Cognitive Behavioral Fusion Scale: Psychometric Analysis

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Variable Selection: Thought-Action Fusion

In recent decades, researchers have undertaken the objective of developing psychometric inventories designed to effectively identify and provide a more precise measurement of latent variables associated with obsessive-compulsive disorder (OCD; Freeston et al., 1991; Rachman et al., 1995; Shafran et al., 1996; Salkovskis et al., 1999; OCCWG, 1997, 2001, 2003, 2005). The results of the research examining the underlying cognitive mechanisms associated with the pathogenesis of OCD have uncovered multiple psychological vulnerability mechanisms that exhibit etiological or maintenance functions (OCCWG, 1997, 2001, 2003, 2005; Frank & Davidson, 2014). A particular psychological vulnerability mechanism recognized as a latent variable and a risk factor for the maintenance and pathogenesis of OCD is referred to as thought-action fusion (TAF; Shafran et al., 1996; OCCWG, 1997; Berle & Starcevic, 2005; Meyer & Brown, 2012; Frank & Davidson, 2014).

The origins of the TAF construct can be traced back to several earlier studies conducted by Rachman (1976), Rachman and De Silva (1978), Salkovskis (1985), Salkovskis (1989), Rachman (1993), and Rachman et al. (1995), which investigated the anatomy and phenomenology of obsessions. These studies, amongst others (OCCWG, 1997, 2001, 2003, 2005), have converged on cognitive mechanisms associated with TAF, specifically intrusive cognitions, misinterpretation of the presence of intrusive cognitions, and an inflated sense of responsibility and guilt associated with the intrusive cognitions (Salkovskis, 1985; Salkovskis, 1989; Rachman, 1993; Tallis, 1994).

Rachman's (1993) study on intrusive activity and the subsequent experience of an exaggerated sense of psychological and moral responsibility and guilt highlighted the issue of excessive attribution of blame to oneself in OCD. He proposed that individuals predisposed to

OCD engage in a maladaptive evaluation of what would otherwise be deemed insignificant, intrusive cognitions. These intrusive cognitions become unified with an inflated and maladaptive sense of psychological and moral responsibility, resulting in the individual's excessive attribution of blame to themselves for the occurrence of intrusive thoughts (Rachman, 1993).

An intriguing observation made by Rachman (1993) indicates that individuals frequently encountering distressing cognitions often exhibit heightened religious and/or moral standards, with their behavior reflecting this tendency accordingly. An illustration of this observation is offered by Rachman (1993) concerning blasphemous religious thoughts. Rachman (1993) elucidates that the experience of blasphemous thoughts parallels the act of committing blasphemy. Shafran et al. (1996) provide an additional illustration of the fusion between cognition and behavior through the case of a patient engaged in religious prayer. During her prayer, the patient experienced an intrusive sexual image involving Jesus, which prompted her to believe that she had transgressed against God and to regard herself as an immoral person (Shafran et al., 1996). These examples highlight what Shafran et al. (1996) identify as TAF, a psychological fusion between cognition and behavior, in which the individual perceives the thought as equivalent to executing that thought.

In pursuing psychological measurement, Shafran et al. (1996) identified two primary components associated with TAF, specifically the belief that thinking about a morally repulsive or unacceptable event increases the likelihood of its occurrence. Shafran et al. (1996) designated this component as the likelihood type of TAF. The second component Shafran et al. (1996) identified is moral type TAF. This component is related to the dysfunctional belief that unacceptable, repulsive, and unwanted cognitive activities are as detrimental and morally equivalent to engaging in actual events. Further, Shafran et al. (1996) indicate that TAF is not

exclusive to specific content. This cognitive phenomenon has been recognized in various manifestations of OCD, including checking behaviors, compulsive hand washing (Rassin et al., 1999), and religious scrupulosity (Berman et al., 2010). Although research has examined various populations concerning the relationship between TAF and religious scrupulosity, this area of investigation remains relatively underexplored (Abramowitz et al., 2002; Inclan, 2024; Inclan, 2025) and would significantly benefit from additional empirical inquiry.

Test Identification and Summary

Thought-Action Fusion Scale

One of the first psychometric inventories to operationalize and assess the latent construct of TAF was developed by Roz Shafran, Dana Thordarson, and Stanley Rachman, called the thought-action-fusion scale (TAFS; Shafran et al., 1996), which was constructed from a previous study by Rachman et al. (1995). The TAFS was developed to evaluate the latent construct of TAF, to facilitate a comparison between non-obsessional and obsessional samples, and to investigate whether a relationship exists between measures of obsessionality and TAF (Shafran et al., 1996). The TAFS constitutes a self-reported metric with no administration requirements that employs a 5-point Likert scale, ranging from 0 (representing "disagree strongly") to 4 (denoting "agree strongly").

