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Similarities and Differences in the Functions of Nonsuicidal Self-Injury (NSSI) and Sex as Self-Injury (SASI)

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Differences and similarities were studied in the functions of two different self-injurious behaviors (SIB): nonsuicidal self-injury (NSSI) and sex as self-injury (SASI). Based on type of SIB reported, adolescents were classified in one of three groups: NSSI only (n = 910), SASI only (n = 41), and both NSSI and SASI (n = 76). There was support for functional equivalence in the two forms of SIB, with automatic functions being most commonly endorsed in all three groups. There were also functional differences, with adolescents in the SASI only group reporting more social influence functions than those with NSSI only. Adolescents reporting both NSSI and SASI endorsed the highest number of functions for both behaviors. Clinical implications are discussed, emphasizing the need for emotion regulation skills.

Self-injurious behaviors (SIB) are common in adolescents. Such behaviors can be direct, such as nonsuicidal self-injury (NSSI), or indirect, such as mistreating and abusing oneself (Nock, 2010). NSSI is defined as the deliberate destruction of body tissue without suicidal intent, referring to behaviors such as cutting, burning, and scraping skin (International Society for the Study of Self-Injury [ISSS], 2007). It is of special interest due to its inclusion as a condition in need of further study in the fifth version of the *Diagnostic and Statistical Manual of Mental Disorders* (American Psychiatric Association, 2013). International studies have shown prevalence rates of 15% to 20% in adolescents (Muehlenkamp, Claes, Havertape, & Plener, 2012), and in a Swedish study of community adolescents approximately one third reported having tried NSSI at least once during the last year (Zetterqvist, Lundh, Dahlström, & Svedin, 2013).

SIB can also be indirect, such as reckless and destructive behaviors where individuals mistreat and abuse themselves; for example, by alcohol abuse, involvement in abusive relationships, binge eating, and starvation (Favaro, Ferrara, & Santonastaso, 2007; Møhl, La Cour, & Skandsen, 2014). There is currently an ongoing discussion as

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to how different SIBs should be defined, conceptualized, and categorized in relation to each other (Hooley & St. Germain, 2014). According to St. Germain and Hooley (2012), indirect self-injurious behavior can be understood as a behavior that is clearly damaging to the self but does not involve immediate and deliberate damage to body tissue. They have further suggested that indirect self-injurious behavior should be clinically significant, repetitive or persistent, and represent a source of serious concern for clinicians or family members as well as having the potential to lead to marked physical damage over time.

Direct and indirect SIB often co-occur, such as eating disorders and NSSI (Claes & Muehlenkamp, 2014), as well as risky sexual behaviors and cutting in adolescents (DiClemente, Ponton, & Hartley, 1991; Svensson, Fredlund, Svedin, Priebe, & Wadsby, 2013). Despite their topographic difference, these behaviors often share common elements, such as using the body to regulate the state of mind as well as the social situation (Brausch & Muehlenkamp, 2014). Recent studies, however, have also shown support for a distinction between direct and indirect types of SIB. For example, St. Germain and Hooley (2012) found that individuals with NSSI reported more suicide attempts and were more self-critical than those who engaged in indirect forms of SIB, suggesting that the behaviors are best described as separate phenomena (Hooley & St. Germain, 2014; Møhl et al., 2014; Nock, 2010; St. Germain & Hooley, 2012). Despite being harmful and abusive to the individual and often associated with negative consequences in the long run, the answer to why adolescents engage in maladaptive behaviors (Wedig & Nock, 2010) is usually found in the underlying purpose of the self-injurious behavior; that is, to cope with and relieve distress and problems (Claes & Vandereycken, 2007). As the behaviors chosen to reach this goal can vary in one and the same individual, a functional approach can be useful in understanding and treating such behaviors (Wedig, 2014).

A recent area of interest in the field of indirect self-injury is reflected in clinical reports of adolescents and young adults who testify to deliberately using destructive sexual activities as a means of self-injury (Jenstav & Meissner, 2016; Jonsson & Lundström Mattsson, 2012). In a report from the Swedish Children's Welfare Foundation (Jonsson & Lundström Mattsson, 2012), partly based on qualitative interviews, a suggestion was put forward that sex as self-injury could be defined as follows: "when a person has a pattern of seeking sexual situations involving mental or physical harm to themselves. The behavior causes significant distress or impairment in school, work, or other important areas." In the report, which was also based on clinical experience and interviews with adolescents and professionals, a model was presented for understanding repeated sexual risk-taking in the form of sex as self-injury (SASI). In this model, the key force underlying SASI was the presence of unbearable feelings, especially intense anxiety. In the report, the interviewed individuals described different behaviors when using SASI, such as attending sexual meetings where they knew that they would get physically hurt or would lack control of the sequence of events. In one recent qualitative interview study (Jonsson, Svedin, & Hydén, 2015), some of the young women interviewed compared their engagement in selling sex to cutting, and often had experience of both. Perhaps risky sexual behaviors and intentional engagement in physically abusive sexual relationships can be classified as indirect self-injury in accordance with the definition by St. Germain and Hooley (2012; Hooley & St. Germain, 2014). At the same time, in some instances of intentional self-abusive sexual behaviors, direct physical harm might be involved as well as, which is more in line with the definition of direct self-injurious behavior. More empirical data are thus needed in the process of establishing how this behavior should be conceptualized, defined, and categorized.

The functions of NSSI have been extensively investigated (e.g., Klonsky, 2007).

