Impulsivity in Dissociative Identity Disorder Patients and Borderline Personality Disorder Patients

Impulsiviteit bij Patiënten met een Dissociatieve Identiteitsstoornis en Patiënten met een Borderline Persoonlijkheidsstoornis

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Abstract

Impulsivity is a key feature in the borderline personality disorder (BPD) and includes, among others, the following types: general and aggression-related impulsivity. Although BPD and dissociative identity disorder (DID) patients show high symptom overlap, the status of impulsivity remains unclear. These two groups may have experienced different types of parental aggression in their childhoods, which may have been internalized at a young age and could have led to varying levels of impulsivity between groups. This is supported by the finding that BPD patients tend to externalize their emotions, whereas DID patients use a more introverted coping style. Therefore, it is hypothesized that DID patients show lower general and aggression-related impulsivity than BPD patients. Two subscales from the Schema Mode Inventory were used to examine these types of impulsivity in the sample (N = 454), consisting of a dissociative disorder group (n = 25), BPD group (n = 166) and a comparison group (n = 263). A Kruskal-Wallis test with post hoc comparisons revealed that the BPD group showed significantly higher rates of both general and aggression-related impulsivity than the DID and comparison group, supporting the hypotheses. The latter two groups did not show significant differences. These findings may help improve the differential diagnosis and treatments for these patients. However, these results should be interpreted with caution, due to limitations such as sample issues and a reliance on self-report. Further research should take these issues into account, together with an examination of adverse childhood experiences in these patient groups.

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In the Hollywood comedy 'Me, Myself & Irene' (Farrelly & Farrelly, 2000), the audience watches Charlie (portrayed by Jim Carrey) struggle with having a second identity called Hank, who tends to take over control at inconvenient moments. He suffers from a 'split personality'. The experience of having multiple identities is the main characteristic of the dissociative identity disorder (DID), one of the dissociative disorders (DDs) in the DSM-5 (American Psychiatric Association, 2013). Formerly, this was called multiple personality disorder (MPD), which changed into DID in 1994. DID is characterized by an identity disturbance, where the individual perceives his own identity as fragmented into two or more separate identities, together with memory problems (i.e., amnesia) and other possible dissociative symptoms. Examples of dissociative symptoms are derealization or depersonalization (American Psychiatric Association, 2013).

There is no scientific consensus about the aetiology of DDs. There are two leading models on this: the trauma model on the one hand and the sociocognitive model on the other hand. The trauma model suggests that, in order to develop a DD, one should have experienced a traumatic event (Bailey & Brand, 2017). While experiencing an inescapable traumatic event (e.g., severe childhood abuse), dissociation seems to be one of the body's possible defence mechanisms against the trauma (Boysen & VanBergen, 2013b; Yeager & Lewis, 1996). On the other hand, the sociocognitive model suggests that DDs are the consequence of social influences and weaker cognitive functions (Giesbrecht et al., 2008). It is called sociocognitive, because patients may develop and maintain symptoms due to social influences and reinforcements (e.g., learning to re-enact symptoms by watching a documentary about DID cases) and weaker cognitive functions such as fantasy proneness, resulting in a higher susceptibility of false memories. These weaker cognitive functions, however, may be a

consequence of childhood trauma, which might lead to a predisposition towards particular psychological traits (Lilienfeld et al., 1999). In spite of this, this model does not consider a traumatic experience as the major causal factor of DDs. For example, someone who is sensitive to suggestiveness may develop perceived multiple identities after watching the movie ‘Me, Myself & Irene’.

Both the trauma model and the sociocognitive model have their limitations (Lynn et al., 2019). For example, studies on the trauma model tend to have a lack of objective confirmation on childhood abuse (Lynn et al., 2014). Even though DID patients may report a history of childhood abuse (Dalenberg et al., 2012), it has been shown that it is easy to ‘plant’ false memories of abuse through suggestive methods (Lynn et al., 2015). Besides, it seems illogical to completely rule out the influence of culture or iatrogenesis (i.e., when DID symptoms in a patient are unintentionally reinforced by the treating psychologist; Boysen & VanBergen, 2013a), because this is an all-or-nothing assumption. This assumption is considered false, since no disorder can be completely iatrogenic or entirely non-iatrogenic (Carson & Butcher, 1992). On the other hand, the sociocognitive model is criticized because dissociation itself can be associated with a subsequent rise in fantasy proneness and a decrease in cognitive capacities (e.g., difficulty to distinguish reality from what is made up by oneself; Dalenberg et al., 2012), and therefore, in that case, these cannot be the cause of dissociations. In addition, dissociation and suggestibility are not as strongly related as the sociocognitive model may suggest (Bailey & Brand, 2017). Proponents of the sociocognitive model acknowledge that the cause of DDs is more complex than assuming it is mere trauma-related or mere sociocognitive. They propose that further research should include a wide variety of potential causal variables to create a comprehensive framework (Lynn et al., 2014).