The original study conducted by Shafran et al. (1996) included two iterations of the TAFS from which the normative data were collected and derived. It is important to acknowledge that the initial study conducted by Shafran et al. (1996) provided a theoretical investigation that facilitated the psychometric refinement of the TAFS into its current iteration. The first study included an obsessional sample comprising 147 participants (mean age of 38; 74% female). The individuals within the obsessional sample responded to an advertisement promoting the study

and self-reported having OCD (Shafran et al., 1996). The individuals constituting the obsessional sample were selected for the final analysis by achieving a clinical cutoff score of 11 on the Maudsley Obsessional Inventory (MOCI; Shafran et al., 1996), which has been utilized in previous research evaluating the type and severity of obsessional difficulties (Hodgson & Rachman, 1977). The comparison group in study one consisted of 190 undergraduate students (mean age of 19; 65% female) from Columbia University. A significant difference was observed between the scores of thought-action fusion moral (TAF-Moral) and thought-action fusion likelihood-for-others (TAF-Likelihood-for-others) across the two groups. Specifically, the obsessional sample reported a TAF-Moral score of 25.74 (SD = 14.59), while the comparison group exhibited a TAF-Moral score of 19.52 (SD = 10.59). Moreover, the obsessional sample mean was 13.19 for TAF-Likelihood-for-others (SD = 11.15), in contrast to the comparison group mean was 5.70 (SD = 7.37).

The second study was conducted to further psychometrically enhance the TAFS, building upon its initial development. The researchers excluded positive items from the TAF-likelihood subscale, one item from the TAF-Moral subscale due to its ambiguity, as identified by the researchers, and one negative item from the TAF-likelihood-for-others subscale (Shafran et al., 1996). The psychometrically refined TAFS resulted in 19 total items: 12 moral items, four likelihood-for-others, and three likelihood-for-self items (Shafran et al., 1996). The total cumulative score varies from 0 to 76, with elevated scores signifying a heightened inclination toward TAF beliefs (Shafran et al., 1996; Berle & Starvevic, 2005; Meyer & Brown, 2012).

Participants and Group Comparison

The second study included three distinct groups. Firstly, an obsessional sample comprising 118 participants (mean age of 40; 64% female) that fit the same inclusion criterion as

study one (Shafran et al., 1996). Approximately twenty-three participants from the obsessional group of study two participated in study one (Shafran et al., 1996). The two other comparison samples comprised community and student samples (Shafran et al., 1996). The community sample consisted of 122 volunteers, with a mean age of 40 years (57% female), while the student sample was comprised of 272 undergraduate students, with a mean age of 20 years (65% female) from the University of British Columbia (Shafran et al., 1996). Significant differences were observed between the samples regarding the TAF-Moral subscale ($p = .14$; Shafran et al., 1996). The obsessional sample ($m = 20.03$, $SD = 13.17$) was significantly different from the community sample ($m = 12.74$, $SD = 11.3$) and the student sample ($m = 17.97$, $SD = 10.53$; Shafran et al., 1996).

Psychometric Properties

Regarding reliability, the internal reliability consistency of the TAF subscales, Moral and Likelihood (self and others), demonstrated excellent internal reliability psychometric properties, with Cronbach alpha reported between .85 and .96. Concerning test-retest reliability, no data nor discussion was provided in the original study, however, a follow-up study conducted by Rassin et al. (2001) assessed for test-retest reliability. While results were significant at the 0.01 level at all TAF subscales and total score for test-retest reliability (TAF-total, $r = 0.52$; TAF-likelihood, $r = 0.51$, & TAF-Moral, $r = 0.54$), mean scores dropped across all subscales (Rassin et al., 2001). It is important to highlight that the test-retest reliability assessment in the study by Rassin et al. (2001) involved 98 undergraduate students from an original sample of 285 undergraduates and did not include any clinical population. Rassin et al. (2001) observed that, despite the unsatisfactory results for test-retest reliability, the instability of the TAFS may arise from the characteristics of the participants. It is hypothesized that conducting the assessment on a sample

of individuals with OCD could yield results demonstrating greater stability over time (Rassin et al., 2001).