There is general consensus that the behavior has an affect regulation function, increasing or decreasing affect. For nonclinical adolescents in particular, social functions are not unusual, but are typically considered secondary to affect regulation (Dahlström, Zetterqvist, Lundh, & Svedin, 2015). There is support that difficulties regulating emotions are associated with several maladaptive behaviors (Tull, Weiss, Adams, & Gratz, 2012). A functional perspective can thus be useful in clinical practice to understand and treat these goal-directed behaviors, where negative emotions usually precede several maladaptive behaviors (Wedig, 2014). In this approach, previous research has found that both NSSI and suicide attempts were performed to relieve negative emotions (e.g., Brown, Comtois, & Linehan, 2002), but differences in functions have also been reported (Brown et al., 2002; Chapman & Dixon-Gordon, 2007). Furthermore, a previous model of functions for NSSI was found to be applicable to female binge eating and purging, using the same functional assessment instrument (Wedig & Nock, 2010). There is thus an overlap in functions between the topographically different behaviors of eating disorders and NSSI (Wedig, 2014), with both behaviors serving to regulate strong negative emotions and generate feelings, as well as social functions (to receive attention or help and/or to decrease demands from others).

vIn a study by Cooper, Shapiro, and Powers (1998) motivations for sex and risky sexual behavior among adolescents and young adults were studied from a functional perspective. They found that different factors promote and maintain risk-taking and that there was no common set of predictors; for example, experience of negative emotions may promote indiscriminate sexual contacts among individuals who rely on sex as a way of coping with these emotions. However, situational cases such as the presence of an attractive and available sex partner may better account for indiscriminate sexual behaviors among those who are primarily motivated by enhancement needs. This notion of indiscriminate sexual contacts was supported in a recent qualitative interview study of 15 young women selling sex, in vboth online and offline environments (Jonsson et al., 2015). The women described how they used sex in this context to regulate both negative and positive feelings, and regarded it as a form of strategy that enabled them to cope with life. In this respect, they compared selling sex to other SIB, such as cutting.

However, there are very few studies with a functional approach that compare the functions of different SIBs in the same study sample. To our knowledge, little work has been carried out comparing how functions can vary in different SIBs in adolescents. This study contributes the first empirical data in the process toward establishing how sex as self-injury should be conceptualized, defined, and categorized by exploring the functions of NSSI versus SASI.

This study was exploratory and aimed at examining which functions are reported for NSSI and which functions are endorsed by adolescents who report that they have used SASI, and furthermore to compare whether the functions of these different behaviors are similar or different. Thus, the study addressed a number of questions: Do adolescents with NSSI endorse different functions for engaging in the behavior compared to adolescents with SASI? Do adolescents who have engaged in both NSSI and SASI report different functions for respective behaviors? Do reported functions differ for adolescents reporting only one type of SIB compared to adolescents who engage in both NSSI and SASI?

METHOD

Procedure

A representative sample of Swedish high school seniors (in their third year at high school) was selected by Statistics Sweden using information from the Swedish school register. According to data from 2013

(Statistics Sweden, 2014), approximately 91% of all 18-year-old adolescents are enrolled in Swedish high schools. Schools were selected by Statistics Sweden using stratification based on school size and study program, according to the National School Register for the second year of Swedish high schools for the autumn of 2013. One or two study programs were selected from each school. An oversampling was carried out for Stockholm, the capital of Sweden, to make it possible to compare the county of Stockholm with the rest of the country.

Distribution and collection of questionnaires were performed by Statistics Sweden. Information about the study was sent to the principal of the selected schools by mail in August 2014. Participating schools answered the questionnaire in digital format (by computer in 165 schools) or, when computers were not available, on paper (6 schools). A reminder for the schools that had not yet delivered data was given by phone within a month. Information about the study was given to the principal, the teachers in charge when the questionnaires were filled in, and the students. The students gave informed consent for participation by answering the questionnaire. Afterward, they received written information about where to turn for help and support if needed after answering the questionnaire.

The study was approved by the regional ethical review board of Linköping (Dnr, 131-31).

Participants

A total of 13,903 adolescents from 261 of 1,215 Swedish high schools were selected by Statistics Sweden from the Swedish National School Register in the autumn of 2013. Of the 261 schools selected, 238 were still in existence and still provided the selected programs in 2014. For additional statistical power, the extra sample from the county of Stockholm was included in the study. The response rate for the county of Stockholm was lower (48.7%) compared to the rest of the country (65.3%). Differences were also seen regarding size of schools. In Stockholm, fewer of the respondents came from schools with 10–190 pupils (13.9%) compared to the rest of the country (22.1%) and more often came from middle-size schools with 191–360 pupils (51.2%) compared to the rest of the country (41.6%), resulting in a small effect size (Cramer's $V = .10$). Differences between Stockholm and the rest of the country were otherwise small or nonexistent when the answers to the questionnaire were analyzed. Almost no differences were seen between the selection sample and the sample answering the questionnaire regarding the selection criteria or size of school and study program.

In total, 171 schools agreed to participate in the study. Of the 9,773 adolescents who had the opportunity to participate, 5,873 completed the questionnaire. Thirty-four questionnaires were excluded due to unserious answers or a high amount of missing data, resulting in 5,839 completed questionnaires (a response rate of 59.7%). Mean age of the participating adolescents was 17.97 years ($SD = 0.63$). In the current study, 4,685 adolescents were excluded as they did not report any experience of NSSI and/or SASI (Figure 1). A further 76 adolescents did not answer the questions about NSSI or SASI and were excluded, as were an additional 20 adolescents who only answered the NSSI question but not the SASI question. Finally, 31 adolescents were excluded because they had not answered the questions concerning the functions of SIB in the FASM questionnaire, which resulted in a total of 1,027 participants for this study.

