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Editorial:

Further Evidence that Projective Techniques Continue as Popular Clinical Assessment Tools in Practice Settings

Despite continuing criticism regarding the psychometric credibility of projective techniques, evident in the scholarly literature (e.g., Imuta et al., 2013; Lawrence et al., 2021; Ryan et al., 2019), mounting recent evidence indicates that projective tests are considered an integral part of acceptable methods used or applied in research studies (Eby, 2020; Piotrowski, 2022). In fact, a quick perusal of the recent literature shows the presence of projective measures are relied upon and embedded in research studies (e.g., Aoki & Kogayu, 2021; Bram et al. 2018; McGlone & Viglione, 2020; Schapers et al., 2021; Tafti et al., 2021; Toeplitz, 2013; Yuan et al., 2021). Moreover, I note several novel adaptations to drawing tests, which continue to attract research attention over the past decade: 'Draw-a-Person-in-the- Rain' test (Willis et al., 2010), 'Person Picking an Apple from a Tree' technique (Potchebutzky et al., 2020), and the newly developed 'House Imagery Test' (Yuan et al., 2021). Perhaps reflecting the acceptability and relevance of projective assessment, chapter coverage in recent texts on psychological assessment clearly depicts the importance of projective techniques in clinical and child psychology applied to the mental health evaluation process (Saklofske et al., 2013; Sellbom & Suhr, 2020; Verdon & Azoulay, 2020; Weiner & Kleiger, 2021; Wright, 2020; Yalof & Bram, 2021).

All this bodes-well for research, but what about the status of projective testing in practice/applied settings, particularly as a foundation for forming a conceptual therapeutic framework in mental health treatment? Hence, the purpose of this commentary is to address this specific issue by examining recent test usage findings, based on empirical data, as reported by practitioners.

Of particular interest are the findings of 2 recent dissertations regarding the use of projective tests by practicing psychologists. The first study surveyed a sample of 510 members of APA Division 12 (both clinical child and pediatric psychologists) on the use of drawings (H-T-P, DAP, KFDs) in assessment (Longest, 2006). The most interesting observation is that 25% of the practitioners responded to the survey. Such attention to drawings in clinical practice shows a continued professional interest in projective assessment (see Piotrowski, 2016). More recent data on the use of a variety of projective techniques by psychologists were reported in a dissertation on current assessment practices in the context as an aid in therapy (Hanigan, 2021). This study surveyed licensed psychologists in practice across a myriad of applied settings in the USA. Of the 293 respondents, 29% were engaged in assessment for 20+ hours/per week (this is a slight increase from survey data reported over the past 2 decades). In addition, 55% of these practitioners use at least one projective technique (45% don't use any projective measures). Frequency of projective test usage is of particular interest, and I outline the findings below (% of respondents):

Table 1: Frequency of projective test usage

Tests	Use by practicians in percentage
Rorschach	35
Thematic Apperception Test	26
House-Tree-Person	24
Sentence Completion Test (Rotter)	20
Kinetic Family Drawings	17
Children's Apperception Test	14

Draw-A-Person	12
*Other projective tests	18

What is particularly noteworthy regarding the findings reported in the Hanigan (2021) study is that use of projective measures was compatible to the extent of reliance on objective tests (e.g., the Millon Inventories, the NEO, and the 16PF) by this national sample of psychologists. Furthermore, this study found nearly equal usage of the Rorschach-Performance Assessment System versus Exner's Comprehensive System. This latter finding reflects the perennial scholarly debate regarding the relative status of these 2 Rorschach approaches in contemporary personality assessment (see Gacono & Smith, 2022 for a discussion).

Overall, the continued presence of projective measures in the research literature, the introduction of a host of novel projective techniques in recent years, and contemporary survey data on test usage clearly confirm the fact that projective techniques remain a significant part of the assessment armamentarium of mental health professionals. Indeed, this corroborates the conclusions of earlier reviews on psychological testing practices (see Frauenhoffer et al., 1998; Hughes et al., 2007; Piotrowski, 2015).I note one caveat to these general conclusions: The current pandemic has had a very detrimental impact on the assessment enterprise (Gicas et al., 2021; Krach et al., 2020), particularly with regard to the use of the Rorschach. In fact, a recent survey of members of the Society for Personality Assessment (noted in Ales et al., 2022) found that 52% of SPA practitioners have ceased conducting clinical assessment due to the challenges of test administration via tele-health mediums in the context of COVID-19. This disengagement of personality assessment practice has been corroborated in an analysis of the recent mental health literature related to COVID-19 (Piotrowski & Watt, 2021).Hence, we must await the findings of future studies (post-COVID) before an accurate appraisal on the nature and extent of psychological testing (particularly projective techniques) can be determined (Krishnamurthy et al., 2022). But, for now, projective assessment appears alive and (somewhat well) in the field of mental health evaluation.

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Suicide Risk among Habitual Non-Suicidal Self-Injury Individuals on the Rorschach

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This study examined the characteristics of habitual self-injurers who are at higher risk for suicide by comparing Non-suicidal Self-injury (NSSI) behaviors, clinical history, and psychological characteristics on Rorschach between habitual NSSI individuals who had attempted lethal suicide and those who had not. Individuals (n=45) who attempted suicide used multiple methods of self-injury, and their injuries were more severe. They also had no memory of the self-injurious behavior. On the Rorschach, S-CON≧7 was also more common in those with a history of suicide attempts. Negatively biased cognition (MOR>3) and limited ability to provide ideas and solutions to life problems (P<17) were more common features in habitual NSSI individuals with a history of suicide attempts. Furthermore, more than half of those who experienced suicidal behavior had a history of school absences. Among the habitual NSSI individuals, the high suicide risk group who had attempted suicide showed many behavioral characteristics such as variety and severity of self-injurious behaviors. On the other hand, based on the Rorschach results, psychological characteristics such as negative cognition and inflexibility of thinking were also more common in the high suicide risk group, which may be an important diagnostic marker in the assessment of suicide risk and subsequent treatment.

Introduction:

Non-suicidal self-injury (NSSI) is an act of intentionally hurting oneself without suicidal intent and includes cutting, scalding, stabbing, hitting, and excessive friction, thereby often causing bleeding, bruising, and pain (Klonsky & Muehlenkamp, 2007; Nock & Favazza, 2009). Although NSSI is an explicit behavior without suicidal intent, it is closely related to suicidal acts and has been found to constitute a major risk for suicide. Owens, Horrocks, and House (2002) reviewed follow-up surveys of those who exhibited self-injury and stated that "For subsequent suicide, the increment in the median after a longer follow-up is relatively much more - from less than 2% at 1 year up to nearly four times greater in the studies lasting over 9 years." About a third of those with a history of NSSI had experienced suicidal thoughts, whereas 70% and 55% had attempted suicide at least once and multiple times, respectively (Klonsky, May, & Glenn, 2013). Among female outpatients with a history of self-injury, 18.9% had drug overdosed within 1 year, and 22.4% had attempted suicide using highly lethal means within 3 years (Matsumoto, et al, 2008).

Currently, there are two main clinical variables used in NSSI suicide prediction. One is self-injury behavioral characteristics, and the other is childhood history. Prior studies have predicted the risk for suicide on the following characteristics of NSSI behaviors: low sensitivity to pain that is needed to carry out suicidal acts (Ammerman, Burke, Alloy, & McCloskey, 2016; Franklin, Hessel, & Prinstein, 2011; Hooley, et al. 2010; Joiner, 2005; Van Orden, et al, 2008), duration longer than 1 year (Grandclerc, et al, 2016; Willoughby, Heffer, & Hamza, 2015), higher number of methods used (Turner, Layden, Butler, & Chapman, 2013; Victor & Klonsky, 2014), severity of injuries (Lloyd-Richardson, et al., 2007） and frequency (Andover & Gibb, 2010; Darke, et al, 2010; Paul et al., 2015).

Moreover, the latter studies reported that childhood factors such as traumatic events and family abusive environment are related to self-injury and suicide risk (Baiden, Stewart, & Fallona, 2017; Cutajar et al., 2010). However, to understand the mechanism by which NSSI leads to suicidal behavior and to provide therapeutic intervention, it is necessary to understand not only the past trauma history and visible suicide-related behaviors intervention, it is necessary to understand not only the past trauma history and visible suicide-related behaviors, but also the current psychological characteristics of the individual with NSSI in detail. Therefore, the current

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Keywords: Non-suicide self-injury (NSSI), suicide risk, Rorschach, dissociation

article is concerned with the psychological features on Rorschach, as well as NSSI behaviors and childhood factors in the habitual NSSI individuals with a history of attempted suicide. Moreover, the latter studies reported that childhood factors such as traumatic events and family abusive environment is related to self-injury and suicide risk (Baiden, Stewart, & Fallona, 2017; Cutajar et al., 2010). However, to understand the mechanism by which NSSI leads to suicidal behavior and to provide therapeutic intervention, it is necessary to understand not only the past trauma history and visible suicide-related behaviors, but also the current psychological characteristics of the individual with NSSI in detail. Therefore, the current article is concerned with the psychological features on Rorschach, as well as NSSI behaviors and childhood factors in the habitual NSSI individuals with a history of attempted suicide.

Commonly used concrete risk assessments of self-injury and suicide behavior include self-administered questionnaires and structured interviews. However, individuals with self-injury and suicide attempts have high dissociative tendencies, such as vague or absent memories at the time of the act, and low sensitivity to pain (Aoki, 2015; Ford & Gómez, 2015; Karpel & Jerram, 2015; Saxe, Chawla, & Van der Kolk, 2002). Therefore, it is difficult to obtain accurate answers when asked about their condition at the time of the act, and questionnaires or structured interviews alone may not be sufficient for an adequate assessment (Aoki, 2015). In such cases, the addition to the Rorschach, multi-method assessment may be useful in providing clinical support for NSSI.

There have been several Rorschach studies on self-injury, but most of these compare patients with and without self-injury and have small sample sizes. Kochinski, Smith, Baity, and Hilsenroth (2008) compared the Rorschach variables of adolescent inpatients with and without self-injury and found that patients who self-injured had significantly higher mean scores for Aggressive Past (Ag Past), suggesting that self-injurers may struggle with internally directed aggression and victimized sense of self. Baity, Blais, Hilsenroth, Fowler, and Padawer (2009) compared Rorschach variables for borderline personality disorder with and without self-injury and found that patients who self-injured had significantly higher scores on variables related to dependence. On the other hand, Aoki (2005) focused on dissociation, which increases suicide risk, and showed that individuals without memories of self-injury were significantly higher in "V" as an indicator of self-denial, "Non-F" as a lack of objectivity, and "invasive response from the object recognized in the card" as a weakness in ego boundaries.

There are many studies that have investigated suicide using the Rorschach. Several studies revealed some suicide indicators with high concurrent validity among the administered questionnaires, thereby effectively predicting suicides (e.g., Blasczyk-Schiep, Kazén, Kuhl, & Grygielski, 2011). Early research on suicide in the Rorschach began with identifying common indicators among people who affected their own death. Initially, it was common to focus on only one variable; however, other indicators such as minus form level of human movement responses (M-) (Hertz, 1948), color-shading blends (Applebaum & Colson, 1968; Applebaum & Holzman, 1962; Hansell, Lerner, Milden, & Ludolph, 1988), transparency in the content analysis of response (Blatt & Ritzer, 1974; Hansel et al., 1988; Kestenbaum & Lynch, 1978; Rierdan, Lang, & Eddy, 1978) and frequency of responses with morbid content (MOR) (Broida, 1954; Lindener, 1946) were also observed to be common features among suicide victims, and therefore, follow-up studies were conducted. Moreover, studies based on suicide with a single variable are currently considered to be statistically unstable, while those with composite and multiple variables, namely, those akin to the constellation approach are considered more useful (Blasczyk-Schiep et al.,2001; Fowler, Piers, Hilsenroth, Holdwick Jr, & Padawer, 2001; Viglione & Taylor, 2003). Particularly, the validity of Suicide Constellation (S-CON) according to Comprehensive system (CS) (Exner, 2001) has been considered (Exner, Martin, & Mason, 1984; Exner & Wylie, 1977). S-CON consists of 12 variables, extracted from the data on those who effected their own death within 60 days of undergoing the

Rorschach, and a score of 8 or more is considered a suicide risk. Some 90% individuals with S-CON score of 7 or higher were suicidal, but false positives also increased. Subsequently, Fowler et al. (2001) argued that S-CON score of 7 or higher was well suited to predicting suicide and can be used as a cut-off value. Thus, there are many Rorschach useful findings on the topic of suicide; however, no Rorschach study has directly revealed the relationship between suicide risk and self-injury. In addition, a review of recent trends in Rorschach research, self-injury research itself is extremely rare. An exploratory bibliometric "topic" analysis by Piotrowski (2017), which focused on primary Rorschach studies published between 2000 and 2016, found 10 studies on suicide, or 1.5% of all Rorschach studies, but no self-injury studies were found in the analysis.

In summary, a myriad of studies has examined the association between NSSI and suicide, but few have focused on the characteristics of habitual NSSI individuals who are at higher suicide risk, especially those with a history of suicide attempts. Furthermore, although many studies have focused on NSSI behaviors and clinical history as a suicide risk factor, there have not been enough studies that have focused on psychological characteristics, except for those that have examined emotional control using questionnaires. However, since self-injurers have dissociative tendencies and metacognitive vulnerabilities, assessments other than questionnaires may also be useful and clinically informative.

Therefore, the current study focused only on habitual NSSI individuals with self-injurious behavior for more than one year and divided these individuals into those with and without a history of highly lethal suicide (e.g., gastric lavage due to drug overdose, suicide by jumping, suicide by hanging) according to the criteria provided by Douglas et al. (2004). In addition, the study compared NSSI behaviors, clinical history, and psychological characteristics on Rorschach. Hence, the purpose of this study is to identify the characteristics of NSSI individuals who are at very high risk for suicide.

Methods:

Participants:

Participants had been patients at psychiatric hospitals between 2010 and 2018, exhibiting repetitive NSSI. The criteria for repetitive NSSI were as follows: (1) NSSI behaviors continued for more than one year and (2) NSSI behaviors were carried out several times in a month. Moreover, according to the rule of the CS that “Protocols that contain less than 14 responses should probably be discarded on the premise that they are unreliable and as such are not interpretively valid (Exner, 2001)," two participants were excluded because of the lack of responses (<14) and the data from 45 participants were used for analysis.

The mean age was 24.78 years (*SD*=7.99). The sample included three men and 42 women. The participants were divided into two groups, the group that have attempted to commit highly lethal suicide at least once (e.g., gastric lavage from drug overdose, jumping, hanging, etc.) (N=16) and the group that have not (N=29). The former is the suicide attempt group (SA Group) and the latter is no-suicide attempt group (N-SA Group). No statistical difference was found between the two groups in term age, the years of education, diagnoses, gender, and occupation (see Table 1 and Table 2).

Table 1. Demographic variables for the sample

	Suicide attempt group（N=16）	**No-suicidal attempt group(N=29)**	**Total**	*p*
Gender				
Male	1 (6.3%)	2 (6.9%)	3 (6.7%)	1.00
Female	15 (93.8%)	27 (93.1%)	42 (93.3%)	
Total	16 (100%)	29 (100%)	**45 (100%)**	
diagnosis				

Posttraumatic stress disorder	3	(18.8%)	6	(20.7%)	9	(20.0%)	
Dissociative Disorder	6	(37.5%)	8	(27.6%)	14	(31.1%)	
Anxiety Disorder	1	(6.3%)	6	(20.7%)	7	(15.6%)	
Mood Disorder	1	(6.3%)	5	(17.2%)	7	(15.6%)	
Personality Disorder	5	(31.3%)	4	(13.8%)	9	(20.0%)	
Total	16	(100%)	29	(100%)	**45**	**(100%)**	
Occupation							
YES	9	(56.3%)	15	(51.7%)	24	(53.3%)	0.77
NO	7	(43.8%)	14	(48.3%)	21	(46.7%)	
Total	16	(100%)	29	(100%)	**45**	**(100%)**	

Fisher's test in Gender, chi-square in occupation

Table 2. Age and Education duration for the sample

	Suicide attempt group (N=16)		**No-suicidal attempt group (N=29)**		*t*	*p*
	M	**SD**	**M**	**SD**		
Age	27.25	10.02	23.41	6.40	-1.57	0.12
Education duration	13.25	2.93	13.83	2.38	0.72	0.48

Procedures:

The participation of patients confirmed or diagnosed with habitual NSSI by their attending psychiatrists or clinical psychologists was requested, in addition to the use for research purposes of self-injury data, clinical history data, and Rorschach data necessary for treatment. Participants were explained that the data would be digitized for use, that their identities would be protected, and that they could withdraw their consent at any time without affecting their medical care. The study target was the clinical and assessment data of patients who provided informed consent. The survey was conducted with the approval of the Committee on Ethics of the Faculty for Research in Human Sciences, Tsukuba University, Japan.