Validity for the TAFS was measured in the original study and subsequent follow-ups. Shafran et al. (1996) established robust content validity, as demonstrated by the items included in the TAFS, which were derived from clinical observations of patients diagnosed with OCD. The construct validity was further evaluated by assessing the TAF with the MOCI and the Beck Depression Inventory (BDI; Beck et al., 1961; Shafran et al., 1996). With an alpha level established at 0.005, the results indicated a significant correlation between the MOCI subscales, particularly in the domains of checking and cleaning, suggesting a relationship between TAFS and OC symptoms (Shafran et al., 1996). Concerning the construct validity between the BDI and TAF, significance was attained at the 0.005 level, which was interpreted to mean that depression is a mediating variable in metacognitive beliefs. A subsequent study by Rassin et al. (2001) further validated and illuminated additional findings. The construct validity demonstrated that MOCI subscales at the 0.01 level correlated with TAF-total scores ($r = 0.21$). It is important to emphasize that Rassin et al. (2001) identified only a significant correlation between the BDI and the TAF-Likelihood subscale at the 0.05 significance level ($r = 0.17$); however, TAF-total scores did not exhibit a significant association with BDI ($r = 0.15$). Rassin et al. (2001) further assessed discriminant validity, recruiting two samples: a clinical sample of 30 participants diagnosed with OCD and 41 participants with an anxiety or related disorder (post-traumatic stress disorder, panic disorder, and social phobia). Results indicated there were no significant differences in TAF-total score between OCD participants and anxiety and related disorder participants (Rassin et al., 2001). Rassin et al. (2001) proposed that the construct of TAF lacks the high specificity to OCD as initially suggested. This further substantiates the notion that TAF represents a widespread

construct that manifests across various emotional disorders. This claim is reinforced by contemporary literature suggesting that TAF can be conceptualized as a transdiagnostic psychological vulnerability mechanism (Thompson-Hollands et al., 2013; Frank & Davidson, 2014). Nevertheless, Rassin et al. (2001) do not dismiss the potential influence of TAF in OCD, suggesting that TAF may assume a more intricate role in OCD than in other disorders.

Taken together, the present study sought to develop a new thought-action fusion scale grounded in previous theoretical and empirical research (Salkovskis, 1985; Salkovskis, 1989; Rachman et al., 1995; Shafran et al., 1996; Thompson-Hollands et al., 2013; Frank & Davidson, 2014), as well as the author's clinical expertise in treating OCD, anxiety, and related conditions. Subsequently, a preliminary empirical investigation was conducted to evaluate the newly developed Cognitive Behavioral Fusion Scale (CBFS) utilizing a small, convenient sample of non-clinical participants. Furthermore, a discussion elucidating the findings and recommendations for practical applications of the CBFS are provided.

Method

Participants

Participants were recruited utilizing a convenience sampling method that included the researcher's acquaintances and relatives (n = 26; 7 female and 19 male). All participants were 18 or older, with 57.7% falling within the 35 to 44 age range. The majority of the participants were Caucasian (n = 20, 76.9%), married (n = 18, 69.2%), obtained a bachelor's degree (n = 11, 42.3%), and identified as Christian (n = 22, 84.6%). The survey was distributed to participants via SMS text messaging that contained a link to the survey. Owing to the limited sample size, this study has been structured as a preliminary investigation to develop a novel thought-action fusion scale. Further analyses must be conducted with larger samples to establish psychometric

properties more effectively.

Materials

Thought-action Fusion Scale

The thought-action fusion scale (TAFS) is a self-reported psychometric inventory that uses a 5-point Likert scale, ranging from zero (strongly disagree) to four (strongly agree; Shafran et al., 1996). The scale consists of 19 items assessing three specific construct domains: TAF-moral (12 items; e.g., *having a sinful thought is almost as sinful to me as a sinful action.*), TAF-likelihood-self (3 items; e.g., *if I think I am going to fail, it increases my chances of failing.*), and TAF-likelihood other (4 items; e.g., *thinking about someone hurting themselves increases the probability they will hurt themselves*; Sharfran et al., 1996). The maximum score attainable on the TAFS is 76, while the minimum score is 0; a higher score indicates a greater prevalence of TAF (Shafran et al., 1996). Concerning internal consistency, Shafran et al. (1996) reported a commendable internal consistency ranging from .85 to .96 across all samples, respectively.