Participants' Background

Eighteen percent ($n = 1,027$) of all participating adolescents had experience of some form of SIB (NSSI and/or SASI; Table 1). Using chi-square analysis throughout, significantly more girls were in the self-injuring group (76.6%) compared to the group without any SIB (50.1%) and to the individuals who felt that the division into boy or girl did not fit them (1.6% vs. 0.8%; see

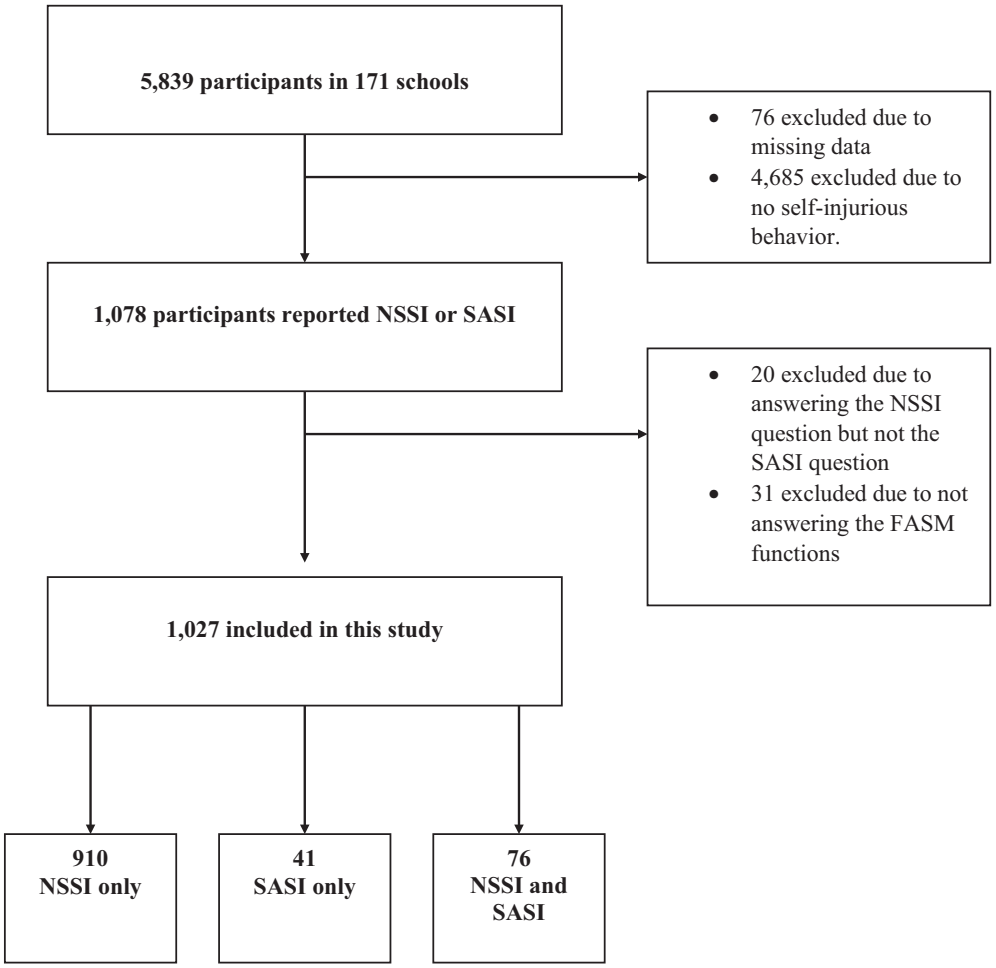

Figure 1. Flowchart of participants. NSSI, nonsuicidal self-injury; SASI, sex as self-injury.

Table 1). Regarding study programs and immigrant status, no differences were shown between the groups. No differences were found regarding whether mothers were working or their education status whereas significant differences were found regarding fathers. Participants with experience of self-injury less often had fathers who were working (84.4% vs. 88.6%) or who had a university education (36.4% vs. 41.1%). The financial situation in the family was more often perceived as problematic among the participants with SIB (25.9% vs. 20.4%). Finally, the adolescents with SIBs were less likely to live with both parents together or alternately (63.5% vs. 73.1%).

Measures

The questionnaire for the present study was a modified version of the questionnaire used previously by Svedin and Priebe (2004, 2009). It comprised 116 main questions, of which only questions relating to background, SIB status, and functions were used in this study.

Nonsuicidal Self-Injury. Screening for the NSSI was performed using a general question from The Self-Injurious Thoughts and Behaviors Interview-Short Form-Self Report (SITBI-SF-SR). The SITBI-SF-SR was developed from the SITBI (Nock, Holmberg, Photos, & Michel, 2007), a

TABLE 1
Background Data and Socio-Demographic Variables for Adolescents with Nonsuicidal Self-Injury (NSSI) and/or Sex As Self-injury (SASI) and Adolescents with Neither NSSI nor SASI

	With NSSI and/or SASI		With neither NSSI nor SASI				
	n	%	*n*	%	χ^2	*df*	*p*-Value
Total number of participants	1,027	18.0	4,685	82.0			
Gender							
Boy	224	21.8	2301	49.1	255.7	2	<.001
Girl	787	76.6	2346	50.1			
This division does not fit me	16	1.6	37	0.8			
Study program							
Theoretical	731	71.2	3,333	71.1			ns
Practical	296	28.8	1,352	28.9			
Fathers working	860	84.4	4,144	88.6	14.2	1	<.001
Mothers working	885	87.1	4,080	87.3			ns
Fathers with university education	372	36.4	1,918	41.1	7.8	1	.005
Mothers with university education	534	52.1	2,443	52.3			ns
Financial situation in the family							
Good	954	93.0	4,421	94.4	20.3	2	<.001
Poor	45	4.4	97	2.1			
Do not know	27	3.6	165	3.5			
Adolescents with immigrant background	82	8.0	414	8.8			ns
Fathers with immigrant background	209	20.4	1,237	21.7			ns
Mothers with immigrant background	208	20.3	1,023	21.8			ns
Living situation							
With both parents or alternating	650	63.5	3,425	73.1	46.1	3	<.001
With one parent with or without new partner (stepparent)	265	25.9	955	20.4			
Alone or with siblings or partner	96	9.4	281	6.0			
In foster care or institution	13	1.3	22	0.5			