Although it is hard to get on common ground, proponents of both perspectives are now able to view DID as a disorder of self-understanding. This view assumes that DID patients

live under the false impression that they consist out of more than one person, holding inaccurate beliefs about themselves (Dalenberg et al., 2012; Lynn et al., 2014). DID seems to be too complex to be caused by one single factor, such as a traumatic experience or proneness to fantasy (Boysen & VanBergen, 2013a). Perhaps, in the future, a comprehensive integrative theory will emerge. To this day, the aetiology around DDs remains unclear.

Additionally, another problem arises: differentiating between DDs and other disorders. DDs show symptom overlap and high levels of comorbidity with other disorders, such as the post-traumatic stress disorder (PTSD; Swart et al., 2020). This makes sense when you view DDs through the trauma model lens. However, there are also considerably high symptom overlap and high levels of comorbidity between DDs and schizophrenic disorders (Lynn et al., 2019) and borderline personality disorder (BPD; Dorahy et al., 2014; Laddis et al., 2016). Both BPD and DID share a possible aetiology, which concerns early adverse childhood experiences (Fink & Golinkoff, 1990). Some authors even considered MPD/DID as a ‘special instance of BPD’ (Clary et al., 1984; Lauer et al., 1993). In the DSM-5, BPD is characterized by an unstable self-image, impulsivity, unstable interpersonal relationships and sometimes dissociative symptoms. The latter are characterized by a subjective loss of information integration or a loss of conscious mental processes (American Psychiatric Association, 2013). Overlapping symptoms between DID and BPD are identity disturbance, affective instability, a tendency towards self-damage (Kemp et al., 1988), emotional and cognitive dysregulation (Lynn et al., 2019) and dissociative symptoms (Laddis et al., 2016).

In terms of comparing DID and BPD symptoms, the status of impulsivity remains unclear. Impulsivity is characterized by a tendency towards quick and unplanned actions without regard for the possible consequences of the action (Moeller et al., 2001). However, it is suggested that impulsivity may be better conceptualized as an umbrella term for multiple different subtypes of impulsivity. One of them is a lack of premeditation (another subtype is

described below), which is characterized by the inability to abstain from acting upon potentially self-damaging impulses by evaluating the consequences of the action (Whiteside & Lynam, 2001). The lack of premeditation is the most frequent conceptualization of impulsivity (Whiteside & Lynam, 2001), as visible in the similarity between this definition and the overall definition of impulsivity as proposed by Moeller and colleagues (2001). This is why it will henceforth be referred to as 'general' impulsivity, which is the first construct of interest in the current study.

With regard to impulsivity symptoms, DID and BPD used to be seen as comparable (Wagner & Heise, 1974). However, it was found that DID patients use a more introverted and constricted coping style (Armstrong & Loewenstein, 1990). This emphasis on internal mental processes within these patients is presumably the cause of the experience of multiple personalities. On the other hand, BPD patients tend to cope by acting impulsive, irritable and aggressive (Carlson et al., 2020). This may tentatively point at a higher rate of general impulsivity in BPD patients. In a study by Kemp and colleagues (1988), ten MPD and ten BPD patients were compared with regard to their social history. They found that BPD patients had a higher rate of arrest, school suspensions, school truancy and suicide attempts. These results may also point at a higher rate of general impulsivity in BPD patients.