Measures:

To assess the behavioral characteristics of the NSSI, duration, frequency, number of methods, severity, memory of NSSI, place in NSSI, injured body areas and pattern of the scar. These items were chosen in reference to Deliberate Self-Harm Inventory (DSHI), and original items was added more. DSHI is a self-report questionnaire to assesses deliberate self-injury behaviorally. This measure is composed of 17 items and assesses various aspects of deliberate self-injury (Gratz, 2001). To assess risk behavior as indirect self-harm, binge-eating, over-dose and sexual risk-taking behaviors. To assess the clinical history, child abuse, other family problems, sexual assault, bullying and school refusal. To assess psychological features of NSSI, the data on the Rorschach were obtained according to CS (Exner, 2001). In this study, S-CON (Exner & Wylie, 1977; Exner et al., 1984) was used.

Data analysis:

First, to assess NSSI features, suicide related behaviors and clinical history within the samples, the chi-squared test, Fisher's exact test and t-test were used. Next, for the Rorschach data, the two certified psychologists scored the responses using the Comprehensive System (Exner, 2001). The first author coded all responses. To assess interrater reliability, 15 protocols were then randomly selected and independently recoded by the second author or the third author. Reliability between the two raters was analyzed using the intra class correlation coefficient

(ICC). Results indicate that all the measures included in this study had very good to excellent interrater reliability, ranging from 0.43 to 1.00. According to standard benchmarks for interpreting ICC values (Cicchetti, 1994; Shrout & Fleiss, 1979), all variables included in the analyses showed excellent interrater reliability (i.e., ICC ≧.75) except for 3r+(2)/R<.31 or.>44, which showed a fair level of interrater reliability (i.e., ICC≧.40).

Results:

As for the method of NSSI, all participants used wrist cutting, but significantly more participants in the SA group used multiple methods of self-injury such as hitting one's head against the wall, stabbing, or striking (75.0%). In the N-SA Group, 65.5% repeated only wrist-cutting, whereas only 34.5% repeatedly used multiple methods. *P=0.01*.（Table 3).There were significant differences in the severity of self-injuries. In the SA Group, significantly more participants (43.8%) injured themselves to the point that medical treatment was necessary, such as wrist-cutting that required sutures than the N-SA Group (13.8%, p=0.04). In terms of dissociative tendencies during self-injury, sensitivity to the pain of self-injury was low in all participants. On the other hand, significantly more participants in the SA group (56.3%) had no or vague memories during self-injury. Thus, 79.3% of participants in the N-SA group had memories of self-injury, while 20.7% had no memories (χ^2= 5.87, df= 1, p<.05). No statistical difference was found between the two groups in NSSI duration and NSSI age of onset (Table 4), place in NSSI, injured body areas and pattern of the scar (Table 3). There were significant differences in the overdose of the level that it is not the fatal dose or does not need gastric irrigation. In the SA Group, overdose was significantly more common (93.8%). In the N-SA Group, only 34.5% had taken an overdose (p<.001). No statistical difference was found between the two groups in binge-eating and sexual risk-taking behaviors.

As for clinical history, there were no significant differences on all family factors and trauma factors. However, there were significant differences in school adaptation. In the SA Group, significant more participants (56.3%) had been school refusal. In the N-SA Group, only 24.1% had school refusal career (χ^2= 4.64,df= 1, p < .05)（Table 5).

Further, both the groups' Rorschach variables were compared. There was no significant difference in S-CON applicability (S-CON≧8)(Table 6). However, there was a significant difference for S-CON≧7. In other words, 43.8% in the SA Group had S-CON≧7 scores, whereas 13.8% in the N-SA Group had a significantly lower S-CON≧7 scores (p<.05).

Table 3. NSSI and suicide related behaviors

	Suicide attempt group（N=16）		No-suicidal attempt group (N=29)		Total		χ_2	p
Methods of NSSI								
1 (wrist-cutting only)	4	(25.0%)	19	(65.5%)	23	(51.1%)		0.01 *
≧2	12	(75.0%)	10	(34.5%)	22	(48.9%)		
Total	16	(100%)	29	(100%)	**45**	**(100%)**		
Severity of NSSI								
Suture required	7	(43.8%)	4	(13.8%)	11	(24.4%)		0.04 *
No suture	9	(56.3%)	25	(86.2%)	34	(75.6%)		
Total	16	(100%)	29	(100%)	**45**	**(100%)**		
Awareness of NSSI								
Awareness	7	(43.8%)	23	(79.3%)	30	(66.7%)	5.87	0.02 *

No awareness	9	(56.3%)	6	(20.7%)	15	(33.3%)		
Total	16	(100%)	29	(100%)	**45**	**(100%)**		
Place in NSSI								
Alone only	14	(87.5%)	29	(100%)	43	(95.6%)		0.12
Public or alone	2	(12.5%)	0	(0.0%)	2	(4.4%)		
Total	16	(100%)	29	(100%)	**45**	**(100%)**		
Scar of wrist cut								
Regular	11	(68.8%)	25	(86.2%)	36	(80.0%)		0.25
Random	5	(31.3%)	4	(13.8%)	9	(20.0%)		
Total	16	(100%)	29	(100%)	**45**	**(100%)**		
Over dose								
Yes	15	(93.8%)	10	(34.5%)	25	(55.6%)		0.00***
No	1	(6.3%)	19	(65.5%)	20	(44.4%)		
Total	16	(100%)	29	(100%)	**45**	**(100%)**		
Binge eating								
Yes	5	(31.3%)	10	(34.5%)	15	(33.3%)	0.48	0.83
No	11	(68.8%)	19	(65.5%)	30	(66.7%)		
Total	16	(100%)	29	(100%)	**45**	**(100%)**		
Sexual risk behaviors								
Yes	5	(31.3%)	4	(13.8%)	9	(20.0%)		0.25
No	11	(68.8%)	25	(86.2%)	36	(80.0%)		
Total	16	(100%)	29	(100%)	**45**	**(100%)**		
Injured body area								
Body only	15	(93.8%)	29	(100%)	44	(97.8%)		0.36
Face or body	1	(6.3%)	0	(0.0%)	1	(2.2%)		
Total	16	(100%)	29	(100%)	**45**	**(100%)**		

Fisher's test in the item with the cell less than 5, chi-square in without the cell less than 5.
* p <.05, **p <.01, ***p <.001

Table 4. NSSI history

	Suicide attempt group (N=16)		**No-suicidal attempt group (N=29)**		t	p
	M	SD	M	SD		
NSSI age of onset	20.13	8.66	19.24	6.02	-0.40	0.69
NSSI duration	7.56	6.49	4.24	3.04	-1.93	0.07 +

+ p <.10

Table 5. Clinical history

	Suicide attempt group（N=16）		No-suicidal attempt group (N=29)		Total		χ_2	p
Child abuse								
Yes	4	(25.0%)	4	(13.8%)	8	(17.8%)		0.43
No	12	(75.0%)	25	(86.2%)	37	(82.2%)		
Total	16	(100%)	29	(100%)	**45**	**(100%)**		
Family problems								
Yes	12	(75.0%)	20	(69.0%)	32	(71.1%)		0.74
No	4	(25.0%)	9	(31.0%)	13	(28.9%)		
Total	16	(100%)	29	(100%)	**45**	**(100%)**		
Sexual assailment								
Yes	8	(50.0%)	10	(34.5%)	9	(40.0%)	1.03	0.31
No	8	(50.0%)	19	(65.5%)	36	(60.0%)		
Total	16	(100%)	29	(100%)	**45**	**(100%)**		
School refusal								
Yes	9	(56.3%)	7	(24.1%)	16	(35.6%)	4.64	0.03*
No	7	(43.8%)	22	(75.9%)	29	(64.4%)		
Total	16	(100%)	29	(100%)	**45**	**(100%)**		
Bullying								
Yes	2	(12.5%)	6	(20.7%)	8	(17.8%)		0.69
No	14	(87.5%)	23	(79.3%)	37	(82.2%)		
Total	16	(100%)	29	(100%)	**45**	**(100%)**		

Fisher's test in the item with the cell less than 5, chi-square in without the cell less than 5.* p <.05

Table 6. Major results of RT

	Suicide attempt group (N=16)		No-suicidal attempt group (N=29)		Total		X_2	p
S-CON≧8								
Yes	3	(18.8%)	1	(3.4%)	4	(8.9%)		0.12
No	13	(81.3%)	28	(96.6%)	41	(91.1%)		
Total	16	(100%)	29	(100%)	**45**	**(100%)**		
S-CON≧7								
Yes	7	(43.8%)	4	(13.8%)	11	(24.4%)		0.04 *
No	9	(56.3%)	25	(86.2%)	34	(75.6%)		
Total	16	(100%)	29	(100%)	**45**	**(100%)**		
Color-shading blends								
Yes	11	(68.8%)	12	(41.4%)	23	(51.1%)	3.09	0.08＋
No	5	(31.3%)	17	(58.6%)	22	(48.9%)		
Total	16	(100%)	29	(100%)	**45**	**(100%)**		
MOR>3								
Yes	8	(50.0%)	5	(17.2%)	13	(28.9%)	5.39	0.02 *

	No	8	(50.0%)	24	(82.8%)	32	(71.1%)	
	Total	16	(100%)	29	(100%)	**45**	**(100%)**	
CF+C>FC								
	Yes	11	(68.8%)	12	(41.4%)	23	(51.1%)	3.09	0.08+
	No	5	(31.3%)	17	(58.6%)	22	(48.9%)	
	Total	16	(100%)	29	(100%)	**45**	**(100%)**	
R<17								
	Yes	11	(68.8%)	7	(24.1%)	18	(40.0%)	8.55	0.00 **
	No	5	(31.3%)	22	(75.9%)	27	(60.0%)	
	Total	16	(100%)	29	(100%)	**45**	**(100%)**	

Fisher's test in the item with the cell less than 5, chi-square in without the cell less than 5.
$+p$ <.1, * p <.05, **p <.01

In detail, among 12 variables of S-CON, there were significant differences for 2 variables –both MOR>3 and R<17. 50.0% in the SA Group had MOR>3, whereas 17.2% in the N-SA Group had a significantly lower MOR>3 ($\chi^2 = 5.39, df = 1, p < .05$). 68.8% in the SA Group had R<17, whereas 24.1% in the N-SA Group had a significantly lower R<17. $\chi^2 = 8.55, df = 1, p < .01$. Moreover, the SA Group had significantly higher trends for another 2 variables- both color-shading blend >0 and CF+C>FC in S-CON ($p < .10$)

Discussion:

These results suggest that individuals who have attempted suicide one or more times are significantly more likely to use multiple methods of self-injury and are more likely to engage in self-injurious behaviors that are severe enough to require medical treatment and treatment for overdose. Prior studies (Lloyd-Richardson et al., 2007; Turner et al., 2013; Victor & Klonsky, 2014) have argued that the severity of self-injury and use of multiple self-injury methods are closely related to the risk of suicide, which is in line with this finding. In the case of habitual NSSI, if there is a history of suicide attempts, high severity of self-injury, and use of multiple methods of self-injury, it is essential to carefully monitor the progress of the individual, considering the possibility of suicidal behavior, in supporting the individual. Moreover, this analysis discovered that 56.3% of those who had suicidal behavior sometimes reported no memory of their self-injury itself, which was more than twice as common as in no-suicide behavior group. Although previous studies have reported that self-injurers at high risk for suicide have low sensitivity to pain (Ford et al., 2015; Karpel & Jerram, 2015; Saxe et al., 2002), the results of the current study further indicate that self-injurers who have attempted suicide may have no memories of self-injury events. The inability to grasp one's own self-injury, such as dissociation, could lead to lack of the control of self-injury behaviors, and as a result, can lead to high suicide risk.

Furthermore, 56.3% of those who had suicidal behavior had a history of school refusal, compared to 24.1% of those who had no history of school refusal. Recent research on NSSI has focused on family factors and less attention has been paid to whether school-related factors play a role in NSSI. However, interpersonal theories of suicide (Joiner, 2005; Van Orden et al., 2008) have already indicated that interpersonal factors have a significant impact on suicide and suicide-related behavior. The results of the present study suggest that problems in the interpersonal setting of school as well as within the home may increase the risk of suicide for NSSI individuals. Interpersonal problems may be a factor that cannot be ignored in suicide and self-injury, both inside and outside the home.

Moreover, in terms of the Rorschach Index, 43.8% of those with a suicidal history scored 7 or higher on S-CON, while only 13.8% of those without a suicidal history scored 7 or higher. S-CON≧7 may be an indicator

of higher-risk suicidal behavior in habitual self-injurers. Among variables constituting S-CON, MOR>3 and R<17 presented significant difference and color-shading blends>0 and CF+C>FC presented significant trends. MOR scored damage-related contents such as “broken” or “worsen,” while R<17 indicated few responses. Those who self-injury and have a history of suicidal behaviors have negatively biased cognition and a limited ability to provide ideas, or solutions to life problems (Exner, 2001). If these behaviors occur simultaneously, it could potentially increase the risk of future suicide attempts. Moreover, color-shading blends is considered an indicator of sensitivity indicator of suicidality and the failure to cope effectively with painful affect (Fowler et al., 2001; Kumar, Nizamie, Abhishek, & Prasanna, 2014). CF+C>FC indicates weakness of emotional regulation. These two affective variables may increase suicide risk when acting in combination with each other, although Rorschach results showed no significant difference, with only a significant trend for weaknesses in emotional control.

The present results suggest that many habitual NSSI individuals may lack memory of self-injury among those who habitually engage in NSSI. If self-administered questionnaires and interviews do not provide sufficient information about self-injurious behavior, an S-CON≧7 on the Rorschach may be an indicator of the likelihood of high-risk suicidal behavior. Negative cognition and rigidity of thinking were assumed to increase suicide risk in NSSI habitants at high risk for suicide, suggesting that approaches to cognitive interventions are needed in treatment and personal support.

Conclusions:

The present study focused on habitual self-injurers with a history of suicide attempts, who are at higher risk of suicide among NSSI individuals, and examined their characteristics of self-injurious behavior, upbringing history, and psychological characteristics on Rorschach. Comparing the results with and without a history of attempted suicide, those who had exhibited at least one incident of suicidal behavior had used multiple methods to self-injury and that the degree of their injuries was more severe. Moreover, over half of those who had suicidal behavior sometimes had no awareness of their self-injury. Although their self-injury might not have involved the intent to commit suicide, their behaviors indicated a high risk of suicide. On the Rorschach, it was suggested that S-CON ≧7 may be an indicator of risky suicidal behavior. Especially, negatively biased cognition (MOR>3) and a limited ability to provide ideas or solutions to life problems (R<17) was significantly shown a lot in the NSSI individuals who took a suicide attempt. It is suggested that approaches to intervening with negative cognitions and increasing stress coping patterns may be helpful in supporting habitual NSSI individuals who are at high risk for suicide. Furthermore, more than half of those who had experienced suicidal behavior had a history of school refusal, suggesting that adjustment issues at school, as well as at home, may increase the risk of suicide.

Limitations:

The sample size of this study was small since it was limited to those who had been habitually self-injuring for more than one year, which was confirmed not only by self-report of the NSSI individuals but also by medical professionals. Therefore, the statistical validity of findings in this study is somewhat limited. In addition, this study only compared the frequency of each variable according to the presence or absence of a serious suicide attempt and did not examine the relationship among variables. Therefore, the conclusions presented here are considered preliminary. More detailed studies with a larger number of participants are needed in the future.

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Use of Projective Techniques with the Elderly: An Historical Analysis of Key Research Studies

Chris Piotrowski

A review of the mental health literature clearly indicates that both clinicians and researchers have considered various projective measures as suitable and pragmatic assessment instruments in the mental health evaluation of the elderly. The aim of the current study is to present a brief overview of this body of scholarship, based on a bibliographic analysis. To that end, a comprehensive search of the database *PsycINFO* identified 35 peer-reviewed articles with a focus on projective tests and aged populations. Of these, the author determined that 23 references were either select reviews or empirical studies. Based on an aggregated analysis of this dataset (1954-2016), the author contends that projective techniques have the ability to reveal latent psychodynamics, identify cognitive deficits, and differentiate select diagnostic groups. These attributes of projective measures are a key feature in the assessment of the elderly, where issues such as depression, declining health, and deficits in verbal expression are critical clinical challenges. A select bibliography of key studies is provided.

Introduction:

From an historical perspective, projective techniques were in the limelight in the mid-20th century, evident by exponential levels of both research and clinical attention (Gilbert & Hall, 1962; Lemov, 2011; Murstein, 1965; Piotrowski, 2015a). And much of this scholarly attention has had a focus on the elderly (see Hayslip & Lowman, 1986; Lawton et al., 1980; Oberleder, 1967; Overall & Gorham, 1972). Moreover, Panek (2006), in a classic commentary, argued that projective techniques are a clinically viable aid in forming reliable assessments of pathology and differential diagnostic decision-making in the mental health evaluation of aged patients. However, Piotrowski (2019) concluded that, based on bibliometric analyses, personality testing is rather neglected in assessment practices of the elderly. Hence, it would be worthwhile to review scholarly work regarding the issue of the status of projective techniques reflected in the research literature. To that end, the aim of current study is to provide an overview of key studies with a focus on projective tests, from a historical perspective. Thus, this review should support the position that clinical work with the elderly indeed has a central role in both geriatrics and in gerontological psychology (Karpf, 1978).