structured interview that assesses a wide range of self-injurious thoughts and behaviors. Participants who answered in the affirmative to the question: "Have you ever actually engaged in nonsuicidal self-injury (NSSI; that is, purposely hurt yourself without wanting to die, for example by cutting or burning)?" went on to answer questions from The Functional Assessment of Self-Mutilation (FASM; Lloyd, Kelley, & Hope, 1997), which assesses the methods, frequency, and function of self-reported deliberate NSSI. Respondents are asked whether they have engaged in any of 11 different methods of NSSI during the past year or at any time previously. The frequency of NSSI and whether medical treatment was received is also assessed, as is the degree of physical pain experienced during NSSI. The FASM contains 22 statements assessing the functions of NSSI, which respondents rate on a four-point Likert scale, covering the categories *never*, *rarely*, *some*, and *often*. The FASM has previously been used in normative (Lloyd et al., 1997) and psychiatric samples (Guertin, Lloyd-Richardson, Spirito, Donaldson, & Boergers, 2001), with test scores showing acceptable psychometric properties in adolescent samples (Esposito, Spirito, Boergers, & Donaldson, 2003; Guertin et al., 2001; Penn, Esposito, Schaeffer, Fritz, & Spirito, 2003). Lloyd et al. (1997) identified two factors from the NSSI items: moderate/severe and minor. The

former consisted of NSSI items that are considered to be more severe, such as cutting/carving and burning the skin. The latter consisted of items considered to be less severe, such as biting or hitting. These subscales have been used in previous NSSI studies, as, for example, by Guertin et al. (2001) and Zetterqvist et al. (2013).

Test scores from the FASM also support concurrent validity, demonstrating significant associations with measures of recent suicide attempts, hopelessness, and depressive symptoms (Nock & Prinstein, 2005). The psychometric properties of the Swedish version, administered to a community sample of adolescents, have been fully described in a study by Zetterqvist et al. (2013). Reliability scores of the Swedish version of the FASM for the present sample were tested with acceptable/good internal consistency. Cronbach's alpha for all the FASM functions for NSSI in the present sample was $\alpha = .86$. A previous factor analytic study (Dahlström et al., 2015) where the FASM was used on a Swedish adolescent community sample resulted in a four-factor model: automatic ($\alpha = .81$), social influence ($\alpha = .86$), avoiding demands ($\alpha = .70$), and peer identification ($\alpha = .66$). These factors are used in this study and the alpha values for the present sample are presented in parenthesis. Automatic functions include feeling generation/antidissociation items, self-punishment, to get control, to stop bad feelings, and to feel relaxed. Social influence functions include items aiming at influencing the social environment, for example, by receiving attention, help, or understanding. Peer identification refers to functional items such as feeling part of a group or being like someone you respect. Items in the avoiding demands factor refer to functions that decrease social demands. In the present analysis, a functional item was considered to have been endorsed if it was rated as "some" or "often" and dichotomized accordingly.

Sex as a Form of Self-Injury. Questions were created for the purpose of the study regarding using SASI: "Have you ever used sex to purposely hurt yourself?" with "Yes" or "No" as response alternatives, followed by questions about frequency of SASI during the last year. The FASM (Lloyd et al., 1997) was used to assess functions of the SASI (see NSSI and the FASM section). Cronbach's alpha for all the FASM functions for SASI in the present sample was $\alpha = .85$. Based on the four-factor model suggested by Dahlström et al. (2015), Cronbach's alpha for the four factors were as follows: automatic factor: $\alpha = .80$; social influence factor: $\alpha = .81$; avoiding demands factor: $\alpha = .60$; and peer identification factor: $\alpha = .53$.

Demographic Information. A demographic questionnaire was drawn up for the purpose of the study, assessing demographic characteristics such as gender, type of education, parents' occupation, parents' education, perception of family's economy, immigrant background, and living conditions. Adolescents self-reported demographic information in fixed answer categories (Table 1).

Data Analyses. SPSS 20.0 was used for all analysis. The results are presented with frequencies and mean values. To analyze differences between groups, nonparametric tests (chi-square test, Fisher's exact text.) as well as parametric tests (*t* test using in silico, http://in-silico.net/tools/statistics/chi2test/2x2) were used.

RESULTS

For the present analyses, adolescents who confirmed any SIB ($N = 1,027$) were classified into three groups based on their answers to the SIB-questions: NSSI only, SASI only, and adolescents with both NSSI and SASI. The NSSI only group consisted of 910 adolescents, of which 207 (22.8%) were boys, 692 (76%) were girls, and 11 (1.2%) reported that neither category was applicable ($n = 910$). Of those who reported only SASI ($n = 41$), 11 (26.8%) were boys, 29 (70.7%) were girls, and one person (2.5%) reported that neither category was applicable. Seventy-six adolescents reported experiences of both NSSI and SASI, of

which six (7.9%) were boys, 66 (86.8%) were girls, and four (5.3%) reported being neither boy nor girl. Adolescents with both NSSI and SASI ($n = 76$) are presented twice, as they answered the questions concerning the functions of NSSI and the functions of SASI separately (Figure 1).

Functions of Nonsuicidal Self-Injury

The reported functions of the different SIB in the three groups are summarized in Table 2. For adolescents who reported only NSSI ($n = 910$), the function "to relieve feeling numb or empty" was most commonly reported (46.9%), followed by "to stop bad feelings" (38.1%) and "to punish yourself" (36.4%). The functions in the automatic factor were reported by 18.6%–46.9% of adolescents with NSSI (Table 2). Social influence functions for NSSI were relatively less commonly endorsed, from 1.8% (to make others angry) to 10.4% (to try to get a reaction from someone, even if it's a negative reaction). Of those with only NSSI, 0.2%–1.6% endorsed functions in the peer identification factor and 2.0%–5.4% endorsed functions in the avoiding demands factor. For adolescents who reported having engaged in both NSSI and SASI, automatic functions for NSSI were endorsed by 43.4%–75.0%. Social influence functions for NSSI were endorsed by 2.6%–22.4%, while 1.3%–5.3% and 3.9%–11.8% of adolescents endorsed functions for peer identification and avoiding demands, respectively (Table 2).