However, next to general impulsivity, another subtype of impulsivity is suggested: negative urgency. When this occurs, one acts impulsively while experiencing negative affect, in order to alleviate the negative emotions (Whiteside & Lynam, 2001). An example is showing aggressive behaviour when one feels angry, such as hitting another person or throwing objects around. People with this tendency have a high degree of aggression-related impulsivity, the second construct of interest in the current study. Aggression-related impulsivity is defined as the inability to abstain from acting on one's aggressive impulses. This is different from general impulsivity, which does not take the presence of (negative)

emotions into account. A factor analysis, conducted by Whiteside and Lynam (2001), showed that these two types of impulsivity (i.e., lack of premeditation and negative urgency, in the current study represented as general and aggression-related impulsivity) were indeed found to be distinct constructs.

Elaborating upon aggression-related impulsivity, acting aggressive when feeling angry may be an internalized way of coping with negative emotions. According to the social learning theory of aggression (Bandura, 1978), it is assumed that individuals internalize, at a young age, the manner in which one deals with aggressive feelings by observing their parents' coping styles. Thus, observing violent behaviour in one's own parents may lead to self-expressed violent behaviour at a later point in life. In fact, the experience of physical violence in the household may lead to decreased individual self-control and conflict-resolution skills (Hellman et al., 2018). The expression of aggression seemed to differ in the childhood homes of DID and BPD patients. Brenner (1996) reported that DID patients experienced more covert forms of parental aggression in their childhood, whereas BPD patients experienced more openly directed forms of parental aggression. In fact, the impulsivity that characterizes BPD is associated with a history of childhood traumatic experiences (Richard-Lepouriel et al., 2019), possibly pointing at the aggressive parental behaviour that BPD patients may have experienced (Brenner, 1996). When these overt or covert types of aggression are internalized (Bandura, 1978), the stereotypical image could occur: DID patients become introverted, focusing on one's mind, feelings and emotions, thus keeping aggressive feelings to themselves, whereas BPD patients tend to aim their emotions at their surroundings (i.e., negative urgency).

The current study includes a known construct in the comparative literature on DID and BPD patients (i.e., general impulsivity) and a novel construct that has not yet been studied in DID individuals, namely aggression-related impulsivity. The current research will focus on

individuals with both a DID or a ‘dissociative disorder – not otherwise specified’ diagnosis (DD-NOS), since these are considered as the most severe disorders in the DD spectrum with comparable symptoms (Rodewald et al., 2011). DD-NOS, however, is a DSM-4 disorder, which changed into the ‘other specified dissociative disorder’ in the DSM-5 (OSDD; American Psychiatric Association, 2013). Henceforth, the DID and DD-NOS patient group will now be referred to as the DD group. The following research question is asked: do DD patients show a lower level of general and aggression-related impulsivity than BPD patients? Based on the literature, it is hypothesized that 1) DD patients show a lower level of general impulsivity than BPD patients, and 2) DD patients show a lower level of aggression-related impulsivity than BPD patients.

Method

Participants

All participants are Dutch individuals. The sample (N = 454) involves three distinct groups. The DD patient group (n = 25) consists of participants who indicated a diagnosis of DID (n = 17) or a DSM-4 diagnosis of DD-NOS (n = 8), the BPD patient group consists of participants who reported a BPD diagnosis (n = 166), and the comparison group consists of participants who report no diagnosis (n = 263). The latter serves as a baseline group.

Some participants in the patient groups (DD or BPD patient group) reported one or more comorbid disorder, such as anorexia nervosa, major depressive disorder or PTSD. Most of the patients reported no comorbid diagnosis (64% in the DD group and 60% in the BPD group), whereas the minority reported at least one comorbid disorder (36% in the DD group and 40% in the BPD group). The overall mean age is 38 (SD = 11.26). However, three participants in the comparison group did not report their age, which is why this overall mean age is calculated without their ages. For more detailed information about demographics per group, see Table 1.

Table 1
Descriptive statistics regarding gender and age, per group

			Group			
			Comparison group	BPD patients	DD patients	Total
Gender	Male	Count	80	15	1	96
		% within group	30,4%	9,0%	4,0%	21,1%
	Female	Count	183	151	24	358
		% within group	69,6%	91,0%	96,0%	78,9%
Age	Mean		38,69	36,12	38,56	37,74
	Std. Deviation		11,79	10,12	12,01	11,26
	Range		16 – 78	15 – 59	21 – 57	15 – 78

Regarding inclusion criteria, participants were included in the patient groups (i.e., DD or BPD patient group) when they either reported a DID/DD-NOS or a BPD diagnosis. They were still included if they had one or more comorbid disorders (with the exception of comorbid DID/DD-NOS and BPD, see below). With regard to the comparison group, participants were included when they made it clear that there was an absence of a diagnosis. This was done by answering the open-ended question ‘What diagnosis was given to you?’ with either ‘None’ or ‘Not applicable’. They were also included when they stated that they used to have a diagnosis in the past, but it no longer applies to them.