With regard to Rorschach testing with the elderly, prior research concluded that constriction, stereotypy, and problems with perceptual clarity contributes to fewer responses, higher *W%*, fewer *M* and *C,* and more card rejections (e.g., Ames, 1966). Weiner et al. (2019) provides a contemporary overview on Rorschach assessment with elderly individuals.

With regard to 'thematic' measures, researchers have used up to 12 cards from the TAT when testing older adults and relied on specially selected cards not from the original TAT set. Due to the lack of specialized measures for the assessment of aged individuals, clinicians developed the Gerontological Apperception Test (GAT; Wolk & Wolk, 1971)and the Senior Apperception Test (SAT; Bellak, 1975). Both these instruments have a moderate level of visibility in the literature, in addition traditional projective techniques. The GAT purports to allow easier identification with aged peers than the TAT. A central critique of both the GAT and SAT is the negatively stereotyped depiction of the elderly. Thus, this raises serious validity concerns (see Swensen, 1972).

Table 1 presents the 23 studies identified via a search of *PsycINFO*, where the Boolean online search had a focus on projective techniques with elderly populations. Several key references were obtained by scanning the bibliography of these articles.

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Keywords: Elderly, Older adults, Assessment, Testing, Projective techniques

Table 1. Key Studies with a Focus on the Use of Projective Techniques with Elderly Samples

Study	*Projective Measures*	*Major Finding*
Caldwell (1954)	Rorschach	Author cautioned regarding visual impairment of the aged.
Lorge et al. (1954)	Human Figure Drawings	Drawings showed lack of integration & proportion, and bizarreness.
Lakin (1958)	Human Figure Drawings	Drawings of institutionalized elderly were rather negative in affective tone.
Ames (1960)	Rorschach	Based on test-retest data, with increasing old age, participants showed decreased N, fewer color responses, increased F%, and higher A%; author concludes that the mental life of the elderly person tends to be extremely static, stereotyped, and restricted.
Eisdorfer (1963)	Rorschach	Findings indicated that cognitive decline was a key moderator to consider in Rorschach testing with the elderly.
Ames (1966)	Rorschach	Found that elderly participants easily responded to Rorschach testing.
Carp (1967)	Sentence Completion Test	Connotations of self-referent responses were related to other assessment findings.
Overall & Gorham (1972)	Holtzman Inkblot Technique	Responses to inkblots differed between younger and older age groups.
Andrew (1973)	Sentence Completion Test	Results on the SCT indicated diminished coping ability and verbal skills.
Fitzgerald et al. (1974)	Both the Gerontological Apperception Test (GAT) and TAT	Study found no significant differences for TAT or GAT to elicit selected themes in a sample of the elderly.
Panek et al. (1976)	Hand Test	Studied potential changes in personality due to aging; corroborating prior research with other projective measures, depletion and constriction of personality were noted.
Pasewark (1976)	Both the GAT and TAT	Theme content did not differ among adolescents, middle-aged, or elderly participants.
Foote & Kahn (1979)	Senior Apperception Test	Provides a method analysis to differentiate psychological impaired vs. normal elderly; the best predictor dimension was ‘interpersonal relationships’, the poorest was ‘mood’.
Stock & Kantner (1980)	Senior Apperception Test	In a sample of 40 elders, no significant sex differences on SAT scores were found; Major content themes were: affiliation, physical limitations, and dependency.
Hayslip (1982)	Holtzman Inkblot Technique	Reported normative and factor structure data (7 factors) on the HIT with an elderly sample; substantial variation for several HIT scores was found.
Hayslip & Panek (1982)	Hand Test	In a sample of institutionalized elderly, the authors studied organic dysfunction; HT scores of Withdrawal and Pathology were valid indicators of cognitive loss.

Kornfeld & Marshall (1987)	Both the SAT and TAT	Findings showed that institutionalized and nursing home elders had a narrow, present-oriented time perspective on both tests.
Rajagopalan & Prakash (1990)	Senior Apperception Test	In a sample of 60 elders, the authors reported several main themes (authority, nurturance, submissiveness); older individuals expressed unsympathetic and indifferent attitudes toward younger figures in the stories.
Knapp (1994)	Human Figure Drawings	Drawing features (e.g., use of space, size of drawings) proved to discriminate between normal and Alzheimer's patients.
Singh et al. (1999)	Somatic Inkblot Series (SIS-II)	Elderly sample failed to show a significant sex difference with regard to total number of responses.
Hayslip et al. (2002)	GAT	Developed a novel scoring model for the GAT that reflects salient issues of the elderly, such as interpersonal, health concerns, and intrapsychic aspects of aging; findings support the clinical utility of the GAT, particularly regarding cognitive functioning.
Panek (2015)	Figure Drawing Techniques	Based on a literature review of published research over 3 decades, the authors argue that Human-Figure-Drawings (HFDs) are suitable assessment tools in addressing referral questions directed about older adults; HFDs can differentiate dementia vs. normal elderly patients.
Fernandez et al. (2016)	SAT and Tree Drawing	Authors claim that these projective techniques are particularly useful tools in the study of Alzheimer's patients with communication deficits.

Conclusion:

Over the past 30 years, there has been extensive research and clinical attention devoted specifically to the psychological assessment of the elderly (Hunt & Lindley, 1989; Lengenfelder et al., 2019; Segal et al., 1998).The aim of the current analysis is to provide empirical support for the utility on the use of projective techniques with older adults and seniors in both research and practice. Admittedly, in the current clinical milieu, the predominant focus on assessment of the elderly is on neuropsychological evaluation (e.g., Piotrowski, 2014), yet the current review points to the importance of salient factors in gero-psychological testing, such as issues of depression and deficits in verbal expression (Fiske & O'Riley, 2008; Panek et al., 2013; Piotrowski, 2019).Hence, projective measures can serve as key assessment tools in the evaluation of the mental health status of older individuals, including insights into the nature of personality characteristics. Indeed, projective techniques have been and continue to be relied upon by mental health professionals across various disciplines (see Dubey et al., 2019; Frauenhoffer et al., 1998; Piotrowski, 2015a). However, their continued usage will largely depend on their status in professional training programs (see Piotrowski, 2015b, for a review).

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The Use of Virtual Reality in Psychological Research and Therapy: Attributes and Limitations

Steven J. Kass

Virtual reality (VR) allows users to experience highly immersive, simulated events that would otherwise be too dangerous, expensive, or just impossible to achieve in a real environment. While VR was once only available to a handful of researchers, commercialization and decreased costs have greatly increased its accessibility to all. Because it provides the capability to precisely control the virtual world, VR has become an increasingly popular tool for use by psychological researchers and therapists, alike. The vast growing literature on VR documents how it has been used for such purposes as gaming and entertainment, knowledge elicitation, training and education, exposure therapy, and physical rehabilitation. However, though the use of VR holds great potential, it may not be suitable for everyone. Many factors must be considered before adopting this technology. This article reviews some of the many uses for VR, as well as its strengths and limitations when used for research and therapy.

Introduction:

While the topic of Virtual Reality (VR) is pervasive in the popular media, clinicians and investigators may be surprised that the VR domain has received extensive research focus over the past decade and emerging research in this area is advancing at an exponential pace (Piotrowski, 2022). For example, a search of PsycINFO shows that over 8,000 peer-reviewed articles, and 816 dissertations have already appeared. The aim of the current article is to review some of the key attributes and drawbacks of how VR is being used or adapted as a measurement tool in research, clinical practice, and assessment. Hence, such practical information should have applications in research and practice in the field of mental health.

Personal Background:

My first experience with VR occurred in the early 1990s as a graduate research assistant at a facility conducting research and development in simulation and training. Some colleagues showed me a project they were working on called VR. At the time, I had only read about VR, but had never experienced it. I was asked to sit in a plastic chair that had a broomstick duct-taped to its back with a device strapped to the top that would track my head movements as I wore a special head mounted display (HMD). The HMD was of low resolution by today's standards but was at least in color. Because the system was driven by the typical slow, small memory capacity desktop computers of the time, the graphics viewed on the headset were purposely sparse to not slow processing speed too much. I was told to imagine I was on a floating magic carpet and to look around for images. Most of the environment was blank, but as I turned my head, and the scene followed shortly after, I could make out a cartoonish looking military tank below me among the vastness of empty space. I remember being completely underwhelmed by the experience and thinking this will never catch on. Was I wrong! VR technology has come a long way since then and is commercially available to the public. It is being used in a variety of settings as a safer alternative to other forms of training and practice, as well as for gaming and entertainment, and treating anxiety-related disorders such as social phobias and post-traumatic stress disorder. Over the years, I have had the opportunity to work on projects that used VR to train everything from baseball umpiring skills to materiel readiness assessments aboard a US military vessel to the proper procedures for pilots to follow after being ejected from a damaged fighter jet. For the current article, I will review some of the advantages and disadvantages of using VR for psychological research and clinical practice.

Though numerous definitions of VR appear in the literature, Carr (1995, p. 5) noted more than two decades ago that what most definitions have in common is that they describe VR as "…the stimulation of human perceptual experience to create an impression of something which is not really there." That perceptual experience becomes more realistic as the technology advances and incorporates multiple senses. VR users may now experience a virtual world in which they can interact in 3-dimensional space, with sound appearing to come from any

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direction, and in which they can "feel" and maybe even "smell" aspects of their virtual environment. As one becomes more present in the virtual environment, one becomes more separated from the real world. Being totally immersed in the virtual world holds many benefits, but the experience may include certain drawbacks.

Growing Use of VR:

Many of the early published accounts of VR applications had a distinctly military focus. For example, Hodges et al. (1998) created a virtual environment (VE) depicting the sights and sounds of the Vietnam War, including vibrotactile sensations to simulate the feel of flying in a helicopter. This VE was later used in a case study by the same group of researchers to treat a Vietnam veteran helicopter pilot with post-traumatic stress disorder (Rothbaum et al., 1999). Using a VR version of exposure therapy (VRET), the participant's PTSD symptoms were substantially reduced following seven weeks of treatment. Around that same time, Martin, Sheldon, Kass, Mead, Jones, and Breaux (1998) reported on the use of VR to elicit knowledge from experienced Navy ship handlers. The subject matter experts were instructed to complete a difficult underway replenishment task which included piloting a cruiser class vessel to approach, then maneuver alongside a supply ship, receive supplies, then pull away. The VR modeled the two vessels as well as the complex hydrodynamics of the task. As the pilots reviewed videos recorded from their first-person perspective, they were able to explain their maneuvers and decision making. The information gathered in this manner provided more detailed information than those of traditional task analysis protocols used to develop training exercises.

Since those early studies, the use of VR has grown dramatically. Several factors have contributed to this growth, including improvements in the technology (both in hardware and software), the increasing number of published studies demonstrating the benefits of VR, as well as its decreasing costs and increasing accessibility. Suggested uses of VR have included diagnosing and treating cognitive impairments due to Alzheimer's disease (Liu, Tan, Chen, Liu, Yang, & Zhang, 2019), physical rehabilitation for patients suffering from strokes, Parkinson's disease, and multiple sclerosis (Naro & Calabro, 2021), and in the classroom for practicing counseling skills (Rogers, Hollett, Li, & Speelman, 2022), training and assessing medical students (Hilty et al., 2006), and for teaching engineering and technology theory (Chandramouli, Takahashi, & Bertoline, 2014). Much of the recent literature has touted the benefits of using VR technology for treating anxiety disorders. For example, Melamed and Castro (2011) noted the benefits of VRET for treating polytrauma in soldiers. In a review of 10 studies, Goncalves, Pedrozo, Coutinho, Figueira, and Ventura (2012) found that VR and traditional exposure therapies proved to be equally efficacious for treating PTSD, with no difference in dropout rates in treatment groups. In a meta-analysis of 92 studies, Lim, Aryadoust, and Esposito (2022) found that VR-based therapies significantly reduced anxiety related to public speaking and that the VR method was as effective as the more traditional cognitive behavioral therapy (CBT) approaches. Moreover, the typical treatment protocol included an average of just over six sessions with each lasting about half an hour. As promising as those results appear, Lim et al. advised that because participants tended to act differently in the virtual environment, as compared to the real environment, transfer of training may be questionable. These investigators suggested that VR be used in conjunction with CBT, not in place of it. Lognoul, Nasello, and Triffaux (2020) were also cautiously optimistic. They noted that VRET works well as a complementary approach to mental or *in vivo* exposure treatment for a variety of anxiety disorders including phobias, panic disorders, and PTSD. However, their cautions regarding its use stem from patients' individual differences in their comfort with the technology and susceptibility to cybersickness. Lognoul et al. also warn about conflicts of interest in the research literature regarding VRET efficacy given that many of the VR developers are also the authors of the studies and that the variety of virtual environment materials developed make comparisons among studies rather difficult. Likewise, Lanier, Waddell, Elson, Tamul, Ivory, and Przybylski (2019) noted that the ability to generalize from VR studies is somewhat limited by the fact that the majority of reported studies lack statistical power due to small sample sizes, and many lack methodological rigor.

Potential Drawbacks of VR:

Cost of Developing Virtual Environments:

Given the preliminary success of VR-based therapy, one might wonder why more therapists and researchers are not incorporating this tool in treatment. One reason that VR is not used more may be that although the cost of commercial off-the-shelf VR equipment has been greatly reduced, generating the virtual environments can take a great deal of time, money, and technological expertise. Naro and Calabro (2021) noted that though the cost of VR has decreased dramatically, the technology still demands hardware and software maintenance to customize it for individual user needs. While VR may be cost prohibitive for some applications, cheaper, faster alternatives, such as the use of panoramic photography, exist for developing virtual environments. Moskal, Moskal, and Kass (1998) compared imaged-based (i.e., 360 deg panoramic photos) to model-based (i.e., computer-rendered graphics) virtual environments for training Naval officers on materiel readiness inspection skills. They found that although the model-based virtual environment allowed for greater interaction and more natural navigation, trainees preferred the greater realism provided by the image-based version (and performed better). However, at that time, image-based environments were created by taking several photographs from numerous vantage points and digitally "stitching" them together. Today, an inexpensive 360 deg camera can easily and quickly produce a panoramic virtual environment in a single snap shot as compared to what used to take many work hours and a great deal of technical skill. Lundin et al. (2021) proposed the use of 360 deg videos as a more cost-efficient approach than animated imagery for conducting exposure therapy. They found that patients treated for panic disorder with agoraphobia improved significantly after 10 to 12 weeks of 60 min sessions using video based VRET and maintained those improvements six months later. They concluded that video based VRET can increase accessibility to treatment making it more affordable and feasible to use in the clinic and that overall VRET had other benefits over *in vivo* treatments in that sessions are less time consuming, clinicians have more control over the environment, exposures can be repeated or prolonged more easily, and patients may be more accepting of the treatment.

Cybersickness:

Another perceived impediment to the use of VR in clinical practice and research is the relatively high prevalence of cybersickness reported (e.g., Chang, Kim, & Yoo, 2020; Naro & Calabro, 2021; Saredakis, Szpak, Birckhead, Keage, Rizzo, & Loetscher, 2020). Just as motion sickness is caused by a mismatch between vestibular and visual motion cues, so is cybersickness. In a virtual environment, the visual cues may be very compelling, while vestibular cues (e.g., acceleration, inertia) may be lacking or do not coincide with the visuals. Weech, Kenny, and Barnett-Cowan (2019) noted that modern stereoscopic (3-D) head mounted displays provide a larger field of view that create a greater sense of presence. However, these realistic visual cues also lead to vection (i.e., the illusion of self-motion) which creates greater sensory mismatch and sickness. Chang, Kim, and Yoo (2020) identified three categories for the etiology of cybersickness; 1) hardware factors such as display type, flicker, field of view, and lag; 2) content factors such as the scenery displayed, optic flow, and the level of control and duration of the task; and 3) human factors such as individual susceptibility. Saredakis et al. (2020) found that mean dropout rates due to cyber sickness was nearly 16% across the 46 studies reviewed. The study suggested that though stereoscopic displays appear very realistic, the eyes do not respond to depth and motion cues the same way as they do in the real environment. That is, in the real world as an object gets closer, one's eyes converge on it (rotate inward), but because objects do not actually get closer on a video display (only larger), the expected convergence does not occur causing a conflict between what the body expects and what it experiences. These authors also concluded that content, exposure duration, and individual differences also contribute to cybersickness. Though clinicians may worry that their older patients may be more susceptible to cybersickness and less accepting of the technology, Saredakis et al. and Tuena et al. (2020) found that this concern may be unwarranted in that older participants may be less susceptible to sickness and quite accepting of using VR. Findings on sex differences in cybersickness may be somewhat equivocal. That is, while Saredakis et al. (2020) found no sex differences in cybersickness susceptibility, Lawson et al. (2021) suggested that the findings on sex differences may be confounded by the type of study conducted and how sickness was measured or reported.