Functions of Sex as Self-Injury

For adolescents who only reported engaging in SASI ($n = 41$), the function "to relieve feeling numb or empty" was most commonly reported (58.5%), followed by "to stop bad feelings" (53.7%) and "to punish yourself" (41.5%). Automatic functions for this behavior were endorsed by 19.5%–58.5% of the adolescents. Compared to the automatic functions, social functions for SASI were less commonly endorsed, from 0% (to make others angry) to 34.1% (to try to get a reaction from someone, even if it's a negative reaction) of adolescents reporting social influence functions. The peer identification functions were endorsed by 2.4%–9.8% and functions relating to avoiding demands were reported by 7.3%–9.8% of adolescents with only SASI. Of those adolescents with both NSSI and SASI, 22.4%–59.2% endorsed automatic functions for their sexual behavior, 3.9%–17.1% endorsed social influence functions for SASI, while 0%–3.9% endorsed peer identification functions and 2.6%–6.6% endorsed functions in the avoiding demands factor (Table 2).

Functions of NSSI Versus Functions of SASI in Adolescents with only NSSI or only SASI

Adolescents with only NSSI or only SASI were compared to examine whether they differed concerning which automatic and social influence functions were reported for respective behaviors. The groups followed the same pattern of functional endorsement with the automatic functions being most commonly endorsed and social functions relatively less so (Table 2). Significantly more adolescents in the SASI only group endorsed functions in the social influence factor: "to get attention," 26.8% vs. 9.3% (χ^2 [1, $N = 910/41$] = 13.22, $p = .0003$) and "to try to get a reaction from someone, even if it's a negative reaction," 34.1% vs. 10.4% (χ^2 [1, $N = 910/41$] = 21.73, $p < .0001$). The function "to feel more a part of a group" was also reported by significantly more adolescents in the SASI only group compared to those with only NSSI, 9.8% vs. 0.9% (χ^2 [1, $N = 910/41$] = 24.81, $p < .0001$), as was "to give yourself something to do when alone," 26.8% vs. 5.4% (χ^2 [1, $N = 910/41$] = 30.52, $p < .0001$). Of all 22 functions, those with only SASI endorsed an average of 4.12 ($SD = 3.00$) functions compared to 2.63 ($SD = 2.87$) reported by those with only NSSI, which was significantly higher ($t = 3.25$, $p = .001$). The average number of reported automatic functions was 2.41

TABLE 2
Functions of Nonsuicidal Self-Injury (NSSI) and Sex as Self-Injury (SASI)

		NSSI n = 986				SASI n = 117				Stat sign[a]			
		a NSSI only n = 910		b NSSI + SASI[b] n = 76		c SASI only n = 41		d SASI + NSSI[b] n = 76					
Function		n	%	n	%	n	%	n	%	a/c	b/d	a/b	c/d
Item	**Automatic Functions**												
2	To relieve feeling numb or empty	427	46.9	57	75.0	24	58.5	45	59.2		*	***	
4	To feel something, even if it was pain	262	28.8	41	53.9	16	39.0	33	43.4			***	
6	To get control of a situation	216	23.7	41	53.9	12	29.3	24	31.6		**	***	
10	To punish yourself	331	36.4	55	72.2	17	41.5	44	57.9			***	
14	To stop bad feelings	347	38.1	53	69.7	22	53.7	33	43.4	*	**	***	
22	To feel relaxed	169	18.6	33	43.4	8	19.5	17	22.4		**	***	
	Social Influence												
3	To get attention	85	9.3	9	11.8	11	26.8	13	17.1	***			
7	To try to get a reaction from someone, even if it's a negative reaction	95	10.4	17	22.4	14	34.1	10	13.2	***		**	**
8	To receive more attention from your parents or friends	56	6.2	5	6.6	2	4.9	4	5.3				
11	To get other people to act differently or change	37	4.1	9	11.8	3	7.3	8	10.5			**	
15	To let others know how desperate you are	48	5.3	11	14.5	4	9.8	8	10.5			**	
17	To get your parents to understand or notice you	43	4.7	7	9.2	3	7.3	4	5.3				
20	To get help	56	6.2	10	13.2	2	4.9	6	7.9			*	
21	To make others angry	16	1.8	2	2.6	0	0.0	3	3.9				
	Peer Identification												
12	To be like someone you respect	15	1.6	1	1.3	1	2.4	1	1.3				
16	To feel more a part of a group	8	0.9	3	3.9	4	9.8	0	0.0	***		*	*
19	To give yourself something to do when with others	2	0.2	4	5.3	1	2.4	3	3.9	*		***	

(continued)

TABLE 2
(continued)

		NSSI n = 986				SASI n = 117				Stat sign[a]			
		a NSSI only n = 910		b NSSI + SASI[b] n = 76		c SASI only n = 41		d SASI + NSSI[b] n = 76					
Function		n	%	n	%	n	%	n	%	a/c	b/d	a/b	c/d
	Avoiding Demands												
1	To avoid school, work, or other activities	49	5.4	10	10.3	4	9.8	2	2.6		*	*	
5	To avoid having to do something unpleasant you don't want to do	46	5.1	9	11.8	4	9.8	5	6.6			*	
9	To avoid being with people	26	2.9	8	10.5	3	7.3	2	2.6			**	
13	To avoid punishment or paying the consequences	18	2.0	3	3.9	3	7.3	4	5.3	*			
18	To give yourself something to do when alone	49	5.4	14	18.4	11	26.8	11	14.5	***		***	

[a]Chi-square or Fisher exact test, ***$p < .001$, **$p < .01$, *$p < .05$.
[b]Adolescents with both NSSI and SASI (n = 76) are presented twice, as they answered the questions concerning the functions of NSSI and the functions of SASI separately.