As for exclusion criteria, participants were excluded from the patient groups when they had both a DID/DD-NOS and a BPD diagnosis at the same time. Since these participants had comorbid DID/DD-NOS and BPD, it was impossible to place them into either the DD group or the BPD group. With regard to the comparison group, participants were excluded if there was a reason to assume that they did have a diagnosis. For example, if they stated that they ‘forgot’ their diagnosis, there were ‘controversial diagnoses’, there was no diagnosis ‘yet’ (i.e., implicating that they are in the process of obtaining a diagnosis), their diagnosis was ‘unclear to them’, their diagnosis was ‘unknown due to early termination of therapy’ or if

the participants simply did not know their diagnosis. Participants who gave no answer on the question ‘What diagnosis was given to you?’ (i.e., skipped the question) were excluded from any of the groups.

Material

Two subscales, coming from one of the four questionnaires from the original study (see Procedure section), are used for the current study. The currently relevant questionnaire is the Schema Modi Inventory (SMI; Young et al., 2007). This self-report questionnaire is based on Young’s schema theory (Young, 2003) and identifies the presence of adaptive or maladaptive schema modi within an individual. The SMI can identify fourteen different schema modi (i.e., fourteen different subscales), with examples being ‘Vulnerable Child’, ‘Punishing Parent’ and ‘Healthy Adult’. In the current study, the following two subscales are used from the SMI: ‘Impulsive Child’ and ‘Enraged Child’.

First, the ‘Impulsive Child’ subscale reflects the construct of general impulsivity, as defined in the Introduction section. It consists of eight six-point Likert-scale statements, such as ‘I act impulsively or out of emotions that gets me in trouble or hurt others’ and ‘I break rules and regret it afterwards’. Second, the ‘Enraged Child’ is considered as a reflection of aggression-related impulsivity. It consists of nine six-point Likert-scale statements, such as ‘I physically attack people when I am angry with them’ and ‘I tend to throw and smash things when I am angry’. Participants are expected to rate all statements with regard to the frequency that applies to them, ranging from 1 (‘Never or rarely’) to 6 (‘Always’). In both subscales, a lower score reflects a lower degree of (either general or aggression-related) impulsivity. Both subscales are considered reliable, in the current dataset, with a high internal consistency (for the ‘Impulsive Child’ subscale, Cronbach’s alpha = 0.92; for the ‘Enraged Child’ subscale, Cronbach’s alpha = 0.93). For every question in both subscales, the minimum score given by participants is ‘1’ and the maximum score is ‘6’.

Procedure

The data is retrieved from a bigger online study. Participants could partake in this study when visiting the website of the Dutch Association of Schema Therapy (www.schematherapie.nl). Here, a link was available to a package of questionnaires. Additional information, regarding the instructions on how one should be filling out the particular surveys, was available within the questionnaires. The Dutch Association of Schema Therapy actively encouraged associated therapists to talk with their clients about the possibility of participating in the study. The participants signed an informed consent, then filled out demographical information, followed by filling out the questionnaires. The study was approved by the local Ethics review committee.

The original dataset consisted of 1867 participants and their corresponding data. For the current study, the existent dataset is filtered. This was done by including and excluding participants based on the presence or absence of certain diagnoses (for the exact inclusion and exclusion criteria, see the Participants section above), resulting in a number of 454 participants.

Analysis

First, demographical information is obtained. Second, assumption checks are carried out to see whether a one-way analysis of variance (ANOVA) is applicable to the current dataset. However, the assumptions of normality and homoscedasticity are violated (see Results section), and with the current dataset, a one-way ANOVA is not robust against these violations. Therefore, a Kruskal-Wallis test is conducted. This test does not assume normality or homoscedasticity and can therefore be carried out without major consequences. The independent variable is the grouping variable (i.e., DD patient group, BPD patient group and comparison group). The dependent variables are the different subscales that will be analysed (i.e., the ‘Impulsive Child’ and the ‘Enraged Child’ subscales). Third, in case of a significant

result (i.e., indicating that not all group medians are equal), Dunn's pairwise comparisons are conducted to analyse the differences between pairs of groups, because this is the recommend post hoc test when conducting a Kruskal-Wallis test (Dinno, 2015).