While cybersickness is no doubt a concern for therapists contemplating the use of VR in their treatments, Reger, Smolenski, Edwards-Stewart, Skopp, Rizzo, and Norr (2019) suggested that anxiety during VRET may account for a larger portion of simulation side effects, such as cybersickness, than does the VR itself. Other side effects, such as visual fatigue, were found to be no greater among VR users than those performing the same task using two-dimensional displays (Hirota et al., 2019). In a meta-analysis of VR neuroscience studies, Kourtesis, Collina, Doumas, and MacPherson (2019) found that VR side effects (and therefore, dropout rates) were greater among studies that used older generation head mounted displays. The newer, high-resolution headsets, with faster image refresh rates and which allowed for more naturalistic movements, provide a more pleasant experience with fewer side effects. Other research suggests that side effects can be overcome. Menshikova, Kovalev, and Klimova (2017) noted that individuals in professions that involve high levels of vestibular disturbance (e.g., figure skaters) are less susceptible to motion sickness. This finding suggests that like sailors who may take some time to develop their "sea legs," VR users can also build a tolerance to cybersickness over time.

Level of Immersion:

When the virtual environment appears real, the benefits for therapy include the ability to interact in dangerous environments while remaining in the safety of one's virtual environment. One may even be able to experience what it is like to walk in someone else's shoes (Martingano & Persky, 2020). However, a common complaint among clinicians and researchers is that the VR experience may not be real enough to maximize transfer. Vasser and Aru (2020) reminded researchers to consider that the user likely knows the virtual environment is not real and therefore should use caution when generalizing from VR study findings to real-world applications and not overstating results. In a survey of 185 therapists, Linder, Miloff, Zetterlund, Reuterskioild, Andersson, and Carlbring (2019) found that of those surveyed with negative attitudes toward VR, a common response was that they believed that the virtual environment would not be perceived as a real enough experience for exposure therapy to work. However, of those with positive attitudes regarding VR, the top-rated aspects of VRET were the ability to precisely control the content and exposure of the anxiety producing stimuli and the ability to assign VR homework to their patients. Lachiniet al. (2019) found that immersion (isolation from real-world) was not the only important factor needed for rehabilitation patients to experience high levels of presence. They found that interaction (the capacity to naturally explore the virtual environment) and Imagination (ability to create vivid mental images) were also important factors. Study participants who can generate more vivid images were less aware of their external world and more present in the virtual environment. As Boeldt, McMahon, McFaul, and Greenleaf (2019) noted, clinicians may not adopt VRET because the realistic anxiety-producing stimuli that they need may not be commercially available. Based on a review of the literature on the use of VR for physical rehabilitation, Rose, Nam, and Chen (2018) saw no clear correlation between patients' level of immersion and their motor recovery. They also found haptic gloves, meant to increase realism and interaction in the VR, and therefore immersion, interfered with patients' movements and rehabilitation exercises as compared to standard controllers. On the other hand, Gibbs, Gillies, and Pan (2022) found that vibrotactile feedback greatly enhanced users' experience of presence when virtually bouncing a ball on a stick. When the sense of touch is important to the VR training task, Grabowski (2015) found that providing actual objects to participants while immersed in VR was more effective than using expensive haptic devices.

Conclusions:

Once accessible only to a few, VR is now readily available to clinicians, researchers, and educators, as well as other professionals to help improve the services or products they provide. The benefits of VR include the ability to provide a highly controlled environment where individuals can experience events that would otherwise be too dangerous, costly, or time consuming to arrange in a natural setting. For example, a clinician could treat a patient with acrophobia (fear of heights) by exposing patients to various intensity levels of anxiety-producing stimuli (e.g., view from atop a ladder or a rooftop), without placing the patient in any real danger or treat social phobias without the possibility of the patient running into someone they know during treatment. The technology

can be used in conjunction with other types of treatment and the overall number of treatment sessions may even be reduced. Whether one is a researcher or clinician using VR, the ability to precisely control the experience while systematically collecting performance or progress data can improve the efficiency of the treatment or research project.

However, several disadvantages of VR have been discussed. While the cost of the technology itself has greatly decreased, several hidden costs must be considered, such as the cost of developing personalized virtual environments and the cost (and expertise) of maintaining the system. In addition, side effects such as cybersickness are well documented, while others are still being investigated. These side effects may be physical (e.g., eye strain, fatigue) or psychological (e.g., addiction to the VR experience) and many individuals may be fearful of the technology.

The potential uses of VR are unlimited, but like any tool, it must be used appropriately. One must weigh the advantages against the disadvantages of VR (see Table 1) which may help one decide when the experience of the virtual environment is preferred over the actual environment.

Table 1: Summary of Advantages and Disadvantages of VR

Advantages:

- Controlled environment
- Anonymity/privacy
- Safely experience dangerous environment
- Repetition
- Reduced number of clinic visits
- Data collection/progress recorded
- Can combine with other techniques for treating anxiety disorders

Disadvantages:

- Technology management/upkeep
- Cybersickness
- Eye strain/fatigue
- Technophobia among some users
- Access to technology
- Limited movement
- Inability to interact with real environment while in VR
- Time, skill, and cost required to develop scenarios

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Development and Initial Examination of a Measure of Emotion Regulation Knowledge

Adam P. Natoli & Julie F. Brown

Many effective therapies targeting emotion dysregulation employ psychoeducation and skills training interventions, both of which presumably increase a person's accessible knowledge of processes that potentially facilitate or hinder emotion regulation processes, how different skills can help regulate emotional experiences, at what point emotion regulation strategies should be used, and which emotion regulation strategy would be ideal given the context (i.e., emotion regulation knowledge). Thus, emotion regulation knowledge may play an important role in emotion regulation functioning. Based on a review of the literature, no currently available measure directly assesses emotion regulation knowledge. The aim of the current study was to develop such an instrument. Development and initial validation of the Emotion Regulation Knowledge Scales (ERKS) occurred over two measurement development phases and a subsequent validation phase using two diverse samples. A pool of 77 items was developed and then reduced based on expert appraisals of each item. Exploratory structural equation modeling was used to identify an optimal factor structure of the ERKS and then, using a second sample, confirmatory factor analysis was applied to test whether the identified model would be confirmed. Initial construct validity of the ERKS was then assessed using a latent variables approach. Exploratory structural equation modeling supported a two-factor solution of the ERKS, which was confirmed in a second, independent sample. The two ERKS scales possessed good internal consistency and produced theoretically consistent correlations with measures of psychological distress and emotion dysregulation. The presented findings, combined with the potential utility of the ERKS in research and clinical settings, support early confidence that the ERKS is an internally reliable and valid measure of emotion regulation knowledge. However, future confirmatory research is necessary to support this claim.

Introduction:

Emotion dysregulation – deficits in the ability to monitor, evaluate, and accept or modify emotional experience in accordance with desired goals or use situationally appropriate strategies to modulate emotional responses (Gratz & Roemer, 2004) – can be a key factor underlying psychological distress. In fact, impaired emotion regulation is a diagnostic feature in the majority of all mental disorders (Gross & Levenson, 1997). In treating emotion dysregulation, many effective therapies regularly employ psychoeducation and skills training. These interventions presumably increase a person's accessible emotion regulation knowledge, a construct proposed to encompass a person's understanding of processes that potentially facilitate or hinder emotion regulation, how different skills can help regulate emotional experiences, at what point emotion regulation strategies should be used, and which strategy (or strategies) would be ideal given the situation. That is, increases in emotion regulation knowledge might be one component contributing to the improved emotion regulation observed when psychoeducation and skills training interventions are employed. Such a hypothesis is consistent with existing literature, which identifies knowledge as a precondition for action (Strube & Wender, 1993) and has empirically demonstrated a knowledge-action link, with researchers concluding that "it is not possible to act without knowledge" (Funke, 2017, p. 109). Unfortunately, no currently available measure directly assesses emotion regulation knowledge. Accordingly, the aim of the current study was to develop a brief, easily administered self-report measure of emotion regulation knowledge.

Potential Domains of Emotion Regulation Knowledge:

In developing a measure of emotion regulation knowledge, we primarily referred to the modal model of emotion generation, the process model of emotion regulation, and the extended process model (see Gross, 2015; Gross & Thompson, 2007), as well as Brown's (2016) Emotion Regulation Skills System to identify competencies foundational for effective emotion management. The modal model of emotion generation explains that emotions happen in a four-phase sequence: situation, attention, appraisal, and response. The process model includes "five families" of emotion regulation processes: situation selection, situation

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modification, attentional deployment, cognitive change, and response modulation (McRae & Gross, 2020). A lack of competency in one or more of these phases and/or processes is understood to facilitate emotion regulation problems, potentially resulting in patterns of over- or under-regulation (Gross, 2015; McRae & Gross, 2020). The extended process model (Gross, 2015) elaborates the process model and describes three stages of emotion regulation: identification, selection, and implementation, each of which contain sub-steps including perception, valuation, and action. Finally, the Emotion Regulation Skills System (Brown, 2016) is a DBT-informed approach to addressing emotion regulation deficits and proposes nine core emotion regulation skills that support the attentional deployment, appraisal, and reappraisal processes that help individuals execute goal-directed actions, identify, and manage risk, and modulate emotional responses.

Based upon a review of emotion regulation literature and guided by the above models, we identified six domains of knowledge seemingly associated with a person's abilities to generate contextually-effective emotion regulation: 1) *Emotional-Cognitive-Behavioral Functioning* consists of knowledge about emotions, cognitive processing, and behavioral regulation that influence perception processes; 2) *Mindful Awareness* pertains to knowledge about attentional deployment (i.e., the process of concentrating and distracting attention) that affects contextual emotion regulation functioning; 3) *Cognitive Strategies* regards knowledge of the cognitive appraisal and reappraisal processes associated with adaptive functioning; 4) *Executing Goal Direct Actions* describes knowledge about modifying situations and initiating action in service of personal goals; 5) *Managing Risk* concerns knowledge about strategies related to choosing situations that enhance one's abilities to self-regulate and reach personal goals; and 6) *Response Modulation Activities* entails how to modulate emotional, cognitive, and behavioral responses once these occur.These six general domains served as an organizational framework during item development with the aim to generate a broad, yet focused, array of test items.

Measuring Emotion Regulation Knowledge:

Emotion regulation is a complex, multi-faceted process that, at times, seemingly relies on an individual's accessible knowledge of emotion regulation and specific skills, suggesting value in an instrument capable of explicitly measuring an individual's emotion regulation knowledge. Although there are several validated measures of emotion regulation used by clinicians and researchers focusing on specific emotion regulation strategies (e.g., Emotion Regulation Questionnaire; Gross & John, 2003), regulation expectations (e.g., Generalized Expectancy for Negative Mood Regulation Scale; Catanzaro & Mearns, 1990), and specific dimensions of emotion regulation wherein difficulties can occur (e.g., Difficulties in Emotion Regulation Scale; Gratz & Roemer, 2004), no readily available measure directly examines a person's accessible knowledge of how they could optimally regulate their emotions. Thus, the current study's goal was to develop a self-report measure of emotion regulation knowledge. This new instrument stands to have utility for both clinical practice and research.

Clinically, the ability to quantify a client's knowledge of how they could optimally regulate their emotions can help clarify the extent to which a client's poor emotion regulation is due to a lack of knowledge or alternative factors (e.g., impulsivity). Such clarification could be used by treatment providers when planning skills training and psychoeducation interventions, allowing them to strategically target areas of low knowledge or a client's specific misconceptions that may be inhibiting effectual emotion regulation, which, if addressed, can improve emotion regulation (Gross & Thompson, 2007; Gyurak et al., 2011). Beyond the potential clinical value, the ability to accurately measure emotion regulation knowledge could prove useful in ongoing research endeavors. Since the appropriate use of learned skills – such as emotion regulation skills– requires knowledge of those skills and when these skills should be used, and knowledge commonly precedes behavior change (Funke, 2017), a measure of emotion regulation knowledge might allow for earlier detection of emotion regulation-related treatment effects in psychotherapy research than currently available measures. Hence, an empirically validated measure of emotion regulation knowledge is warranted.

Methods:

The development and initial validation of the Emotion Regulation Knowledge Scales (ERKS; full measure and scoring instructions available at https://www.apnatoli.com/pubs-tools-instruments-media/instruments) occurred over two measurement development phases and a subsequent validation phase using two diverse samples. A detailed discussion of each phase is presented in sequential order below, with sample characteristics, procedure, and results described under the appropriate headings.

Measurement Development Phase 1: Item Development and Reduction

The ERKS was designed to be a brief, easily administered self-report test for measuring an individual's knowledge of emotion regulation and dysregulation processes, how different skills can help regulate emotional experiences, at what point emotion regulation strategies should be used, and which emotion regulation strategy might be ideal given the situation. The clinical utility of self-report tests (e.g., relatively easy to complete; time-efficient; require little training to properly administer, score, and interpret) and our specific goal to measure an individual's accessible knowledge (cf. implicit thoughts or unconscious cognitive biases) were justifications for use of the self-report format.

In the first phase of measurement development, we created an initial pool of 77 items based on contemporary literature and organized using the six identified domains of emotion regulation knowledge listed above (approximately 12 items per domain). Professionals who were either scholars in the field of emotion regulation and/or clinicians with an active caseload treating individuals with emotion regulation difficulties were then consulted to assist in reducing the initial item pool. Thirteen experts were presented with a general description of the ERKS and definitions of the six identified domains of emotion regulation knowledge. Each expert was then asked to rate each of the 77 items on the basis of (a) how well a correct response would reflect an individual's knowledge about a given domain (or about emotion regulation in general) and (b) how likely the statement is to be understood by individuals with dual diagnosis (intellectual disability / mental illness) who are within the mild or moderate range of intellectual disability[1]. Responses ranged from 1 to 4, where 1 indicated *does not represent / will not understand* and 4 indicated *good representation / will understand*. Mean ratings ranged from 2.89 (*SD* = 0.78) to 4 (*SD* = 0) for representation and from 2.67 (*SD* = 0.50) to 4 (*SD* = 0) for understandability. Experts were also asked to provide feedback on each item, which was reviewed by the authors and used to make minor revisions to individual items when deemed appropriate. Thirty-six items – six items for each of the six identified domains – were selected based on the experts' feedback and numerous conversations between the authors. The results reported in the remainder of this paper made use of data collected using this refined 36-item version of the ERKS.

Measurement Development Phase 2: Factor Analysis

The second phase of measurement development used exploratory structural equation modeling (ESEM; Asparouhov & Muthén, 2009) to identify the optimal factor structure of the ERKS and then, using a separate sample, conducted a confirmatory factor analysis (CFA) to test whether the model identified in the ESEM would be confirmed.

Sample 1: Exploratory Structural Equation Modeling

Participants and Procedure:

As part of a larger data collection project, 360 participants (77% female) were recruited from a medium-sized university in the southern United States. This study was approved by the Institutional Review Board

[1] This question served two purposes. First, responses provided a metric regarding how clearly each item was estimated to be understood by individuals with a standardized level of cognitive difficulty, thus assuring that items rated as easily understood possess a relatively low probability of being misunderstood by most individuals. Second, responses provided a metric regarding how clearly each item was estimated to be understood by individuals from a specific population of interest, which was necessary for the second aim of the larger project (i.e., a measure accessible to the general population as well as to individuals living with cognitive challenges; data collection to address this second aim is being prepared).

of Sam Houston State University (#IRB-2020-202). Participation was restricted to individuals who were at least 18 years of age and English-speaking. No other restrictions were placed upon participation. All students received course credit for their participation. The sample averaged 20.49 years of age (*SD* = 3.83). Approximately 32% of participants self-identified as Hispanic or Latinx and the breakdown of the sample's race is as follows: 59% White or Caucasian, 26% Black or African-American, 2% Asian-American, 1% American Indian or Alaska Native, 5% mixed race, and 7% other.

Measure:

The 36-item version of the ERKS is a self-report inventory designed to measure an individual's knowledge of how they could optimally regulate their emotions. Items of the ERKS require respondents to indicate *True* if they believe an item's statement is true or *False* if they believe an item's statement is false or not true in their opinion, with the option to select *Not Sure* if they are unable to decide. This response scale was chosen for three important reasons: 1) previous studies show little to no improved external validity of psychological questionnaires when a true/false response format is replaced with a polytomous rating scale (e.g., Finn et al., 2015; see Lozano et al., 2008); 2) a true/false response format is viewed by responders to be easier than a multi-choice rating scale (Cox, 2011), increasing the clinical utility of the ERKS; and 3) including a *Not Sure* option may reduce non responding while also providing individuals a way to explicitly communicate their awareness of their lack of knowledge.

In this study, ERKS items were recoded so that *True* responses to correct statements (i.e., statements consistent with emotion regulation literature, such as Item 3) and *False* responses to incorrect statements (i.e., statements contradicting or inconsistent with emotion regulation literature, such as Item 10) were assigned a value of 3, *Not Sure* responses were assigned a value of 2, and *False* responses to correct statements and *True* responses to incorrect statements were assigned a value of 1. Thus, greater scores in every case indicated more responses that were consistent with the emotion regulation literature (i.e., greater knowledge). However, individual ERKS item scores should be understood as categorical variables and were treated as such in the following data analyses.