(*SD* = 1.76) in the SASI group compared to 1.92 (*SD* = 1.89) in those with NSSI, which was not significant ($t = 1.63$, $p = .10$). The average number of reported functions in the social influence factor was 0.95 (*SD* = 1.16) vs. 0.48 (*SD* = 1.24), with the SASI group reporting significantly more social influence functions ($t = 2.38$, $p = .02$).

Functions of NSSI vs. Functions of SASI in Adolescents with both NSSI and SASI

The 76 adolescents who had experience of both NSSI and SASI began by answering the questions concerning NSSI functions, and then went on to the SASI question and functions. The level of NSSI severity in the only NSSI group compared to the NSSI + SASI group was assessed by adding together the percentages of adolescents who endorsed each item on the moderate/severe NSSI behavior subscale. Compared to adolescents with only NSSI, the 76 adolescents in the NSSI + SASI group reported more severe NSSI: 35.5% reported three to five moderate/severe NSSI behaviors compared to 15% in the NSSI only group. Specifically, 76.3% of those with NSSI + SASI endorsed cutting/carving skin compared to 50.7% in the NSSI only group ($p < .001$, phi = .14). Furthermore, the NSSI + SASI group endorsed several of the 11 NSSI methods of the FASM: 5.04 (*SD* = 3.1) compared to 3.06 (*SD* = 2.6) for the NSSI only group ($p < .001$).

There were no differences in the proportion of adolescents who endorsed the social influence functions for respective behaviors (Table 2). However, significantly more adolescents of those with both NSSI and SASI endorsed the following automatic functions for NSSI compared to SASI: "to get control of a situation" 53.9% vs. 31.6% (χ^2 [1, $N = 76$] = 7.77, $p = .005$), "to stop bad feelings" 69.7% vs. 43.4% (χ^2 [1, $N = 76$] = 10.72, $p = .001$), and "to feel relaxed" 43.4% vs. 22.4% (χ^2 [1, $N = 76$] = 7.63, $p = .006$).

The 76 adolescents who had experience of both SASI and NSSI reported an average total of functions of 5.29 (*SD* = 3.24) vs. 3.68 (*SD* = 3.30) for their NSSI and SASI, respectively ($t = 3.04$, $p = .003$). The average number of reported automatic functions for the NSSI functions was 3.68 (*SD* = 1.87) compared to 2.58 (*SD* = 1.99) for the SASI functions ($t = 3.51$, $p = .0006$). The average reported NSSI functions in the social influence factor was 0.92 (*SD* = 1.62) vs. 0.74 (*SD* = 1.54) for the SASI functions, which was not significantly different ($t = 0.70$, $p = 0.48$).

Functions of NSSI Among Adolescents with NSSI Only vs. Adolescents with Both NSSI and SASI

Adolescents who reported experience of both NSSI and SASI had a pattern of more endorsed functions for their NSSI than did those who only reported NSSI. The automatic functions in particular were reported to a greater extent: "to relieve feeling numb or empty" 75% vs. 46.9% (χ^2 [1, $N = 910/76$] = 22.13, $p < .001$), "to feel something even if it was pain" 53.9% vs. 28.8% (χ^2 [1, $N = 910/76$] = 20.85, $p < .001$), "to get control of a situation" 53.9% vs. 23.7% (χ^2 [1, $N = 910/76$] = 33.22, $p < .001$), "to punish yourself" 72.2% vs. 36.4% (χ^2 [1, $N = 910/76$] = 38.15, $p < .001$), "to stop bad feelings" 69.7% vs. 38.1% (χ^2 [1, $N = 910/76$] = 29.06, $p < .001$), and "to feel relaxed" 43.4% vs. 18.6% (χ^2 [1, $N = 910/76$] = 26.59, $p < .001$). The social influence functions were also more commonly reported for NSSI among adolescents who had experience of both NSSI and SASI compared to those with only NSSI: "to try to get a reaction from someone, even if it's a negative reaction" 22.4% vs. 10.4% (χ^2 [1, $N = 910/76$] = 9.91, $p = .002$), "to get other people to act differently or change" 11.8% vs. 4.1% (χ^2 [1, $N = 910/76$] = 9.54, $p = .006$), and "to let others know how desperate you are" 14.5% vs. 5.3% (χ^2 [1, $N = 910/76$] = 10.55, $p < .004$). More adolescents with both NSSI and SASI also endorsed the peer identification factor: "to give yourself something to do

when with others" for their NSSI than those with only NSSI did, 5.3% vs. 0.2% (χ^2 [1, N = 910/76] = 19.81, $p < .001$). They also reported avoiding demands, such as "to avoid being with people" to a greater extent 10.5% vs. 2.9% (χ^2 [1, N = 910/76] = 12.39, $p = .003$). Furthermore, significantly more adolescents with both NSSI and SASI endorsed the function "to give yourself something to do when alone" for their NSSI than those with only NSSI, 18.4% vs. 5.4% (χ^2 [1, N = 910/76] = 29.50, $p < .001$).

Functions of SASI Among Adolescents with SASI Only vs. Adolescents with SASI and NSSI

The adolescents with SASI only and those reporting both SASI and NSSI shared the same pattern of endorsed functions. However, one function relating to social influence: "to try to get a reaction from someone, even if it's a negative reaction" was more often reported among adolescents with only SASI, 34.1% vs. 13.2% (χ^2 [1, N = 41/76] = 7.20, $p = .007$).