Results

Assumption checks

Before conducting a statistical analysis, the data needs to fit certain assumptions. The first assumption is that the dependent variable is a continuous variable. Here, the dependent variable consists of the scores on the two subscales. These scores are numerical and continuous, and therefore, this assumption is met.

Second, the scores should be obtained using a random sample from the population. This is hardly the case in actual research, which also applies to the current study. This is because the sampling was done via convenience sampling, and thus, this assumption is violated.

Third, the observations should be independent from one another. This assumption is met in the current study, since there is no participant who is placed in two or more groups. Additionally, the observations within each group are independent, since the observations are all assigned to different participants.

Fourth, the data should be normally distributed within groups. In Figure 1 (see Appendix), it is visible that the data from the 'Impulsive Child' subscale is approximately normally distributed. However, as visible in Figure 2 (see Appendix), the data from the 'Enraged Child' subscale is not normally distributed. Therefore, the normality assumption is not met for the data in the 'Enraged Child' subscale.

Fifth, the assumption of homoscedasticity assumes that all group variances should be equal. Levene's test indicated that variances are unequal for the 'Impulsive Child' subscale

($F(2, 451) = 5.06$ $p = .007$), which also applies to the 'Enraged Child' subscale ($F(2, 451) = 14.25$ $p < .001$). Therefore, the assumption of homoscedasticity is violated for both subscales.

In sum, only the assumption of continuous level of measurement and the assumption of independence of observations are met. The violations of the other assumptions lead to the choice for the non-parametric alternative of ANOVA, namely the Kruskal-Wallis test.

Analysis

General impulsivity is reflected by the 'Impulsive Child' subscale. The BPD patient group had the highest mean score on this scale, followed by the comparison group and the DD group. See Table 2 for the exact means and standard deviations. The overall mean score for this subscale was 2.58 ($SD = 1.05$). A Kruskal-Wallis test revealed that the null hypothesis, expecting that the distribution of data in this subscale is the same across all groups, is rejected ($p < .001$). It also revealed a statistical difference in general impulsivity across groups ($H(2) = 77.49$, $p < .001$). Dunn's test for pairwise comparisons showed that the BPD group differed significantly from both the DD group ($p < .001$) and the comparison group ($p < .001$). The DD group and the comparison group did not differ significantly from each other ($p = .122$).

Aggression-related impulsivity is reflected by the 'Enraged Child' subscale. Again, the BPD patient group had the highest mean score on this subscale, followed by the DD patient group and the comparison group (see Table 2). The overall mean score for this

Table 2
Descriptive statistics on SMI subscales per group

Group		'Impulsive Child' subscale	'Enraged Child' subscale
Comparison group	Mean	2,29	1,5
	Std. Deviation	0,91	0,69
BPD patients	Mean	3,14	2,18
	Std. Deviation	1,07	1,00
DD patients	Mean	1,91	1,57
	Std. Deviation	0,79	0,71
Total	Mean	2,58	1,78
	Std. Deviation	1,05	0,87

subscale was 1.78 (*SD* = 0.87). A Kruskal-Wallis test revealed that the null hypothesis, as described in the paragraph above, is rejected ($p < .001$). It also revealed a statistical difference in aggression-related impulsivity between groups ($H(2) = 57.43$, $p < .001$). Dunn's test showed that the BPD group differed significantly from both the DD group ($p = .002$) and the comparison group ($p < .001$). The DD group and the comparison group showed no significant difference ($p = 1$).