Cognitive Behavioral Fusion Scale

The Cognitive-behavioral fusion scale (CBFS; see Appendix A) is a 19-item questionnaire that uses a 5-point Likert scale assessing three construct domains: cognitive behavioral fusion moral (CBFM, 10 items, e.g., *An image of someone else other than my spouse/partner while I am having sex with my spouse/partner is the same as having sex with that person*), cognitive behavioral fusion self (CBFS, three items, e.g., *If I think I will get sick, I am more likely to get sick*), and cognitive behavioral fusion others (CBFO, six items, e.g., *Thinking about someone dying increases the chances of them dying*). The scoring system ranges from zero, indicative of strong disagreement, to four, representative of strong agreement, with a maximum attainable score of 76 and a minimum score of zero. Elevated scores suggest an

increased tendency towards TAF. Scale items were derived from both theoretical content and logical content methodologies. The theoretical framework was formulated based on a comprehensive review of numerous scholarly articles investigating the phenomenology and anatomy of obsessions. The articles included are as follows: Rachman (1971), Rachman (1973), Rachman (1976), Rachman (1978), Rachman and De Silva (1978), Salkovskis and Harrison (1984), Salkovskis (1985), Salkovskis (1989), Clark and Purdon (1993), Rachman (1993), Wegner and Zanakos (1994), Tallis (1994), Rachman et al., (1995), Freeston et al., (1996), Shafran et al., (1996), Thompson-Hollands et al., (2013), and Frank and Davidson (2014). A logical content strategy was furthermore employed, leveraging the author's clinical expertise as a licensed clinical psychotherapist specializing in the assessment and treatment of obsessive-compulsive disorder (OCD), as well as anxiety and associated disorders.

Procedure

The researcher utilized a survey research design and sent all participants an SMS message containing a hyperlink to a survey. The survey was designed and developed on the MailChimp platform and completed online. Further, the survey consisted of the new version of the CBFS, the existing TAFS (Shafran et al., 1996), a brief rationale for the study, and instructions pertaining to the survey. The data collected from participants was loaded and statistically analyzed with IBM SPSS Statistics version 30.0.0.0 (172).

Results

The present study sought to develop and field test a new psychometric inventory called the CBFS. The CBFS was designed to evaluate the latent construct of TAF (Shafran et al., 1996), which has been recognized as a significant psychological vulnerability mechanism in OCD (O'Leary et al., 2009; Bailey et al., 2014; Siev et al., 2017; Hezel et al., 2019) and across various

psychopathologies (Thompson-Hollands et al., 2013; Frank & Davidson, 2014). The CBFS is structured on a 5-point Likert scale from 0 (Strongly Disagree) to 4 (Strongly Agree), with a scoring range extending from 0 to 76; higher scores reflect a more pronounced influence of TAF.

Descriptive Statistics

Several statistical analyses were performed to evaluate the psychometric properties of the CBFS. Descriptive analyses indicate that the distribution of total scores for the CBFS and the TAFS (Shafran et al., 1996) is normally distributed. Figures 1 and 2 present visual representations of the normal distribution for the CBFS and TAFS. Further, see Table 1 for a summary of the descriptive analyses.

Reliability

A reliability analysis employing the odd-even method was conducted to evaluate internal consistency. Following the statistical decision to perform an odd-even analysis, the Spearman-Brown Prophecy Formula was utilized, revealing a strong reliability coefficient of 0.93 (see Table 2). These results demonstrate excellent internal consistency, which instills a high confidence level in the items tapping TAF.

Validity

The CBFS was subjected to additional evaluation for convergent validity by implementing a Pearson correlation analysis juxtaposed with a well-established measurement instrument for TAF, specifically the TAFS (Shafran et al., 1996; Meyer & Brown et al., 2012). The statistical results indicated a robust positive correlation between the two measures, $r = .881$, $p < .001$ (one-tailed; see Table 3). These findings provide a high confidence level that the new scale, CBFS, assesses the same latent construct as the TAFS.

In conclusion, after examining the psychometric properties of the CBFS, it is apparent that these properties exhibit considerable strength. However, it is important to recognize that further psychometric analysis is necessary due to the insufficient sample size. Subsequent research should be conducted with a larger sample size to evaluate the psychometric properties more comprehensively. Nevertheless, in light of the strong statistical results, it is encouraging that an additional TAF scale is forthcoming.

Discussion

The present study was a preliminary step toward developing a new psychometric instrument to assess the latent TAF construct. It focused on psychometric analysis regarding internal consistency and convergent validity in a small pilot of non-clinical participants. The CBFS appears to evaluate the underlying psychological construct known as TAF, as psychometric properties demonstrated strong internal consistency and convergent validity.