DISCUSSION

In this study we examined which functions adolescents endorsed for NSSI (behaviors such as cutting and burning skin), compared to which functions were reported by adolescents using SASI. Using sex as a deliberate means of injuring oneself is a largely unexplored area of research, and many questions still remain as to how this behavior should be defined, conceptualized, and delimited. Its relationship to other SIBs, such as NSSI, also needs to be clarified. Examining whether adolescents endorse different or similar reasons for engaging in these different SIBs is thus an important first step and a contribution to a field still lacking in empirical data. In the present study, adolescents from a large community sample were classified in one of three groups based on their self-injury status: NSSI only (n = 910), SASI only (n = 41), and both NSSI and SASI (n = 76). The proportions of boys and girls were similar in the NSSI only and SASI groups, but among adolescents who reported both types of SIB (NSSI + SASI), there were fewer boys (22.8%, 26.8%, and 7.9%, respectively). In the present study, there was an overlap between the two forms of self-injury, with a majority of adolescents who reported using sex as a way of hurting themselves also endorsing NSSI (65.0%, n = 117). This is in line with earlier research which has also shown that there is an overlap of direct and indirect forms of self-injury, as well as different risky and maladaptive behaviors in adolescents (DiClemente et al., 1991; Duggan & Heath, 2014; St. Germain & Hooley, 2012). The findings can be summarized and discussed in six main points.

First, with regard to the functions endorsed for respective behaviors, automatic functions (i.e., to generate or regulate feelings or to punish oneself) were the most commonly reported functions in all three groups. Specifically, items "to relieve feeling numb or empty," "to punish yourself," and "to stop bad feelings" were the three functions most frequently endorsed, irrespective of SIB category. This confirms well-established data, replicated in several studies (Klonsky, 2007; Lloyd-Richardson, Perrine, Dierker, & Kelley, 2007; Nock & Prinstein, 2004; Wedig, 2014; Zetterqvist et al., 2013), which show that these functions are the main reason why adolescents engage in NSSI. There thus seems to be functional equifinality in these topographically different behaviors, in that they can be performed to achieve similar goals. This has previously been shown with regard to eating disorders and NSSI (Wedig, 2014; Wedig & Nock, 2010), but has up to now been largely unexplored with regard to NSSI and using sex to self-injure.

Second, social functions (items "to try to get a reaction from someone, even if it's a negative reaction," "to get attention," "to feel more a part of a group") and, in addition, the item that refers to regulating loneliness and perhaps boredom ("to give

yourself something to do when alone") seems to be more closely related to using sex to injure oneself. Our interpretation of this functional item in the SASI context is that adolescents also seek the company of others and engage in sexual activity as a means of self-injuring to avoid being alone, and therefore associate it with a social function, although other interpretations of this item are plausible and need to be explored further. Significantly more adolescents in the group who only reported SASI endorsed these social functions compared to the NSSI only group. Specifically, "to try to get a reaction from someone, even if it's a negative reaction" was the fourth most commonly endorsed function (34.1%) among those who used sex as a means of injuring themselves. Compared to the automatic functions, the social functions were less commonly endorsed in all three groups, and a similar result has previously been reported in connection with NSSI (Nock & Prinstein, 2004; Zetterqvist et al., 2013). NSSI is typically a behavior performed in solitude and often kept secret from others, whereas the form of self-injury where a sexual activity is deliberately engaged in to hurt oneself per definition involves other people, which could explain the relatively higher endorsement of social functional items in this group.

Third, significantly more NSSI social functions were endorsed by adolescents with both NSSI and SASI compared to those with only NSSI. Previous research has shown that social functions for NSSI are less commonly endorsed (Zetterqvist et al., 2013), and results from the present study preliminarily imply that certain social influence functions are reported by significantly more adolescents with experiences of only SASI compared to those with only NSSI, strengthening previous results on social functions. Interestingly, it would tentatively seem that adolescents with experience of both types of SIB (NSSI + SASI) have a greater need to regulate social experiences (e.g., to try to get help, to get others to understand how desperate they are and act differently toward them, to get a reaction from someone or by decreasing social demands), and that NSSI also meets social functions in this group.

Fourth, among individuals with both forms of SIB, significantly more adolescents endorsed automatic functions for their NSSI compared to adolescents with only NSSI. This perhaps indicates a need to escalate the SIB in order to find relief from an unbearable state of mind. This combined SIB group could potentially be more burdened with unmanageable negative emotions and therefore NSSI on its own is no longer sufficient to regulate emotions.

Fifth, adolescents who only reported engaging in sex as a means of deliberately injuring themselves reported a significantly higher total number of functions, as well as a higher number of automatic functions for this behavior compared to the NSSI functions for adolescents with only NSSI. The feeling generation/antidissociation functions in the automatic factor of NSSI have previously been associated with posttraumatic stress in adolescents (Nock & Prinstein, 2005), indicating that experiences of trauma, posttraumatic stress, and dissociation in adolescents with SASI could be an area for further studies.

Sixth, significantly more adolescents who reported both forms of self-injury endorsed several of the automatic functions for their NSSI, more than for their SASI. This group reported more severe NSSI, more cutting, and several different NSSI methods compared to those with only NSSI, indicating a more burdened and distressed group, compelled to engage in several different forms of self-injury. For adolescents with both SIBs, NSSI seems to be more clearly associated with automatic functions than is SASI. Methodologically, the functional items for NSSI came before the functional assessment of SASI in the questionnaire. A clear majority of adolescents with both forms of behavior thus first endorsed automatic functions for their NSSI, which is possibly why fewer adolescents endorsed automatic functions for SASI later on in the questionnaire. Those

with NSSI + SASI reported the highest number of total functions. In addition, these adolescents reported the highest percentage for automatic functions, indicating a high need for affect regulation. Specifically, the high endorsement of all NSSI automatic functions in combination with the highest number for most of the NSSI functions is in all likelihood associated with the fact that they were the group with the most severe NSSI. Previous studies have shown that more frequent, severe, and diverse NSSI increases the number of functions (Lloyd-Richardson et al., 2007).

