworth Press.

Tolmunen, T., Honkalampi, K., Hintikka, J., Rissanen, M., Maaranen, P., Kylmä, J., & Laukkanen, E. (2010). Adolescent dissociation and alexithymia are distinctive but overlapping phenomena. *Psychiatry Research*, *176*(1), 40–44. http://dx.doi.org/10.1016/j.psychres.2008.10.029

van der Kloet, D., Giesbrecht, T., & Merckelbach, H. (2015). Sleep loss increases dissociation and affects memory for emotional stimuli. *Journal of Behavior Therapy and Experimental Psychiatry*, *47*(0), 9–17. http://dx.doi.org/10.1016/j.jbtep.2014.11.002

van der Kloet, D., Merckelbach, H., Giesbrecht, T., & Broers, N. (2014). Night-time experiences and daytime dissociation: A path analysis modeling study. *Psychiatry Research*, *216*, 236–241. http://dx.doi.org/10.1016/j.psychres.2013.12.053

van Ijzendoorn, M. H., & Schuengel, C. (1996). The measurement of dissociation in normal and clinical populations: Meta-analytic validation of the dissociative experiences scale (DES). *Clinical Psychology Review*, *16*, 365–382. http://dx.doi.org/10.1016/0272-7358(96)00006-2

Vannucci, M., & Mazzoni, G. (2006). Dissociative experiences and mental imagery in undergraduate students: When mental images are used to foresee uncertain future events. *Personality and Individual Differences*. *41*, 1143–1153. http://dx.doi.org/10.1016/j.paid.2006.02.021

Woody, E. Z., & Bowers, K. S. (1994). A frontal assault on dissociated control. In S. J. Lynn, & J. W. Rhue (Eds.), *Dissociation: Clinical and theoretical perspectives* (pp. 52–79). New York, NY: Guilford Press.