Discussion

The results of the present study suggest that there are significant differences between DD and BPD patients. First, it was found that DD patients scored significantly lower on the subscale about general impulsivity than BPD patients. In other words, DD patients are seemingly better at evaluating the consequences of their actions, before acting on their impulses, in comparison to BPD patients. This finding supports our first hypothesis that DD patients show a lower degree of general impulsivity than BPD patients. Besides, BPD patients also showed a significantly higher rate of general impulsivity than the comparison group, whereas the DD group and the comparison group showed no significant difference. It was to be expected that we found a higher degree of general impulsivity in the BPD group than in the comparison group, since impulsivity is a key symptom of BPD (American Psychiatric Association, 2013). This is consistent with the findings of Carlson and colleagues (2020), who demonstrated that BPD patients have a tendency to act more impulsive than controls. Next to that, the current findings are consistent with the comparison that Kemp (1988) made between MPD and BPD patients, although that study is fairly outdated. He demonstrated that BPD patients had a social history with more events that are tied to a higher rate of impulsivity (e.g., a higher arrest rate) in comparison to MPD patients. The varying degrees of impulsivity may point at the proposed difference in coping styles (i.e., more introverted in DD patients and more externalizing in BPD patients; Armstrong & Loewenstein, 1990).

Second, DD patients also scored significantly lower on the subscale about aggression-related impulsivity than BPD patients. This implies that BPD patients are more likely to lose control when they are feeling negative emotions (i.e., anger or aggressive feelings), when compared to DD patients. This finding supports our second hypothesis that DD patients show a lower degree of aggression-related impulsivity. The BPD patients also showed a significantly higher degree of aggression-related impulsivity than the comparison group, whereas the DD patients and the comparison group showed no significant difference. Again, we expected the BPD patient group to score significantly higher on aggression-related impulsivity, since impulsivity is a main symptom of BPD (American Psychiatric Association, 2013). This study is, to our knowledge, the first to investigate aggression-related impulsivity in these populations. Because we assumed that DD and BPD patients had varying childhood experiences of parental aggression (Brenner, 1996), which may have been internalized in these individuals (Bandura, 1978), it was decided to study aggression-related impulsivity in these populations. Our theoretical speculations are consistent with the current results, suggesting that these childhood experiences may be related to aggression-related impulsivity later in life.

The innovative part of the current study is the examination of different types of impulsivity. To our knowledge, these specific types were never studied in these patient populations before. Besides, two patient populations were put side to side to make direct comparisons. DD and BPD were not often compared with regard to impulsivity, as seen in the available literature. More knowledge about the different types of impulsivity in the two populations, and the general differences between these groups, may help to improve the differential diagnostics in the diagnostic process. Our current results suggest that DD and BPD patients show a different pattern in dealing with negative emotions. BPD patients tend to externalize these emotions (as suggested by the higher rate of aggression-related impulsivity),

whereas DD patients seem to have a more introverted coping style (Armstrong & Loewenstein, 1990). Knowing more about the exact mechanisms of impulsivity and emotional regulation within these populations, the administered treatment can be successfully adapted to a more efficient one. Additionally, this study may help to find an answer to the question: is DID a disorder on it's own, or is it a subcategory of BPD? This research shows that significant differences are found between DD and BPD patients regarding impulsivity, pointing at the uniqueness of DID as separate from BPD.

Although interesting results were found in the present study, certain key limitations need to be addressed. First, the literature on DID is scarce, especially when it comes to comparisons between DID and BPD. A lot of the literature is outdated (e.g., Kemp, 1988; Fink & Golinkoff, 1990), which makes it harder to come to a contemporary comprehensive theoretical framework. In this study, we tried to set up a theoretical framework as best as we could, with the available literature. Hopefully, in the future, more research on DID will emerge to learn more about this disorder. Next to that, our theoretical framework is focused on the influence of adverse childhood experiences on (the development of) impulsivity, since these experiences may have differed between DD and BPD patients. The consequent hypotheses were also based on these theoretical speculations. However, in the current study, we did not gather information about childhood experiences. Even if we did, the causal relationship between these experiences and the development of different forms of impulsivity would still remain unclear. Further research may fill this gap by taking adverse childhood experiences into account, preferably in a longitudinal design.

Additionally, the sample is not representative for the general population with regard to gender. Women are overrepresented, whereas men are underrepresented. First of all, the current BPD patient group has a higher percentage of women than in the general Dutch population of BPD patients (Ten Have et al., 2016). This also applies to the comparison

group, where women are overrepresented, while the male and female ratio in the general Dutch population is approximately equal (Statistics Netherlands, 2020). The sample being non-representative has consequences for the generalizability of the data, implicating that our results cannot be generalized to the populations. As for the sample, its size is too small to draw accurate conclusions on the studied populations. Especially the DD patient group is small. By adding participants to the DD group who reported a DD-NOS diagnosis, which are seen as comparable to DID regarding symptoms and severity (Rodewald et al., 2011), the sample size rose from seventeen to 25. Adding to this, the subsample sizes were unequal. The conclusions that are drawn in the current study should be interpreted with caution. In future research, samples should be bigger, equal in size and representative for the populations.