Taken as a whole, the higher number of functions endorsed and the higher endorsement of automatic functions for NSSI as well as the fact that the adolescents had resorted to SASI leads to speculation about the etiology and nature of earlier life experience in this group. Perhaps this is a more traumatized population, specifically with regard to sexual abuse. The behavior also needs to be seen in the context of retraumatization and reenactment seen in trauma populations with possible symptoms of posttraumatic stress and dissociation, which would account for the high endorsement of automatic functions. This is the focus of a forthcoming study, which will contribute further to this research area, currently in paucity of empirical data.

Finally, we have avoided categorizing SASI as a direct or indirect form of self-injury. One argument for the direct form of self-injury is the immediate relationship in time between action (having sex) and function, especially the automatic functions, and also the fact that in another study from the same sample (Svedin, Priebe, Wadsby, Jonsson, & Fredlund, 2015), the majority (68%) of those who used SASI reported pain associated with the activity. SASI could also be considered a "direct" form as actual physical harm occurs without any intervening steps (Nock, Cha, & Dour, 2010) even though, apart from pain, it is difficult to establish alteration of body tissue. The direct and deliberate destruction of body tissue is central to direct self-injurious behavior according to the definition of NSSI, and this highlights the fact that we do not have detailed knowledge or understanding of the actions and the consequences to body tissue that result from SASI. On the one hand, this means that there is perhaps more support for the supposition that SASI should belong to the group of behaviors labeled as indirect SIB, in accordance with the suggested definition of St. Germain and Hooley (2012). On the other hand, the behavior might include both cases: with and without tissue damages, indicating that SASI can best be seen as a continuum of behavior ranging from indirect to direct SIB. Further studies are needed.

This study taps into the work of Hooley and St. Germain (2014), who discuss the relationship between direct and indirect self-injury and present three models for how the behaviors might be related: They can be seen either as alternative forms of SIBs, as differing in severity, or as distinct conditions. The present data show support for functional equivalence, where automatic functions were most commonly endorsed by all three groups of adolescents. Data thus support the idea that it can be fertile to use a functional approach in the examination of SIBs (Wedig, 2014) and also that individuals can alternate between a variety of SIB methods to achieve the goal of emotion regulation. Interestingly, data also lend support to certain distinct psychological characteristics, in that some specific social functions (mainly directed toward getting other people to react to one's situation, to get attention, to feel part of a group, to have something to do when alone, and to potentially reduce boredom or loneliness) were more common among adolescents with only SASI, compared to those who only engaged in NSSI. More studies are needed that can add further information to these preliminary data.

CONCLUSION

Despite being topographically different and, as such, distinct behaviors, NSSI and SASI share many functions. Automatic

functions referring to behaviors such as to relieve feeling empty and numb, to stop bad feelings, and to punish oneself were the three functions most frequently reported, irrespective of type of SIB endorsed. There thus seems to be functional equivalence between these behaviors. There were, however, also differences between groups. Significantly more adolescents who reported sex as a way of hurting themselves endorsed social influence functions than did adolescents with NSSI only. This social aspect has to do with the nature of the SIB chosen; abusive sex is per definition more social than NSSI, which is usually performed in solitude. This is supported by the fact that more adolescents endorsed the functions "to try to get a reaction from someone even if it's a negative reaction," "to get attention," "to feel more a part of a group," and "to give yourself something to do when alone."

Limitations

The data have been collected through self-report, which has a well-known bias with regard to recall and thus potentially influences validity. The FASM was originally developed to measure the functions of NSSI but is also used in this study to measure the functions of SASI, which has not previously been done. The internal consistency for the factors avoiding demands ($\alpha = .60$) and peer identification ($\alpha = .53$) of the FASM when assessing SASI functions was relatively low. These factors only contain a few items, which could explain the lower alpha value, in combination with the fact that the FASM was not originally developed for SASI functions. The similarities in functions between groups could be explained by the fact that the same instrument was used. If different functions had been included it might have resulted in more differences between groups. It does, however, seem to have been a useful method to assess functions of both behaviors in this first explorative investigation.

The use of an instrument originally developed for NSSI with a set list of functions can be problematical and affect the results by limiting choices for the SASI group. It is possible that there are some functions that adolescents with SASI would endorse that individuals with NSSI might not even consider, and which have thus been overlooked due to the design of the present study. To our knowledge, no previous studies have been published on the functions of SASI, and the preliminary results from our study need to be confirmed by additional qualitative studies. The FASM has, however, previously been used successfully in a sample of individuals with eating disorders (Wedig & Nock, 2010).

Another limitation is that we do not know which behavior came first; that is, if adolescents started with NSSI and then progressed to SASI or the other way around. Clinical interviews with adolescents who have experience of both behaviors have reported similar functions and that their SASI had a later debut than NSSI (Jonsson et al., 2015). Other forms of destructive, maladaptive risky behaviors were not assessed, which would have been an interesting step in the process toward a conceptualization of SASI. Statistically, there were multiple comparisons, which increases the risk for type I errors, especially with an explorative approach, which is why significances at the .05 level were not highlighted in the text. Furthermore, cell sizes for some of the less common functions were very small and Fisher's exact test was used. In these cases, the tests of significances have to be interpreted with caution, due to questionable validity. Finally, the assessment of SASI has some limitations as only one item was used without providing further explanation of the behavior.

Clinical Implications

As there is support for a co-occurrence of different SIBs, it is advisable in clinical practice to assess several different forms when one or more have been reported by adolescents. There is generally some reluctance to reveal socially unacceptable

behaviors, and without active questioning, there might be a risk of underidentification.

It is thus important to assess both indirect and direct types of SIB. Individuals with several self-destructive behaviors are usually a particularly distressed group, with a need to regulate emotional difficulties. A functional approach can be useful when designing clinical interventions. Emotion regulation deficits are an underlying cause of many SIBs, and attention should therefore be paid to increasing such skills in the context of both direct and indirect self-injury. Increasing social skills for receiving human attention, help, achieving a sense of togetherness with others, and strengthening relationships also seem to be important, together with directing interventions to the social context to prevent the need for self-abusive destructive behaviors.

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