Procedure and Results:

Consistent with the number of identified emotion regulation knowledge domains that served as an organizational framework for item development, examination of a scree plot suggested no more than six factors. Thus, ESEM was used to evaluate the fit of one-, two-, three-, four-, five-, and six-factor models of the ERKS. ESEM was utilized instead of exploratory factor analysis due to concerns about the minimization of cross-loadings and correlated measurement effort as a result of reverse scored items (Asparouhov & Muthén, 2009). Weighted least squares with means and variances adjusted (WLSMV) estimation and geomin rotation were used; WLSMV is a robust estimator that does not assume variables are normally distributed and is best used for modeling categorical data (Brown, 2006). All factor analysis, except where indicated otherwise, were conducted using Mplus Version 8.0 (Muthén & Muthén, 2012-2018).

To determine the optimal factor structure of the ERKS, comparison of fit and information indices, interpretability of factors, and theoretical fit were examined. Fit and information indices were interpreted following conventional criteria for categorical data (Schreiber et al., 2006). Researchers use a range of factor loading cutoffs, with an average cutoff being .44 (Howard, 2015). Thus, the current study considered an item to adequately load onto a parent factor if a standardized factor loading of ≥.45 was obtained. Possibly problematic cross-loadings were indicated when an item loaded onto a second factor at .32 or greater (Costello & Osborne,2005), at which point the item was considered for removal. Lastly, factors containing fewer than three items are generally weak and unstable (Costello & Osborne, 2005), and a factor solution was eliminated in this study if one or more of its factors contained fewer than three items.

The one-factor solution produced several inadequate fit indices. A comparison of fit and information indices for the remaining factor solutions suggested the superiority of a six-factor model, $\chi^2(429) = 493.08$, $p = .017$, $\chi^2/df = 1.15$, comparative fit index (CFI) = 0.98, Tucker-Lewis index (TLI) = 0.97, and root mean

square error of approximation (RMSEA) = 0.02 (95% CI = 0.009 – 0.028), followed by the five-, $\chi^2(460) = 549.06$, $p = .003$, $\chi^2/df = 1.19$, CFI = 0.97, TLI = 0.96, RMSEA = 0.02 (95% CI = 0.014 – 0.030), four-, $\chi^2(492) = 634.22$, $p < .001$, $\chi^2/df = 1.29$, CFI = 0.95, TLI = 0.93, RMSEA = 0.03 (95% CI = 0.021 – 0.035), three-, $\chi^2(525) = 724.39$, $p < .001$, $\chi^2/df = 1.38$, CFI = 0.93, TLI = 0.91, RMSEA = 0.03 (95% CI = 0.026 – 0.038), and two-factor models, $\chi^2(559) = 1015.54$, $p < .001$, $\chi^2/df = 1.82$, CFI = 0.84, TLI = 0.82, RMSEA = 0.05 (95% CI = 0.043 – 0.052). Despite a significant chi-square test, which might be a product of a Type I error due to our sample size (Chen, 2007), each of these factor solutions (except the one-factor solution) were tolerably supported by the metrics reported based on conventionally accepted cutoff criteria for categorical data (Schreiber et al., 2006).

Three factors in the six-factor solution were composed of only two items each, eliminating the six-factor solution as an option. Similarly, the five-factor solution involved one factor composed of only two items, both of which also had high cross-loadings on another factor, while the remaining factors were composed of five to 14 items. Both the four- and three-factor models consisted of one factor containing multiple problematic cross-loading items. The first factor of the four-factor model was left with only two items that substantially loaded onto this factor without problematic cross-loadings. Except for one item (Item 8), all items loading onto the third factor of the three-factor solution substantially cross-loaded onto one of the other two factors. As a result, attempts were made only to confirm the fit of the two-factor model (see Table 1 for factor loadings). The content of the first factor was focused on dysregulation-directed knowledge (i.e., knowledge that would help an individual avoid dysregulation) and the content of the second factor was focused on regulation-directed knowledge (i.e., knowledge that would likely facilitate successful emotion regulation).

Table 1. ESEM Standardized Factor Loadings of the Two-Factor Solution of the Emotion Regulation Knowledge Scales (ERKS)

Item		Factor 1	Factor 2
2.	It is impossible for me to reach my goals.	**.462**	.056
6.	I can change situations I am in.	**.606**	.061
9.	I can change my thoughts to help me reach my goals.	**.532**	.075
10.	I can't change situations I am in.	**.560**	.027
12.	Paying attention to my thoughts always makes me feel worse.	**.684**	-.194
16.	It is impossible to think about how to manage my feelings.	**.681**	-.040
25.	Nothing will help me feel better when I am very upset.	**.725**	-.009
26.	All situations are risky.	**.568**	.035
27.	Noticing my breathing increases my stress.	**.453**	-.043
29.	It is impossible to fix a mistake I made.	**.452**	.212
31.	It is impossible to create helpful thoughts in my mind.	**.621**	.089
32.	Avoiding everyone keeps me safe.	**.681**	-.007
35.	Ignoring my feelings always helps me calm down.	**.581**	.055
4.	I should use more coping skills when my feelings are strong.	-.232	**.612**
7.	I should leave a situation when it becomes too risky.	-.173	**.489**
11.	Some activities will help me focus my mind.	.241	**.583**
14.	I can still work towards my goals after a mistake.	.260	**.630**
17.	I can think more clearly when I am calm.	.004	**.716**
20.	Staying in risky situations helps me.	.116	**.566**
21.	It is best to ask people for things when I am calm.	-.089	**.738**
22.	Talking to people I trust can help me be safe.	.226	**.644**
23.	Some actions help me reach my goals and other actions do not.	.000	**.823**
28.	It is helpful to encourage myself with positive thoughts.	.265	**.587**
30.	Some of my thoughts help me reach my goals and some do not.	-.111	**.930**
33.	I can think well when I'm very angry.	-.093	**.488**

34.	Some activities will help me feel better.	.230	**.816**
1.	I can control my actions by paying attention to what I feel like doing.	.289	.281
3.	It is best to deal with problems when they are small.	-.007	.431
5.	Noticing how strong my feelings are can help me deal with them.	.388	.306
8.	I can talk well with others when I'm very mad.	-.479	.398
13.	It is best to always get strong feelings out.	-.111	-.345
15.	If I think about doing something, I have to do it.	.222	-.049
18.	I fix my problems best when I am very upset.	.089	.441
19.	Noticing my breath helps me focus.	.133	.019
24.	Expressing feelings will make them stronger.	-.111	.085
36.	Thinking about a problem over-and-over-again will help me feel better.	.020	.424

Note. Bolded values indicate the factor onto which the item loaded.

Sample 2: Confirmatory Factor Analysis:

Participants and Procedure:

A total of 523 participants (37% female) were recruited from Amazon Mechanical Turk (MTurk) and paid $1 to complete a short survey on emotions; this protocol was approved by the Institutional Review Board of the Justice Resource Institute, Inc. (#JRI IRB 2019-08). Research demonstrates crowd sourcing platforms, such as MTurk, produce data of equal (or better) quality as other sampling methods (Casler et al., 2013). Participation was restricted to individuals who were at least 18 years of age and was restricted to U.S. residents. No other restrictions were placed upon participation. The sample averaged 39.49 years of age (*SD*= 12.29) with ages ranging between 19 and 73. Five embedded attention-check items[2] were included in the survey. Four duplicate responders and 139 responders who failed more than two of the five (40%) embedded attention-check items were removed. The final sample consisted of 380 subjects (38% female), averaged 40.13 years of age (*SD* = 12.31) with ages ranging between 19 and 73. Breakdown of the final sample's ethnicity[3] did not notably differ from the original sample and is as follows: 74% White non-Hispanic, 8% African American, 7% Hispanic or Latinx, 7% Asian American, less than 1% American Indian or Alaska Native, 1% mixed ethnicity, and 3% preferring not to say.

Measures:

In addition to the ERKS, participants of Sample 2 completed the following two measures:

Kessler Psychological Distress Scale (K10; Kessler & Mroczek, 1994).

The K10 was developed to measure nonspecific psychological distress using questions about a heterogeneous set of cognitive, behavioral, emotional, and psychophysiological symptoms. Respondents use a 5-point Likert scale to rate 10 questions in reference to how they have been feeling over the past 4 weeks. These ratings are summed to produce a total score, ranging from 10 to 50, that is representative of an individual's level of psychological distress, with higher scores indicating higher levels of psychological distress. Multiple studies (Andrews & Slade, 2001) have demonstrated strong associations between elevated K10 scores and a current mental disorder diagnosis, as well as other indicators supporting the instrument's validity. The K10 has shown adequate internal consistency (α ranging from .92 to .93) and has been found to perform similarly across sociodemographic subsamples (Kessler et al., 2002). Comparable and acceptable levels of internal consistency reliability were obtained in the current study for the K10, with a Cronbach's α (unstandardized) coefficient of .93 and a McDonald's (1999) ω coefficient of .93.

Modified Difficulties in Emotion Regulation Scale (MDERS; Bardeen et al., 2016).

The MDERS is a 29-item self-report measure of difficulties in emotion regulation that was modified from Gratz and Roemer's (2004) original 36-item measure to address its psychometric limitations. Like the

[2] Attention-checks consisted of two items instructing participants to select a specific response and three items presented participants with a statement that had only one logical response, such as responding "True" to the statement "Tuesday comes after Monday."

[3] Unlike the student sample, race and ethnicity were not asked about separately during this data collection.

original, the MDERS uses a 5-point Likert scale to evaluate how often each item pertains to the respondent. Two of the original measure's six dimensions (Awareness, Clarity) were found by Bardeen et al. (2016) to represent the same latent construct and, thus, the MDERS provides scores for only five dimensions of emotion dysregulation: *Identification* (Id; lack of awareness and clarity of emotion), *Nonacceptance* (N; nonacceptance of emotional responses), *Impulse* (Im; impulse control difficulties), *Goals* (G; difficulty engaging in goal-directed behavior), and *Strategies* (S; perceived access to effective emotion regulation strategies). Scores on each scale are calculated by summing items that comprise that scale, with higher scores representing greater difficulty in the given domain. The MDERS has evidenced good convergent and criterion validity (Bardeen et al., 2016). Internal consistency was found to be adequate for scores on the MDERS's total scale (α = .97) and for MDERS's five subscales, with Cronbach's α coefficients ranging from .88 to .95 (Bardeen et al., 2016). Comparable and acceptable levels of internal consistency reliability were obtained in the current study for the MDERS total score (α = .98; ω = .98) and for each of the subscales, with Cronbach's α (unstandardized) coefficients ranging from .93 to .95 and McDonald's (1999) ω coefficients ranging from .93 to .95.

Results:

CFA with WLSMV estimation was used with Sample 2 to test the two-factor model of a 26-item ERKS. As is often the case, fit indices were not unanimous – some fit indices indicated good fit, RMSEA = 0.05 (95% CI = 0.043 – 0.055), χ^2/df = 1.90 and the remaining fit indices were very closely approaching levels indicating good fit, $\chi^2(298)$ = 567.67, p< .001, CFI = 0.93, TLI = 0.93. As conventional cutoff values constitute only rough guidelines and are not considered strict rules (Marsh et al., 2004), these results can be seen as suggesting an adequate fit of the model. All items, except for Items 4, 6, and 33 loaded at ≥ .45 onto their respective factors (see Table 2). Acceptable levels of internal consistency reliability were obtained for both scales of the ERKS, with Cronbach's α (unstandardized) coefficients of .84 and .79 and McDonald's (1999) ω coefficients of .84 and .81, respectively. Given these findings, the criterion-related validity of both scales was examined.

Table 2. Confirmatory Factor Structure and Factor Loadings of the Emotion Regulation Knowledge Scales (ERKS)

Scale		Beta	*SE*	β
Dysregulation-Directed Knowledge		α = .839; ω = .840		
25.	Nothing will help me feel better when I am very upset.	1.00	-	.75
2.	It is impossible for me to reach my goals.	.92	.08	.69
6.	I can change situations I am in.	.57	.08	.43
9.	I can change my thoughts to help me reach my goals.	.69	.09	.52
10.	I can't change situations I am in.	.87	.07	.65
12.	Paying attention to my thoughts always makes me feel worse.	.95	.08	.71
16.	It is impossible to think about how to manage my feelings.	.97	.08	.73
26.	All situations are risky.	.93	.09	.70
27.	Noticing my breathing increases my stress.	.84	.08	.63
29.	It is impossible to fix a mistake I made.	1.15	.08	.86
31.	It is impossible to create helpful thoughts in my mind.	1.11	.08	.83
32.	Avoiding everyone keeps me safe.	.73	.08	.54
35.	Ignoring my feelings always helps me calm down.	.82	.08	.61
Regulation-Directed Knowledge		α = .787; ω = .806		
30.	Some of my thoughts help me reach my goals and some do not.	1.00	-	.74
4.	I should use more coping skills when my feelings are strong.	.38	.11	.28
7.	I should leave a situation when it becomes too risky.	.68	.09	.50
11.	Some activities will help me focus my mind.	.97	.10	.72
14.	I can still work towards my goals after a mistake.	1.03	.09	.75

17.	I can think more clearly when I am calm.	.99	.09	.73
20.	Staying in risky situations helps me.	1.05	.10	.77
21.	It is best to ask people for things when I am calm.	.98	.09	.72
22.	Talking to people I trust can help me be safe.	1.02	.08	.75
23.	Some actions help me reach my goals and other actions do not.	1.02	.09	.75
28.	It is helpful to encourage myself with positive thoughts.	.99	.08	.73
33.	I can think well when I'm very angry.	.46	.10	.34
34.	Some activities will help me feel better.	1.07	.09	.79

Note. Beta = unstandardized beta; β = standardized beta; α = Cronbach's alpha (unstandardized); ω = McDonald's omega.

Validity:

Preliminary investigation into the criterion-related validity of the ERKS involved a latent variable approach to estimate correlations between the two ERKS scales, represented as latent variables, and (H_1) psychological distress (measured by the K10) and (H_2) emotion dysregulation (measured by the MDERS) in Sample 2. Observed indicators for the K10 and MDERS were added to the two-factor model of the ERKS. Overall results indicated significant negative correlations between both ERKS factors and all measures of psychological distress and emotion dysregulation (see Table 3).

Table 3. Means, Standard Deviations, and Correlations Between ERKS Scales and Measures of Psychological Distress and Emotion Dysregulation

	1	2	3	4	5	6	7	8	9
ERKS Dk	—								
ERKS Rk	.74*	—							
K10 Total	-.63*	-.41*	—						
MDERS Total	-.71*	-.53*	.75*	—					
MDERS Id	-.68*	-.57*	.58*	.82*	—				
MDERS N	-.63*	-.48*	.66*	.91*	.71*	—			
MDERS Im	-.65*	-.52*	.67*	.91*	.74*	.78*	—		
MDERS G	-.46*	-.26*	.63*	.83*	.52*	.69*	.72*	—	
MDERS S	-.69*	-.47*	.76*	.92*	.68*	.81*	.82*	.76*	—
Mean	—	—	20.90	65.42	12.26	13.66	12.40	13.47	13.63
(SD)			(8.61)	(26.63)	(5.94)	(6.19)	(6.38)	(5.08)	(6.60)

Note. ERKS = Emotion Regulation Knowledge Scales; Dk = Dysregulation-directed knowledge scale; Rk = Regulation-directed knowledge scale. Psychological distress was measured using the K10. Emotion dysregulation was measured using the MDERS and MDERS subscales; MDERS = Modified Difficulties in Emotion Regulation Scale. MDERS subscales: Id = Identification, N = Nonacceptance, Im = Impulse, G = Goals, S = Strategies. ERKS scales are represented as latent variables.*$p < .001$

Discussion:

The present study identified and then confirmed a two-factor model of the ERKS, with the first factor (or scale) measuring dysregulation-directed knowledge and the second factor (or scale) measuring regulation-directed knowledge. The two ERKS scales possessed good internal consistency and produced theoretically consistent (negative) correlations with measures of psychological distress and emotion dysregulation, offering preliminary support for the criterion-related validity of these scales. All told, this article demonstrates initial confidence that the ERKS is an internally reliable and seemingly valid measure of emotion regulation knowledge. However, further research is necessary before this claim can be made more assertively. Furthermore, although the current study has a number of strengths, it is not without its

limitations. First, our samples included student and community samples, and findings may not generalize to clinical populations. Nevertheless, these samples were a suitable starting point for scale construction. Secondly, findings demonstrating the criterion-related validity of the ERKS were based solely upon theoretically consistent correlations with other self-report outcome measures. Multimethod assessment and diverse research designs should be used in future evaluations of the ERKS.