Regarding the questionnaire, it is relevant to emphasize that it is based on self-report. It is therefore unclear whether the participants were reporting their correct diagnoses. Since the diagnoses were not verified by a clinical professional, it is unclear whether the self-reported diagnosis is the correct one, and whether there actually is a diagnosis at all. The current study did not use standardized or official diagnoses. This is an important aspect of the current study, since the participants were categorized into groups according to their self-reported diagnosis or diagnoses. A self-report always comes with the risk of response biases, such as social desirability or acquiescent responding (Kreitchmann et al., 2019).

While there are some serious limitations, there are also strengths present in the current study. First, we aimed to set up a comparison group that consisted of ‘healthy’ individuals. It is useful to know how the patient groups relate to the healthy population with regard to the two types of impulsivity. However, due to the nature of this self-report study, it is impossible to make definite conclusions that participants in the comparison group are healthy. By carefully making decisions about inclusion criteria (i.e., only including the participants who were clear about the absence of a diagnosis), we tried to minimize the risk of misallocation of

participants to the comparison group. Participants who gave a vague or unclear answer on the question ‘What diagnosis was given to you?’ (see Method section for examples of such answers), were excluded in order to ensure that participants in the comparison group were free of diagnoses. Second, while the gender ratios are not representative in the BPD patient group and the comparison group, the gender ratio is representative for the DD patient group. The male female ratio in our current DD sample is similar to the ratio that is found in the Dutch population of DID patients (Sno & Schalken, 1999). The more representative the sample is, the higher the generalizability of the results. Lastly, despite the limitations of a self-report, it also has advantages. The questionnaire was available to many people, since it could be openly accessed via internet. This resulted in a high overall sample size, from which we could select the participants who were relevant for the current study. Besides, the anonymous nature of the self-report may have increased the chances of more honest responses in the questionnaire.

To conclude, this present research extends the scarce body of literature on DID. The current study suggests that DD patients show less general impulsivity, as well as aggression-related impulsivity, as compared to BPD patients. However, these results should be taken with caution, due to the several limitations that apply to this study. Further research should try to decrease these limitations, by creating representative samples with a large enough sample size, in which diagnoses should be verified by clinical professionals. In addition, the experience of adverse childhood events should be examined to see whether the type of experienced abuse is related to the degree of impulsivity in an individual.

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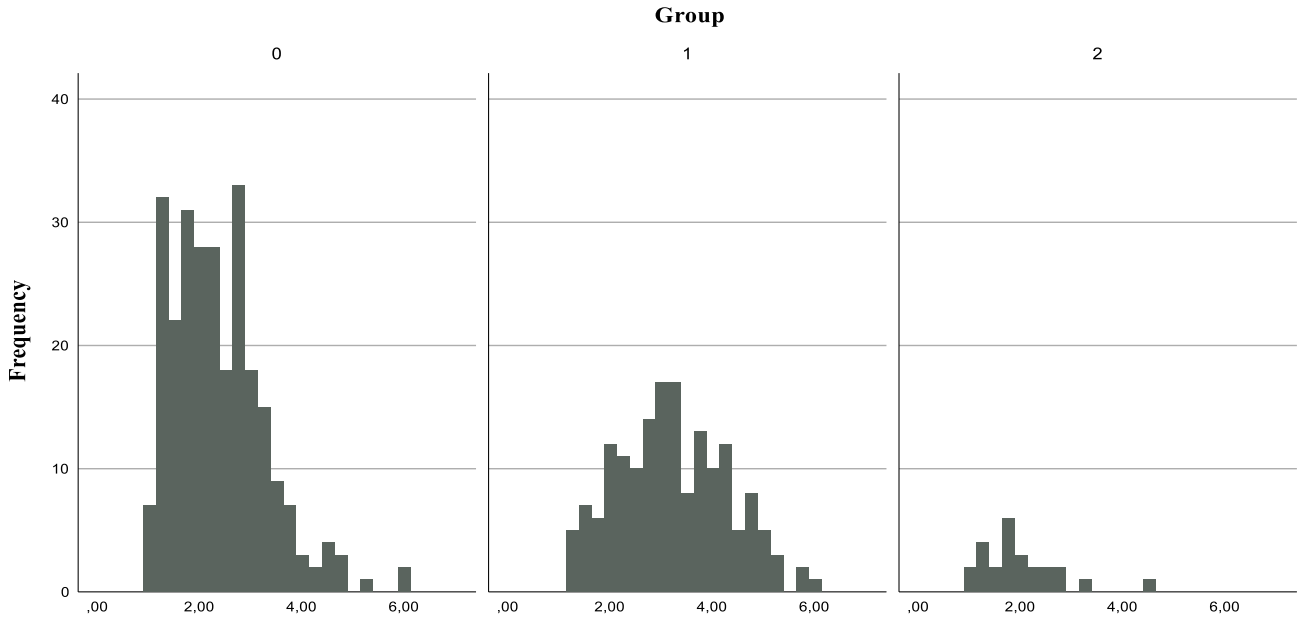
Appendix