The need for further investigations notwithstanding, the development of the ERKS has implications for both practice and research. Many approaches to psychotherapy rely heavily on emotion regulation in sessions or as a target of intervention. The ERKS may help practitioners at each stage of treatment delivery. At the outset of treatment, the ERKS can assist in the identification of potential deficits in emotion regulation knowledge, information that might be valuable for identifying important treatment targets. Administration of the ERKS mid-treatment when progress has slowed or stalled may help the practitioner test whether a client's lack of emotion regulation knowledge could be interfering with current treatment. In such cases, the practitioner may also wish to use the client's responses to individual items to guide psychoeducation. Finally, the ERKS may serve as a worthwhile tool for monitoring changes in emotion regulation knowledge over the course of treatment and upon treatment termination. Monitoring changes may assist the practitioner in targeting treatment interventions in dynamic ways, adjusting treatment to a client's evolving needs, or serve as a tangible source of motivation, confidence, or hope for the client during termination.

Emotion regulation is a burgeoning area of research (Piotrowski, 2021), yet more investigations focusing on understanding the complex emotion regulation processes in life contexts are needed (Bonanno & Burton, 2013; Gross, 2015; McRae & Gross, 2020). Although available emotion regulation measures illuminate functioning problems, what an individual knows about optimal emotion regulation has not been directly measured. The ERKS allows for the collection of information about an individual's emotion regulation knowledge, providing researchers and clinicians a novel instrument to use when exploring this ostensibly critical component of emotion regulation functioning.

Conclusion:

In conclusion, the current study provides initial evidence supporting the ERKS as an instrument for measuring an individual's accessible knowledge of processes that potentially facilitate or hinder emotion regulation processes, how different skills can help regulate emotional experiences, at what point emotion regulation strategies should be used, and which emotion regulation strategy would be ideal given the context. The ERKS shows theoretically meaningful inverse relationships with measures of emotion dysregulation and a significant negative relationship with concurrent psychological distress. Future studies using multi method assessment and diverse research designs are necessary to further investigate the validity of the ERKS, as are explorations of its psychometric properties when used with clinical populations. Nonetheless, the presented findings, combined with the potential utility of the ERKS in research and treatment settings, permit an initial enthusiasm and warrant sufficient interest to pursue future evaluations of this new measure.

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Application of Somatic Inkblot Test in Personality Assessment, Screening and Therapeutic Intervention

Bankey L. Dubey & Anand Dubey

The Somatic Inkblot test (SIT) is highly innovative and, in a sense, a "time machine." The SIT automates the entire "life-cycle of the psychological test" including administration, scoring, interpretation, reporting and diagnostic collaboration. In addition to quantitative analysis, the SIT facilitates and emphasizes **content analysis, psychoanalytic interpretation, and symbolic interpretation** via a database of research and case studies made available as "hints". "Facts" and "Artificial Intelligence". It takes about 30 minutes to complete the test. The SIT was taken by a 40-year female, married, having symptoms of depression, loneliness, and suicidal thoughts for the last 5 years. She was diagnosed as a case of reactive Depression. The SIS responses projected her disturbed erotic relationship, deprivation of affection during childhood from her mother, and nonsupport from her in-laws. The SIT imagery was used as a tool for therapeutic intervention resulting in a positive outcome.

Introduction:

Projective techniques particularly "Inkblot tests" are especially helpful in evaluating persons with limited language and verbal skills. Such people usually rely more on visualization and adapt better to projective techniques than verbal interviews or tests that require reading questionnaires. The unstructured/ semi structured images tend to bank on the language of dreams, and symbolic thoughts as the most basic forms of thinking and expression. It is also the language of repression which brings out whatever is buried in the unconscious layers of the mind to consciousness, and hence accessible for processing. Expressions stimulated by ambiguous imagery can be used in therapy to test insight and to help measure treatment progress.

Rorschach Inkblot test (1921) and Holtzman Inkblot Test (1956) are well established tests, used for individual testing. Somatic Inkblot Test -I [Card form] (1980) and Somatic Inkblot Test –II [Booklet form] (1990) are comparatively newer projective tests which may be administered at the individual or group level. The Somatic Inkblot Test -online version (Dubey & Dubey, 2018, 2021) is the first online inkblot test with added value. It is a cloud-based web test, which can help clients even in remotest area and reduces tester's anxiety.

What is the Somatic Inkblot Test (SIT 30 Images - online version)?

The Somatic Inkblot test (SIT) is a 30 image, semi-structured, projective, diagnostic test, and claims to be a powerful adjunct to psychotherapy. The test is available at our website: www.dubayhealingcenter.com. It was released for quick assessment, after 30 years of intense data collection on clinical, organizational, and typically functioning groups. Researchers have reported **high reliability and validity** (Cassell and Dubey, 1998; Dubey et al, 2019). Research papers published in the journal, "SIS Journal of Projective Psychology and Mental Health"(www.somaticinkblots.com) clearly show the advantages of the test, both in the "individual" as well as "group administration" settings.

The SIT automates the entire "life-cycle of the psychological test" including administration, scoring, interpretation, reporting and diagnostic collaboration. In addition to quantitative analysis, the SIT facilitates and emphasizes **content analysis, psychoanalytic interpretation, and symbolic interpretation** via a database of research and case studies made available as "hints", "facts" and "Artificial Intelligence". It takes about 30 minutes to complete the test.

The SIT is highly innovative and, in a sense, a "time machine." It takes the viewer back in time and helps in releasing unprocessed unconscious material. If there is unresolved painful material in the past memory storage, the projected responses will tend to be shaped by this material. What emerges in projective

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awareness is deep seated material, even though the viewer may have long forgotten the buried traumatic imagery and associated affect. It facilitates the expression of feelings and earlier forgotten life events underlying many forms of mental illness and conversion pain.

The technique is based on spontaneous, individually generated responses to inkblot images/ figures, which elicit intrapsychic associations specific to the person taking the test. The images evoke symbolism and meanings unique to the responding individual. The test responses can be differentiated from peer norms and clinical indices and can be analyzed according to internationally recognized psycho-diagnostic criteria. The procedure is an adjunct to psychotherapy because the responses can be further explored to create a more effective treatment plan, and can be re-addressed in later discussions, providing opportunities to elicit deeply defended unconscious material.

The SIT has11 scoring indices common to Rorschach inkblot test and Holtzman inkblot Test, such as: Total number of Responses, Human Responses, Animal Responses, Anatomical Responses, Sex Responses, Other Responses, Most Typical Responses, Typical Responses, Movement Responses, Rejection of images and Pathological responses (Pathological Anatomy Scale, Hostility Aggression Scale, Depression Scale and Paranoia Scale).

Currently, the SIT is used in clinical settings for personality assessment and therapeutic intervention; it is being used in business organization for team building and team selection, it is being used for detecting sex offenders in school systems and last but not the least, as a social match-making tool (Cassell & Dubey, 2003; Compagnoni & Dubey, 2020; Dubey, 2020; Dubey, Agrawal & Palia, 2001; Dubey, Banerjee & Dubey, 2019, Dubey & Dubey, 2012, 2018; Manickam, & Dubey, 2021; Mishra, Pandey, & Kumar, 2020, Singh & Dubey, 2021, 2022; Singh & Dwivedi, 2020). What makes the SIT- 30 unique is that individuals can take the test in the privacy of their own homes while feeling secure, uninterrupted, and confident. The responses given on various images are analyzed via an analysis game and then shared with individual clients with workable solutions. The mental health management system allows a global team of experts to be utilized in providing analysis and intervention.

Robust case management and artificial intelligence are built into the mental health management system, and this allows quick and effective intervention. The online portal is available worldwide and is bringing consumers and providers together despite geographical barriers. Please visit our website and take the test to see its simple administration, scoring and interpretation (http://www.dubayhealingcenter.com).

Application of SIT in Industry and Business Organizations:

The primary responsibility of managers is the optimal utilization of the existing resources under their jurisdiction. Each manager needs to empower their staff to ensure maximum cost-effective utilization of material resources. Due to the economic downturn, many industries are in crises and leaders must prioritize the goals and the assets of the business which they are operating for the survival of their organizations. Re-structuring, right sizing and monitoring critical economic measures have become the priority of the day. Business owners are looking towards an executive who can create miracles. Under such stressful scenarios, a few organizations who take advantage of modern technology in psychologically assessing workers will have great comparative economic advantage.

Pre-employment personality profiles, assessment, and tests are becoming popular during employee selection process. When the right personality assessment is used as part of the hiring process, it is expected to tremendously benefit the organization. The SIT application empowers the selection processes by more rapidly screening a person with desirable traits such as an individual who is mature, confident, is a visionary, a good team-maker etc. It also brings out to the surface information which the individual failed to report in a standard interview. Moreover, once the candidate is initially selected in an industry, owing to the opportunity of having a follow-up with the SIT being a relatively objective computerized instrument, can

prevent economic losses that may occur later if the person is found to be a mismatch with regard to the demands of the job.

The Somatic inkblot test isalso administered to executives in various private and public sector organizations in India for personality assessment during selection and promotion interviews. The findings have been very encouraging. The SIT was found to be a dependable test in assessing certain important traits such as "Interpersonal Relationship, Healthy Mind-Body Imagery, Team Building, Creativity, Imaginative ability, Controlled hostility and aggression, Erotic disturbances, and Ego strength", which are much required among successful business executives.

Application of SIT in Clinics:

The SIT images can highlight otherwise hidden aspects of the inner emotional world of individuals taking the test. These may reveal to the professional certain past traumatic events and unexpressed distressing emotions which might, otherwise, only surface in disguised symbolic dreams. During clinical interviews, lot of unprocessed unconscious materials is brought out to the surface. Such material is very useful during therapeutic intervention and many clients commented that the "test is particularly designed for me". The purpose of psychotherapy is "to make the client conscious of the underpinnings of exhibited mental states" and the SIT responses are found to be an effective intervention procedure. Many clinical cases are reported in a recent SAGE publication (Dubey et al, 2019 and in 56 issues of the SIS Journal of Projective Psychology and Mental Health (www.somaticinkblots.com).

The Somatic Inkblot images have also been used in a variety of clinical cases to detect early symptoms with positive results. The SIT responses were able to discriminate among the major diagnostic groups such as Anxiety disorder, Psychosomatic disorder, Affective disorder, PTSD, Sexual disorder, Alcohol, Drug and Substance abuse, Depression, Suicidal ideation, Schizophrenia and Criminals (Cassell & Dubey, 2003; Dubey et al, 2019). The projected responses of a case having Depression with PTSD have been interpreted in the present article to understand the efficacy of the Somatic Inkblot Test.

Application of SIT in Schools to have safe employees:

It is a documented fact that victims of child sexual abuse are at a much higher risk. In several cases, it leads to long-term psychological and physical disorders including depression, guilt, and anxiety. The lingering memories of sexual abuse in schools are often difficult to suppress. The schools must be safe for children. Parents should be able to trust teachers and other employees such as bus drivers, cleaners, security-guards, and other staff in the proximity of the children. Sexual abuse generally takes place in familiar setting like school toilets, playgrounds, while on transportation or while students are on field trips. The administration should also protect and keep children safe from abuse, assault, bullying, and other traumatic events. In most of the cases, the perpetrator runs away from the school and is often not punished. We don't have biometric data base to check such people in developing countries. They go un-detected and often shift from one school to another and repeat their behaviors.

Keeping the above facts in view, the school system must hire employees who are safe for the children. They should be mature, having smooth interpersonal relationship and adjustment, be reality-oriented and have awareness of surroundings, with non-hostile attitude and have no erotic conflict. Persons with such positive traits are expected to be a good fit in the school system. The SIT images are found helpful in detecting persons having undesirable personality traits.

Application of SIT in Forensic Laboratories to detect Criminals:

The analysis of inkblot response suggests the following possible indicators leading to the detection of criminals:

High number of aggression and hostility, (HAS), preponderance of murder, blood, attacks, conviction, homicide/suicide, high erotic responses (perceiving more sexual anatomy, and sexual body parts such as genitalia, breasts, bust, preponderance of sex responses (more than 5) even on images not depicting erotic imagery, immaturity (low Human and high Animal responses), low "Most Typical (MT) responses, (Evading reality and social norms).The SIT responses help in detecting persons with criminal personality orientation.

Application of SIT in Matchmaking:

Parity among the couples is most important factor, which must be ascertained before the marriage. Most of the couples say that they like each other, she/he looks presentable and is a very caring person. However, even after staying together for years, they are not aware of the inner motivating unconscious forces of their partners. Knowing about their family, education, income, and social status is not enough. The Somatic images help in understanding the total personality profile (level of self, interpersonal relationship with different sets of people, awareness of surroundings and contact with reality, level of erotic desire, expression of hostility and aggression, level of team-making and expression of feelings). These traits must be matched to ensure compatibility among the couple. The SIT may help in understanding the total personality and the kind of parson one is.

The SIT in a case of Depression and PTSD:

The Case:

The present case is discussed to highlight the efficacy of SIT images.

The perceived feelings of being neglected by parents during childhood and early adolescence, followed by traumatic experiences of non-satisfaction after marriage with husband may lead to depressive thoughts and feelings of hopelessness. Even a few years back, majority of marriages in India used to be arranged in nature where both partners were unknown to each other's habit patterns and personality profile. They have lot of aspirations and expectations from their partners. If the expectations of either partner gets shattered, it may lead to depression and trauma. The present case study highlights the management of a female client having PTSD.

Mrs. X, 40 years old, married, graduate, was referred for assessment and therapeutic intervention for symptoms of being depressed, having sense of loneliness and suicidal thoughts. She had typical developmental pattern and was an average student throughout. As she narrated, she did not get much support and affection from her mother because she was dark-complexioned and was less beautiful in comparison to her sister and brother, though she looked pretty good.

After marriage, her mother-in-law did not treat her well and her father in-law tried to have intimate relations with her. She informed her husband about it. After knowing the incident her husband talked about it to his father and decided to leave his parent's home with his wife and started living separately. She had one teenage son. As she described, she did not get affection from her mother during her childhood and adolescence, and support from her in-laws after marriage. The client likes her husband as he is very supportive and caring. She expressed her "physical dissatisfaction" about her intimate relationship and finds her husband sexually less interested, withdrawn and often an incapable person. Even in the early days of their conjugal life, she reported that he had premature ejaculation. She recollected, "I wanted to get divorce but could not do that because my mother was not supporting me, and I did not have a place to go back. However, his caring nature, loving and protective attitude is helping me to be bonded in the family."Relaxation and supportive therapy had improved her depressive symptoms to some extent, and she was advised to continue it further.

The client took the Somatic Inkblot Test - online version (Dubey & Dubey, 2018). An Inquiry was made during the first session. Her responses were interpreted using content analysis, symbolism, and psycho-analytic interpretation (Cassell & Dubey, 2003, Dubey, Banerjee, & Dubey, 2019, Lerner, 1991, Schafer,1954).

Image 1: She perceived in this image "Mother's Womb" which indicates her "regression", the unconscious desire of security to be in her mother's womb. She feels that the present environment is not very cozy and secure.

Image 2: She viewed this image as "Dried leaves", a depressing content. Normally people see plants in this image. 'Dried leaves' may be interpreted as an indicator of depression. On inquiry, she correlated the dried leaves with her present situation.

Image 3: She perceived "Sending love" in this image which may indicate her desire to share her love and need to be loved, which she feels deprived of.

Image 4: She perceived this image as "Sports" and avoided the most common response "Teddy". Teddy represents childhood memories. Seeing teddy bear playing/enjoying indicates happy childhood (particularly during the first 5 to 6 years). Avoidance of the typical response of 'Teddy' may indicate her disturbed childhood as perceived by the client accompanied by unhealthy comparison with her siblings on the part of her mother.

Image 5: She viewed this image as "Women" though "dancing lady" or "Woman in action" is the most common response. The dancing lady may indicate that the person has contact with reality, adequate ego strength, good interpersonal relationship, and happy mood. She failed to perceive the dancing lady and the other common response, namely, "Apple". Avoiding perceiving "apple" and "dancing lady" by a female may indicate that the happiness from her life has gone away and she has traumatic experience, which needs to be addressed during therapy session. Avoiding dancing lady and apple may also indicate erotic conflict and frustration in interpersonal relationship with her husband.

Image 6: She perceived "Two ladies dancing" which is a normal response though "two persons - a male and a female" would have been a much better response. She has avoided perceiving two persons male and female, because of her painful interaction with her husband.

Image 7. She perceived "Some body part" in this image. Normally people perceive "Ear/Fetus". Avoiding perceiving the fetus may indicate either a desire of pregnancy to have another child (pregnant) or regression to the fetus as projected in image 1. On inquiry, she expressed her desire to have another child. Avoidance of perceiving "ear" may also indicate that her close family members have not given attention to address her problems.

Image 8. She perceived this image of "Someone blessing" as a normal response and symbolizes spiritual support and help. When a person has lost hopes to get a positive outcome and is left with no alternatives, she may take shelter in spirituality and higher power. Such belief is more common in the Indian context. It may also indicate spiritual healing and desire to get affection, of which she had considerable deprivation in her personal life.

Image 9. She perceived" Birds" in this image. Two birds kissing / playing is the normal response in this image, which indicates good interpersonal relationship. Normally couples having conflicting relationships may avoid seeing birds kissing or making love. Avoiding the birds to interact may also indicate frustrated love relationship, which is evident from her case history.

Image 10. She perceived "Rib cage" in this image which is a normal response indicating that she is in touch with reality.

Image 11. She viewed "Broken heart" in this image, though heart is a normal response. A person having conflict in love relations, or frustrated love affairs may perceive a broken heart. It also indicates depressive features.

Image 12. She viewed this image as "Kidney" which is a normal response.

Image 13. Her perception of this image in terms of "Happiness" may indicate good memory shared with her father. She has avoided seeing two kids in either side which may indicate the non-supporting attitude and traumatic memory of her father figure (Father in-law) because of whom the client

and her husband left their parental home and shifted to another city. The client was very sad during the inquiry to remember such moments.

Image 14. She saw "Spine" in this image which is a normal response.

Image 15. She perceived as "Female Phallic Part" which is a normal response. It may also indicate healthy body imagery, and "Self" which protects her from further breakdown.

Image 16. She viewed this image as "Ultrasound" which may indicate her desire to have pregnancy and another child. The theme of image 7 is repeated and she needs to be addressed on this issue during therapy session.

Image 17. She perceived this image as "Soldier" and avoided breast – the most common response. Rejection of the breast may indicate deprivation of love and affection from her mother which is confirmed by the client. She feels bad to remember her non-supporting mother.

Image 18. She viewed this image as "mother and son" instead of perceiving "Man and Woman"or "husband and wife" which is the most common response to this image. This may indicate disturbed interpersonal relationship with her husband. However, perception of "mother and son" may indicate her caring attitude and affection towards her husband.

Image 19. She perceived "Skull" in this image though father and son is the most common response. Avoidance of perceiving "father and son" may indicate conflict with the father figure (father-in-law) which is confirmed by the client and her case history.

Image 20. She viewed this image as "two people in discussion", which is a normal response.

Image 21. She viewed this image as "Knife" which may indicate mild outward aggression.

Image 22. She perceived "Love" in this image which is a normal response.

Image 23. She perceived "Fish" in this image which represents male phallic organ. She finds that the fish in static condition symbolizes the passive behavior of her husband which is confirmed by her case history.

Image 24. She viewed "Globe" in this image and rejected "two hearts" which is the most common response to this image. It may indicate frustrated/ disturbed personal relationship with her husband. Two hearts symbolize two lovers, two persons of opposite sex, and sharing of affections.

Image 25. She perceived "Smoke" in this image which may Indicate anxiety and frustration.

Image 26. "Dead body and departure of the soul" is the normal response in this image.

Image 27. She viewed this as "Siblings" which may indicate her desire to have another child.

Image 28. She perceived "Grandmother" in this image and rejected the most common response "mother: holding child." This may indicate her conflict with her mother. She has also avoided mother's perception on Image 17. On further probing, tears rolled down and she shared the sad moments with her uncaring mother. It could have improved her attitude towards "mother figure" provided she had an affectionate mother-in-law. Her psychotherapist must address this issue during therapy session.

Image 29. She viewed a "Disabled" person in this image which may indicate her depressive mood and feelings of helplessness.

Image 30. She perceived "Family" in this image though "Father, Mother and two children" would have been a better response. Avoiding naming Father and Mother may indicate her conflict and traumatic experiences with her mother, and father figure (father-in-law) which have been expressed in her case history.

Conclusion:

The SIT is a reliable, dependable projective test. Its applicability in clinical cases, business organization, school systems, and forensic field has been highlighted. The SIT responses of a case of 40 years, graduate, married, having symptoms of depressive feelings, hopelessness, and suicidal thoughts have been discussed to understand the efficacy of projective images.

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Gender Differences in Depression, Anxiety, Stress and Sleep Disturbances among Doctors Combating Covid-19

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COVID-19 has caused havoc in the lives of doctors. The doctors were faced with the Herculean task of managing a variety of patients, dealing with the queries of their loved ones, keeping up with the ever-changing guidelines, while balancing the worries of their own families, and facing the risk of contracting the infection themselves or transmitting it to their loved ones. Bearing this in mind, the present study was undertaken to assess the impact of gender in causing depression, anxiety, stress, and sleep disturbances between male and female doctors during COVID-19 pandemic. This cross-sectional, analytical, web-based study was conducted during September 2020, after obtaining approval of Institutional Ethics Committee. All participants gave informed consent. The participants completed basic socio demographic questionnaire, and two standardized questionnaires- Depression Anxiety Stress Scale 21 (DASS21) and Athens Insomnia Scale. Out of 143 doctors included in the study, 83 were females (58.04%), while 60 were males (41.96%). On DASS-21, depression and stress was significantly higher in female doctors as compared to male doctors. On the Athens Insomnia Scale, more female doctors suffered from insomnia as compared to male doctors, but the difference was not statistically significant. Female doctors have significantly higher depression and stress while dealing with COVID-19 compared to male doctors.

Introduction:

COVID-19 was declared as a pandemic by WHO following its spread across the world, after the initial outbreak in Wuhan, Hubei, China. Nationwide lockdown, closure of institutions and industries, and subsequent loss of jobs had an impact on economy as well as the health infrastructure. COVID-19 pandemic created an unprecedented mayhem (Srivastava et al, 2020; Chaudhury & Samudra, 2020; Chag et al, 2020). Doctors were faced with an unending stream of challenges while dealing with the pandemic. Doctors were forced to take multiple roles and multitask. On the one hand was the challenge of managing a totally new disease which initially had a high fatality rate. Along with that was trying to address the worries of the patients' loved ones which was acute in the early stages of the pandemic. In addition to this, there was the constant risk of contracting the infection themselves or transmitting it to their loved ones. Therefore, number of studies reported on high rates of stress, depression, anxiety, disturbed sleep and increased prevalence of burnout in healthcare workers (HCWs) (Cevik et al, 2020; Pappa et al, 2020; Pooja et al, 2021; Preti et al, 2020).Studies on the psychological effects of pandemics revealed that doctors and other frontline workers showed significant increase in the levels of depression, anxiety, stress, and insomnia (Lai et al, 2020). Sex and gender differences seem to play a role in the individuals' psychological and behavioural reactions to the COVID-19 pandemic (Guadagni et al, 2020). Previous studies have found apparent gender differences in the prevalence of depression and anxiety in the general population. Females have almost twice the risk of depression, anxiety, posttraumatic stress disorder, and higher risk of insomnia than males (Salk et al, 2017; Zhang et al, 2006). It was with this background that the study was planned to focus on the impact of gender differences on the mental health of doctors.

Materials and Methods:

This cross-sectional study was undertaken in a Dedicated COVID-19 hospital attached to a Medical College. Permission of the Institutional Ethics was obtained before the start of the study, and electronic informed consent was taken from the participants. The voluntary nature of participation was explained to the participants, and they were assured of anonymity. They were also assured that they were allowed to withdraw their consent to participate at any time.

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Key Words: COVID-19, Gender, Depression, Anxiety, Stress, Sleep disturbance

Study design and participants:

An online survey was distributed via social media to the participants during September 2020. A total of 143 (83 females and 60 males) participants were included in the study after matching for age and excluding those who were on psychotropic drugs.

Inclusion criteria:

1) Doctors currently working at a tertiary care centre during the COVID-19 pandemic
2) Willing to participate in the study

Exclusion criteria:

1) Known case of psychiatric illness or taking psychotropic medication

Measures:

The completion of the survey required approximately 10-12 minutes. The participants completed informed consent, basic socio-demographic questionnaire, and two validated scales.
Survey consisted of three modules:

Basic socio-demographic data: Age, gender, place of residence, educational level, income, and use of psychotropic medication.

Depression, Anxiety, Stress Scale- 21 (DASS-21): DASS-21 comprises of 3 self-report scales intended to assess the emotional states of depression, anxiety, and stress. Each of the three DASS-21 scales contains 7 items, giving a total of 21 questions (Henry & Crawford, 2005).

Athens Insomnia Scale: This is an eight-item questionnaire which assesses sleep onset, night and early-morning waking, sleep time, sleep quality, frequency and duration of complaints, distress caused by the experience of insomnia, and interference with daily functioning. A score of >6 indicates insomnia (Soldatos et al, 2003).

Statistical Analysis:

The statistical analysis was done using Chi-square test, t-test, and Mann-Whitney U test, Multiple Regression analysis.

Results:

Participants' characteristics:

Out of 143 physicians, 83 were females (58.04%), while 60 were males (41.96%). Most of the participants (99%) were from urban setups in both the groups. Demographic characteristics of the doctors are as given in Tables 1. There was no significant difference between the two groups except income was significantly more in male doctors.

Table 1. Characteristics of male and female doctors

Characteristics		Male (n=60)	Female (n=83)	t-test/chi square test	p value
Age	Mean	40.82	38.71	1.006	0.316 Not significant
	Range	22-65	22-71		
Age distribution	21-30	19	35	4.436	0.350Not significant
	31-40	8	8		
	41-50	17	28		
	51-60	13	10		
	61-65	3	2		
Income	30,000-59,000	13	41	12.363	0.006 Significant
	60,000-89,000	5	7		
	90,000-1,19,000	11	11		
	>2,00,000	31	24		

Table 2. Depression, Anxiety, Stress and Insomnia scores of male and female doctors

Variables		Male Doctors (N=60)	Female Doctors (N=83)	Mann Whitney U value	P
Depression	Mean(±SD)	7.83	11.76	1901.5	0.015
	Range	0-34	0-42		
Anxiety	Mean(±SD)	6.40	9.18	2103.0	0.109
	Range	0-28	0-42		
Stress	Mean(±SD)	10.40	14.92	1940.5	0.024
	Range	0-30	0-42		
Sleep	Mean(±SD)	5.90	6.39	2371.5	0.627
	Range	0-18	0-20		

Depression anxiety stress scale:

On the DASS-21 questionnaire there was significantly higher levels of depression and stress among female doctors as compared to male doctors. (Table 2).

Athens Insomnia Scale:

The scores of Athens Insomnia scale indicated that 48.25% of doctors suffered from insomnia. Sleep disturbances were more common in female doctors than male counterparts, but the difference was not statistically significant (Table 3).

Table 3. Distribution of severity of Depression, Anxiety, Stress and Insomnia of male and female doctors

Variables		Male Doctors (N=60)	Female Doctors (N=83)	Chi-square test	P
Depression	Normal	43 (71.67%)	41 (49.40%)	6.068	0.194 NS
	Mild	6 (10.0%)	12 (14.45%)		
	Moderate	5 (8.33%)	12 (14.45%)		
	Severe	3 (5.0%)	3 (3.61%)		
	Extremely severe	5(8.33%)	13 (15.66%)		
Anxiety	Normal	40 (66.67%)	45 (54.22%)	3.822	0.431 NS
	Mild	2 (3.33%)	4 (4.82%)		
	Moderate	9 (15.0%)	17 (20.48%)		
	Severe	5(8.33%)	5 (6.02%)		
	Extremely severe	4 (6.66%)	12 (14.45%)		
Stress	Normal	41 (68.33%)	43 (51.81%)	Fishers exact test	0.084 NS
	Mild	6(10.0%)	10 (12.05%)		
	Moderate	4(6.66%)	10 (12.05%)		
	Severe	7 (11.66%)	11 (13.25%)		
	Extremely severe	0 (0.0%)	7 (8.43%)		
Insomnia	Yes	30 (50%)	39 (46.99%)	0.127	0.722 NS
	No	30 (50%)	44 (53.01%)		

Table 4. Spearman's correlations ofage, depression, anxiety stress and Insomnia scores

		Age	Dep	Anx	Stress	Sleep
Age	Correlation Coefficient	1.000	-.155	-.051	-.072	-.025
	Sig. (2-tailed)	.	.064	.542	.395	.764
Dep	Correlation Coefficient	-.155	1.000	.796**	.880**	.670**
	Sig. (2-tailed)	.064	.	.000	.000	.000
Anx	Correlation Coefficient	-.051	.796**	1.000	.808**	.638**
	Sig. (2-tailed)	.542	.000	.	.000	.000
Stress	Correlation Coefficient	-.072	.880**	.808**	1.000	.735**
	Sig. (2-tailed)	.395	.000	.000	.	.000
Sleep	Correlation Coefficient	-.025	.670**	.638**	.735**	1.000
	Sig. (2-tailed)	.764	.000	.000	.000	.

**. Correlation is significant at the 0.01 level (2-tailed).

A Spearman's correlation was run to determine the relationship between age, depression, anxiety stress and Insomnia scores. There was a significant positive correlation between depression and anxiety, stress, and insomnia. There was no significant correlation between age and depression, anxiety, stress, and sleep. (Table 4)

In Table 5 the "R" (the multiple correlation coefficient)value of 0.915, obtained in present study indicates a good level of prediction. The “R Square” (R2) value (the coefficient of determination) indicates that our independent variables explain 83.7% of the variability of our dependent variable, depression. The Durbin-Watson d = 2.018, which lies between the two critical values of 1.5 < d < 2.5, clearly specifying the absence of first order linear autocorrelation in our multiple linear regression data.

Table 5. Multiple regression analysis for predictors of depression:Model Summary[f]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
5	.915[e]	.837	.831	4.53313	2.018
e. Predictors: (Constant), Stress, Anxiety, Sleep, Education, Gender					
f. Dependent Variable: Depression					

Table 6.Multiple regression analysis for predictors of depression:ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
5	Regression	14446.965	5	2889.393	140.608	.000[f]
	Residual	2815.245	137	20.549		
	Total	17262.210	142			
a. Dependent Variable: Depression						
f. Predictors: (Constant), Stress, Anxiety, Sleep, Education, Gender						

In table 6 the *F*-ratio in the ANOVA tests whether the overall regression model is a good fit for the data. The table shows that the independent variables statistically significantly predict the dependent variable, $F(5, 137) = 140.608$, $p < .000$. This clearly implies that the model elucidates a major amount of the variance in depression in health care workers in the study.

Consider the effect of age in this example. It is seen from Table 7 that B (unstandardized coefficient) for stress is 0.070. This means that for each one-unit increase in stress, there is an increase in depression of

0.070 holding all other variables constant. The statistical significance of each of the independent variables can be seen from t and Sig columns. In thepresent study we see that stress, anxiety, sleep, education and gender are significant. It is also evident that stress has a higher impact than anxiety since the beta of the former is higher (beta for stress = .563 versus beta for anxiety =.166) (Table 7). To summarize a multiple regression was run to predict depression from stress, anxiety, sleep, education and gender. These variables statistically significantly predicted Depression, F(5, 137) = 140.608, p < .000, R2 = .837. All five variables (stress, anxiety, sleep, education and gender) added statistically significantly to the prediction.

Table 7. Multiple regression analysis for predictors of depression: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
5	(Constant)	-.825	.935		-.883	.379	-2.674	1.023		
	Stress	.589	.070	.563	8.451	.000	.451	.727	.268	3.734
	Anxiety	.202	.083	.166	2.422	.017	.037	.367	.255	3.924
	Sleep	.144	.048	.228	3.019	.003	.050	.238	.208	4.807
	Education	-2.072	.845	-.090	-2.453	.015	-3.742	-.402	.886	1.129
	Gender	2.049	.849	.095	2.413	.017	.370	3.728	.768	1.303

a. Dependent Variable: Depression

Discussion:

Health Care Workers (HCWs) have to deal with COVID-19 patients directly and hence, are more vulnerable to infection than general population. Increased workload, emergencies, and dealing directly with human sufferings and loss of lives has caused extra stress and anxiety amongst HCWs. Health crises like this has led to psychological changes in the medical workers and such psychological change is initiated by fear, anxiety, depression, insecurity, and uncertainty.

A major finding of our study was that female doctors obtained significantly higher scores with respect to depression and stress as compared to male doctors. Similarly, Das et al (2020) reported that 63.5% of 268 doctors were depressed; of those with moderate to severe depression, there was a positive association with female sex. Their study also found higher perceived stress scores in women, with there being a statistically significant association between the two. A Turkish study observed that anxiety, distress, depression, and insomnia, were higher in female HCWs compared to males (Sahin et al, 2020). Depression, Anxiety, Insomnia and Distress Symptom Scores were all significantly higher in females than in males. Female gender and history of psychiatric illness were identified as risk factors for depression, anxiety, insomnia, and distress symptoms.

Similar results were obtained in a study conducted in Italy by Di Tella et al (2020).Gender, age, and marital status were found to be important factors in predicting depressive symptoms and posttraumatic stress syndrome (PTSS). Female gender, and not in a relationship were found to be associated with higher levels of depressive symptoms. Female gender and older age were found to be associated with higher levels of PTSS. The study conducted by Rümeysaet et al (2020) also indicated that being female, of lower range of age group, and single, and with less work experience were associated with higher scores on DASS-21. The factors associated with higher DASS-21 total scores in frontline workers were: increased weekly working hours, increased number of Covid-19 patients cared for, lower level of support from peers and superiors, and knowledge of limitations in current management of Covid-19 cases.