Figure 1

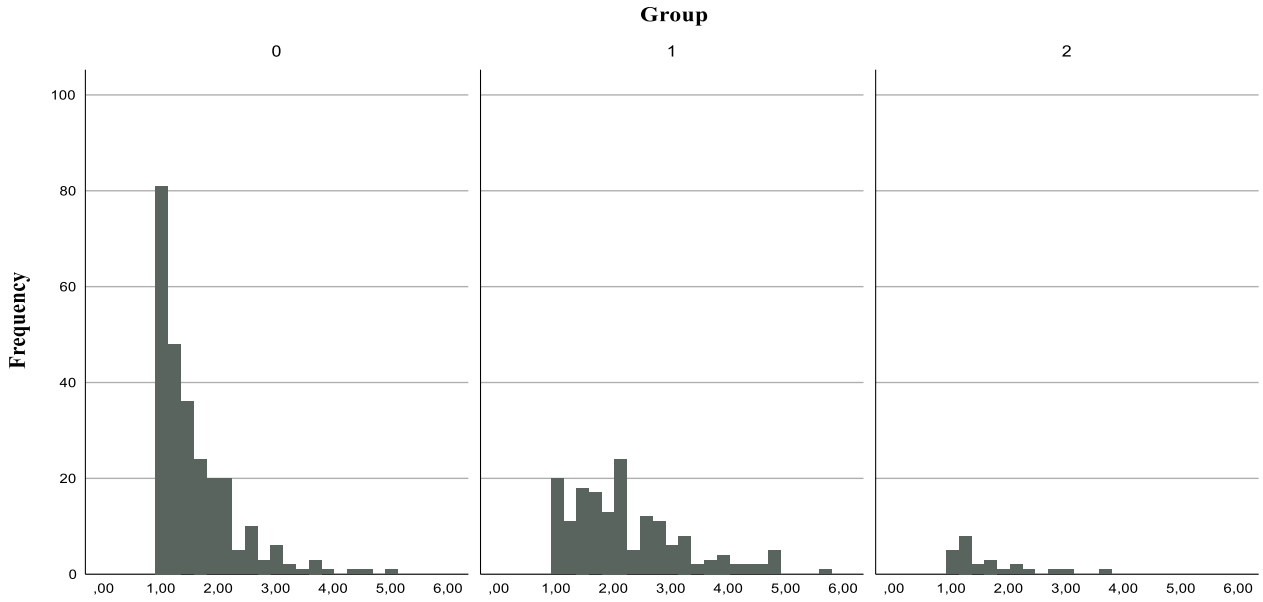
Histogram for the data in the 'Impulsive Child' subscale as a normality check



Note. Groups are represented by the numbers above each graph, where '0' reflects the comparison group, '1' reflects the BPD patient group and '2' reflects the DD patient group.

Figure 2

Histogram for the data in the 'Enraged Child' subscale as a normality check



Note. Groups are represented by the numbers above each graph, where '0' reflects the comparison group, '1' reflects the BPD patient group and '2' reflects the DD patient group.