Our findings are similar to those obtained by the study conducted by Lai et al (2019), which found that women reported more severe symptoms on PHQ-9 for depression, the GAD-7 for anxiety, the ISI for insomnia, and the IES-R for distress which were administered. It also indicated that the female gender was associated with experiencing severe depression, anxiety, and distress (Lai et al, 2020).Our findings are not

in agreement with another study from India which included 174 male and 179 female resident doctors actively engaged in treating patients at a dedicated COVID-19 hospital. Though female residents had significantly higher stress scores, but depression scores were not significantly higher in female HCWs. There was no significant difference in the levels of anxiety (Gupta et al, 2021). This could be due to differences in the sample characteristics.

In the present study insomnia was reported by 48.25% of doctors on Athens Insomnia Scale (AIS>6). An earlier survey of insomnia and related social psychological factors among medical staff involved in the novel Corona virus disease outbreak also found the prevalence rate of insomnia was 36.1% (Zhang et al, 2020). A systematic review and meta-analytic study calculated the pooled prevalence of insomnia in 5 studies to be 34·32% (Pappa et al, 2020).Sleep disturbances were more common in females, but there was no statistically significant difference between the two genders. This finding is similar to many other studies conducted in different countries (Gupta et al, 2021; Lui et al, 2021; Badahdah et al, 2020).

This present study shows that women doctors are more prone to develop pandemic-stress related morbidity. Due to the plethora of hormonal differences and societal expectations, it is known that men and women react to crisis situations differently. The gender differences in response to pandemic stress have been thought to be related to the different immune response in men and women, with a different distribution of the ACE 2 receptors where the corona virus binds and may also be due to effects of oestrogens (Gargaglioni & Marques, 2020; Hodes & Epperson, 2019). Further work is required to confirm the findings from this study, which will help protect female doctors from undesired impact of pandemic stress on their mental health and wellbeing.

Conclusion:

COVID-19 has had a huge impact on mental health. Female doctors have significantly higher depression and stress while dealing with COVID-19 compared to male doctors.

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Relationship Conflict - A Case study with the help of Somatic Inkblot Test

Nipun Ranga, Sakshi Bhagta & Anand Dubey

The Somatic Inkblot Test (Booklet version) was administered to a couple, who were in a relationship for 5 years. Both are employed and financially stable. They are having relationship issues, and the male partner wants to walk out from this relationship. He feels he cannot adjust anymore. The responses given by them on the test indicated intimacy, erotic conflict, and personality issues. The responses were analysed using psychoanalytical interpretation and content analysis and discussed in the case study.

Introduction:

We go through the different developmental stages of life from conception to death and each developmental stage is important for growth. In adulthood having a partner is an important part of our emotional and sexual life. We need to feel emotionally safe and secure and at the same time, we must fulfil our physical needs. A relationship should make us happy and fulfil all kinds of emotional needs such as love, affection, support, and intimate sharing. When the physical and emotional needs are not satisfied by the partner, it leads to emotional disturbance, dissatisfaction, and stress in life (Manickam, & Suhani (2014). It is normal to have a problem in a relationship but it's more important to resolve it and proceed ahead with the intention to have a stronger relationship. When we are in a committed relationship, we must consider our partner as an important player of an informal team.

When we are in a committed relationship, we naturally feel the intimacy towards our partner and to make it stronger, physical relationship plays a great role. When two adults are in a relationship, sex becomes a normal part of it and no intimate relationship works without sexual bond. It is a prime factor to make the relationship more meaningful.

The Case:

The couple has been in a relationship for 5 years and approached one of the authors for counselling to resolve issues in their relationship. The male partner is 30 years old and is an entrepreneur of a small firm, whereas the female is 30 years old working as a government employee. Members of both families are aware of their relationship. The male partner lives with his maternal grandmother along with his mother. His parents got separated when he was about 6 years old. His mother moved back to her parents' home, where he got love and affection from everyone in the family. He never felt the separation from his father because he was looked after well in his grandfather' family.

On the other hand, the female partner lived alone in a flat, away from her parents, because she took a job in a different city. She has two siblings, an elder sister, and one younger brother. She moved to a charitable hostel at the age 10 years. She completed her graduation and took employment.

The female feels that he is cheating on her and she is the one who is giving everything to the relationship, but he doesn't support her. However, the male feels she is a very dominating person, kind of insecure and expects a lot from him. He said she wants to have full control over him. She has taken all the passwords of his laptop and wants to know everything he does in a day and doesn't like him meeting with his friends. She has created scenes many times when he met his female friends. The female partner further complains that she supports him and his family and cares about them a lot, but he doesn't reciprocate the same to me and

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my family. They have no sexual relationship during 5 years of courtship. According to the male partner, he tried to make a physical relationship with her, but she was never interested. On the other hand, the female partner said she has no interest in sexual intimacy and feels awkward even to talk about it.

During clinical intervention, it was observed that the male partner looked stressed but emotionally balanced whereas the female was crying, and her behaviour was not appropriate as per the situation. She was confused and emotionally unbalanced as per the situation.

Methodology:

Both the partners were administered the Somatic Inkblot Test Booklet version individually following standard procedure (Cassell & Dubey, 1990, 2003; Dubey et al, 2019). The significant responses along with rejection of images were analysed using content analysis and psychoanalytic interpretation (Schafer, 1954).

Responses of Male Partner on SIS-II Booklet:

Three most liked images:

A6: "Small boy with teddy" is a normal response suggesting his healthy childhood memories.

B5: "Two people sitting on chairs and sharing thoughts". This is a healthy response with positive emotional content. It may also indicate his desire to be with his partner and sharing nice moments of life.

B31: "Family picture" is a normal response. It suggests that instead of the parent's separation he found the congenial family atmosphere.

Other Significant Responses:

A7: He viewed it as "Drawing of a dancing boy". If a male fails to perceive a "dancing lady" it indicates that the man has traumatic experience from a female. In either case non perception of dancing lady indicates poor interpersonal relationship with opposite sex.

A10: He perceived it as "face with tears in eyes" which may be indicative of depressive content and low self-image.

A13: He perceived this image as "burning hand asking for help". It is indicative of depressive content and a feeling of hopelessness. It may also indicate a severe adverse situation with lots of problems which he wanted to share with the therapist.

A16: He viewed it as "two birds giving shelter" is a good response, indicating good interpersonal relationship and a desire to protect each other.

A21: He viewed it "Dancing figure wearing some costume." He avoided perceiving the typical response of two children. Not perceiving two children/babies is a strong indication of conflict with the father. During inquiry he said that after separation from his father, his mother tried her best to keep him happy.

B4: He viewed it as "two spoilt faces" which may indicate severe aggression towards his father. It may also indicate poor interpersonal relationships between the couple as his girlfriend tries to dominate him.

B8: He viewed it as "a huge piece of rock kept on a cliff of a mountain". Content analysis is indicative of feeling burden and suffocation in the relationship.

B12: He viewed this image as an "angry/ frustrated face". This may indicate his own frustration and anger towards his partner.

B15: He viewed it as "multiple knives thrown at someone". The response indicates severe hostility and aggression which must be addressed by the therapist. This is an alarming sign which needs immediate attention.

B19: He perceived it as a "ball surrounded by snakes". It suggests his feeling of being trapped in the relationship. Not perceiving hearts indicates conflict in a love relationship and craving for affection.

B28: He viewed it as "a person standing disappointed" and a "mother and child". The person standing disappointed indicates his own disappointment with his partner. Mother and child is a normal response, indicating healthy, smooth interpersonal relationship with his mother.

Rejected Images:

A8: This image is normally perceived as Man; man showing male parts. Male sex organ is the most common response on this image. Rejection of this image may indicate sexual conflict with male partner. Avoiding perceiving male organ may also indicate avoiding sexual contact which is supported by their case histories.

A9: Two persons dancing/interacting is a normal response in this image. Rejection of this image may indicate disturbed interpersonal relationships between the couple.

A17: This image is normally perceived as Chest; ribs; heart; lungs but rejection may indicate physical ailments such as Cardiac/liver problems with self or with some significant family members. During inquiry he said that his maternal grandmother recently got operated for a heart problem.

B6: Rejection of this image may indicate erotic conflict. Usually, people perceive upper thighs and lower abdomen, a pair of paints on this image.

B16: Spinal Cord is a frequently perceived response on this image which he failed to perceive. The rejection of this image may indicate his sexual conflict.

B17: Heart is the common response on this image. Rejection of this image may indicate a conflicting love relationship in this case.

B18: Male Sex organ is the typical normal response on this image. It indicates healthy erotic imagery. Rejection of this image may indicate sexual conflict as he confirmed that he wanted to have a physical relationship with his partner, but she always denied it.

B21: Rejection of this image may indicate suppressed hostility/aggression. Guns are the normal response.

B26: Female sex organ is a normal response on this image whereas rejection may indicate sexual conflict with the partner which he confirmed during intervention.

Responses of Female Partner on SIS-II Booklet:

Three most liked images:

A16: "Kissing happy birds, heart" is a normal response which indicates her desire to have an active love relationship. She could not establish a relationship with her partner because of the pressure of her family and non-acceptance of such a relationship in her culture/ society. Heart is a normal healthy response.

B3: "Man, woman within heart, someone standing, girl holding flower" is a normal response and shows her desire to get love and attention from her partner.

B18: “Alone child seating” is an atypical response to this image. Male phallic organ is the normal perception of this image. Females with sexual conflict often reject this image because it symbolizes male phallic body part. The therapist must address her relationship issues during therapy sessions, and she must be given sex education and normal practices in couple relationship.

Three least like images:

A21: “Dancing Babies, Heart, Death God”. Dancing babies indicate her smooth childhood, but the “Death God” indicates the presence of a scary feeling towards her father.

A30: “Ghost eyes/nose, skull” may indicate uncertainty in life and unconscious fear. Perception of “Ghost” may also indicate fearfulness, helplessness, weakness (Schafer,1954).

B2: “Person with tail carrying a child”. The person with the tail may symbolize an animal who is carrying a child. Except for strict behaviour from her maternal uncle's family, where she lived a major part of her life, she does not remember any cruelty. However, the feeling of separation from her father cannot be ruled out which may have an impact on her. She might come out with her issues during therapy sessions later.

Other Significant Responses:

A8: She viewed it as a “sad girl” which may indicate her passive mood. Normally people project male phallic symbols on this image which she has denied perceiving, may further indicate erotic conflict and poor interpersonal relationship with her partner.

A9: She viewed it as "Laughing funny person". Two persons, male and female, or any two persons is a healthy response, suggests good interpersonal relationship. However, “laughing at funny person” may indicate aggression towards the person. She has not perceived the person on the other side which may further indicate her poor interpersonal relationship with her partner and feeling of loneliness.

A25: She viewed it as “eyes, nose, and oval shape”. Female phallic organ is the normal response in this image. The “Eye” represents the female phallic part, is a normal response. It may indicate her healthy attitude towards erotic imagery. However, If a female fails to perceive the embedded phallic content, in this image, it may indicate low self and sexual conflict with male. As she is a mature adult, she needs to learn healthy practices in couple relations during therapy sessions.

A31: She viewed it as “two-person, a boy speaking to a girl (with eyes). It indicates a disturbed relationship with her boyfriend and her suspicious nature towards him.

Though Freudian psychoanalytic symbolism of vagina is eyes, but the client distorted her perception of the reality in terms of the embedded somatic structure embedded. Her distorted projection follows: “eyes nose (two dots in lower area of blot) but not perceived it She was focussing on the minor detail of the image. It is also indicative of sexual conflict and low self-image.

B18: She viewed it as “Alone child sitting”**.** Malephallicorgan is the common response in this image, which may indicate healthy erotic imagery. Snake, spine, missiles, sailing boats in sea/river, indicates symbolic Freudian connotation of male phallic organ. Instead of perceiving phallic male part she has viewed it as a lone child which may indicate her pensive mood, feeling of separation and sexual conflict. Females with sexual trauma often reject this image.This may also indicate her avoidance of intimate physical contact with her partner which has been one of reasons to visit the clinic.

Rejected Images:

A11: Rejection of this image may indicate poor self-image and bodily anxiety.

A20: Kidney is the most common response in this image. Rejection may indicate kidney/heart problems with self or with some significant family members. During inquiry she had confirmed that she is undergoing treatment for kidney stones.

A23: Spinal Column is the common response in this image. It symbolises male phallic organs. Rejection of this image projects her sexual conflict with her partner, which she had discussed during her initial visit.

A26: Fatus is a normal response to this image. Rejection suggests her fear of being getting pregnant by indulging into sexual contact with her partner.

A27: Breast is the normal response. Rejection on this image projects deprivation/conflict with mother during childhood. During enquiry she had confirmed the relationship issues with mother, and she was not properly breastfed by her mother.

B9: Lungs/Kidney is a common response. The rejection may indicate her own problem of kidney stones.

B26: The typical response on this image is female sex organ. Rejection of this image shows sexual conflict and poor self-image.

Conclusion:

The Somatic Inkblot Test was administered to a couple individually having relationship conflict. The images brought on the surface the underlying conflict in the area of intimate relationship, pensive mood, feeling of separation, and interpersonal conflict. The male partner has given 14 Most Typical responses which indicate his contact with reality, moderate ego strength and is free from psychological ailments. However, he has mild depression, frustration, poor interpersonal relationships, and conflict in the sexual area. The female partner has given 13 Most Typical responses, indicating her contact with reality. She has shown poor self-image, mild depression, feeling of separation, conflict in the sexual area, suspicious attitude, and anxiety. The content analyses of SIT responses brought to the surface their disturbed interpersonal relationship. The couple is still undergoing psychotherapy and showing improvement which will be reported in future with the findings on repeat testing.

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What is the Somatic Inkblot Test (SIT 30 Image online Test)?

The Somatic Inkblot test (SIT) is a semi-structured, projective, diagnostic test and an adjunct to psychotherapy. The **SIT** is available at *www.dubayhealingcenter.com*, with 30 imageswas released for quick assessment, after 30 years of intense data collection on clinical, organizational, and normal groups. Researchers have reported **high reliability and validity** of the test (Dubey et al, 2019) The papers published in the international journal, "SIS Journal of Projective Psychology and Mental Health' '(www.somaticinkblots.com) clearly show the advantages of the SIT both in the "individual" as well as "group administration" settings.

The SIT automates the entire "psychological test life-cycle" including administration, interpretation, reporting and diagnostic collaboration. In addition to quantitative analysis, the SIT facilitates and emphasizes content analysis, psychoanalytic interpretation, and symbolic interpretation via a database of research made available as "hints"and case studies. It takes about 30 minutes to complete the test.

The technique is based on spontaneous, individually generated responses to semi-ambiguous figures, which elicit intrapsychic associations specific to the person presented with them. The SIT images evoke symbolism and meanings unique to the responding individual. The test responses (Total R, Human, Animal, Anatomical, Sex, Most Typical, Movement, Rejection and Pathological responses) can be differentiated from peer norms and clinical indices and can be analyzed according to internationally recognized psycho diagnostic criteria. The procedure is an adjunct to psychotherapy because responses can be further explored to create a more effective treatment plan, and can be re-addressed in later discussions, providing opportunities to elicit deeply defended material. During the administration of the SIT procedure, clients may abreact emotional conflict raised to consciousness by the images, which can be a therapeutic experience (Cassell and Dubey, 2003).

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The Test was administered to different clinical groups – Anxiety, Depression, PTSD, Sex perpetuators, Criminals Neurotics, Marital maladjustment, Schizophrenia, and the findings were very encouraging. The images take the client back in time and help to verbalize the repressed material lying down in the storage of unconscious mind. Such verbalization is very useful during therapy session.

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Please visit our website: http://www.dubayhealingcenter.com and take the test to see its simple administration, scoring and interpretation (Quantitative and Content analysis). Please see the Manual of the Test and book "Inkblot Personality Test -Understanding the Unconscious Mind, Dubey, B.L., Banerjee, P. and Dubey Anand (2019) Sage Publications Inc.

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Members of Somatic Inkblot Society will be glad to know that SIS Journal of Projective Psychology and Mental Health has been listed by World Health Organization (Global Forum for Health Research) among 25 indexed journals that have published the highest number of articles on mental health from LMICs in Latin America, Africa and Asia (Medline and PsycINFO). Extract from table-6 of "Research Capacity for Mental Health in Low - and Middle - Income Countries: Results of a Mapping Project "(www.globalforumhealth.org) is given below:

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4	Arquivos de Neuro-psiquiatria	Brazil	Portuguese
5	Acta Psiquiatrica y psicologica de Amercia Laina	Argentina	Spanish
6	Journal of the Medical Association of Thailand	Thailand	English, Thai
7	British Journal of Psychiatry	UK	English
8	Acta Psychiatrica Scandinavica	Denmark	English
9	Salud Mentale	Mexico	Spanish
10	Vertex	Argentina	Spanish
11	Journal of Personality and Clinical Studies	India	English
12	Social Psychiatry and Psychiatric Epidemiology	Germany	English
13	Revista Medica de Chile	Chile	Spanish
14	South African Journal of Psychology	South Africa	Afrikaans, English
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16	South African Medical Journal	South Africa	Afrikaans, English
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