This study further illustrates the requirement for accessible and easily administered psychological assessments to assist individuals experiencing obsessional tendencies within a religious context, given the limited investigation regarding religious scrupulosity (Inclan, 2024; Inclan, 2025). Indeed, this research could represent a significant advancement in equipping church leaders with a tool to identify church members experiencing difficulties with TAF. Several studies have identified an association between high protestant religious devotion and obsessional tendencies, specifically the appraisal that specific thoughts are significant and possibly lead to catastrophic outcomes (Abramowitz et al., 2002; Abramowitz et al., 2004). An infamous Biblical verse, Matthew 5:27-28 (New Living Translation, 1996/2004), has been identified as a quintessential example upon which Protestant doctrine is structured, reinforcing the notion that thoughts can be inherently sinful and that individuals are expected to assume

responsibility for such thoughts (Cohen & Rozin, 2001; Abramowitz et al., 2002; Buchholz et al., 2019; Abramowitz & Bucholz, 2020). Moreover, while numerous religions (Greenberg et al., 1987; Inozu et al., 2020) and various Protestant denominations (Cohen & Rozin, 2001; Abramowitz et al., 2002; Buchholz et al., 2019; Abramowitz & Bucholz, 2020) have been subjected to empirical scrutiny within the context of the phenomenology of religious scrupulosity, a particular Protestant denomination, namely Pentecostalism, has garnered minimal to no empirical examination (Inclan, 2024; Inclan, 2025). Given the significance of TAF in the phenomenology and anatomy of obsessions (Salkovskis, 1985; Salkovskis, 1989; Rachman, 1993; Tallis, 1994) as well as the teachings regarding the sinfulness of thoughts within the Protestant doctrine (Cohen & Rozin, 2001; Abramowitz et al., 2002; Buchholz et al., 2019; Abramowitz & Bucholz, 2020), this study serves as a preliminary step in developing an additional tool designed to assess TAF. This tool may be employed by church leaders who are pastoring individuals who, unfortunately, are susceptible to TAF and the development of OCD.

Several limitations of the study warrant attention. Firstly, the participants were obtained through a convenience sampling technique, which was restricted to the friends and family of the researcher. This aspect could constitute a significant limitation to the heterogeneity of participants and may impact the generalizability of the results. Furthermore, due to the restricted sampling frame, the study was notably limited in sample size. The present study included 26 participants, considerably below the recommended amount for such a scientific endeavor. An additional limitation includes the lack of divergent validity. Though the CBFS demonstrated strong convergent validity with the TAFS (Shafran et al., 1996), the study did not analyze divergent validity.

Despite several methodological limitations within the study and lack of validity analysis, it concurrently exhibits multiple strengths. Firstly, the study is constructed upon a robust theoretical foundation, a foundation that has been developed and evaluated by numerous researchers spanning over half a century to more contemporary periods (Rachman, 1971; Rachman, 1973; Rachman, 1976; Rachman & De Silva, 1987; Salkovskis & Harrison, 1984; Salkovskis, 1985; Salkovskis, 1989; Shafran et al., 1996; Rassin et al., 1999; Rassin et al., 2001; OCCWG, 1997, 2001, 2003, 2005; Thompson-Hollands et al., 2013; Frank & Davidson, 2014). Secondly, the author, a licensed clinical psychotherapist with a specialization in the assessment and treatment of OCD, anxiety, and related disorders, leveraged their clinical expertise, particularly in the formulation of assessment items.

Overall, the CBFS exhibits robust psychometric properties and represents a promising new TAF scale. Nevertheless, several domains warrant further research. Firstly, subsequent studies should be conducted using a sample size that is considerably larger than that utilized in the present study and to include a wider participant frame. Secondly, the effectiveness of the CBFS may be enhanced by its application among a larger cohort of participants diagnosed with OCD, anxiety, and related disorders (e.g., social anxiety disorder, panic disorder, agoraphobia, PTSD). With subsequent follow-up studies, the CBFS possesses the potential to function as a practical psychological instrument for assessing TAF in forthcoming scientific investigations, as well as a valuable tool within outpatient and inpatient psychiatric facilities. Finally, the CBFS may act as a valuable resource for church leaders to assist their congregation members in recognizing potential obsessional tendencies and to furnish appropriate resources for them to obtain psychological support if deemed necessary.

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Table 1

Descriptive Statistics for Total Scores for the CBFS and TAFS

Scale	N	Mean	Median	Mode	SD	Variance	Range
CBFS	26	22.80	23.0	2.0	11.72	137.44	45.0
TAFS	26	24.11	25.0	9.0	14.56	212.02	56.0

Table 2

Spearman-Brown Reliability Coefficient for Odd Even Halves of the CBFS

Test length	r
Equal Length	.93
Unequal Length	.93

Table 3

Validity Coefficient between Total Scores on the CBFS and TAFS

r	N	Sig. (1- Tailed)
.88	26	.001

Figure 1

Distribution of Total Scores on CBFS

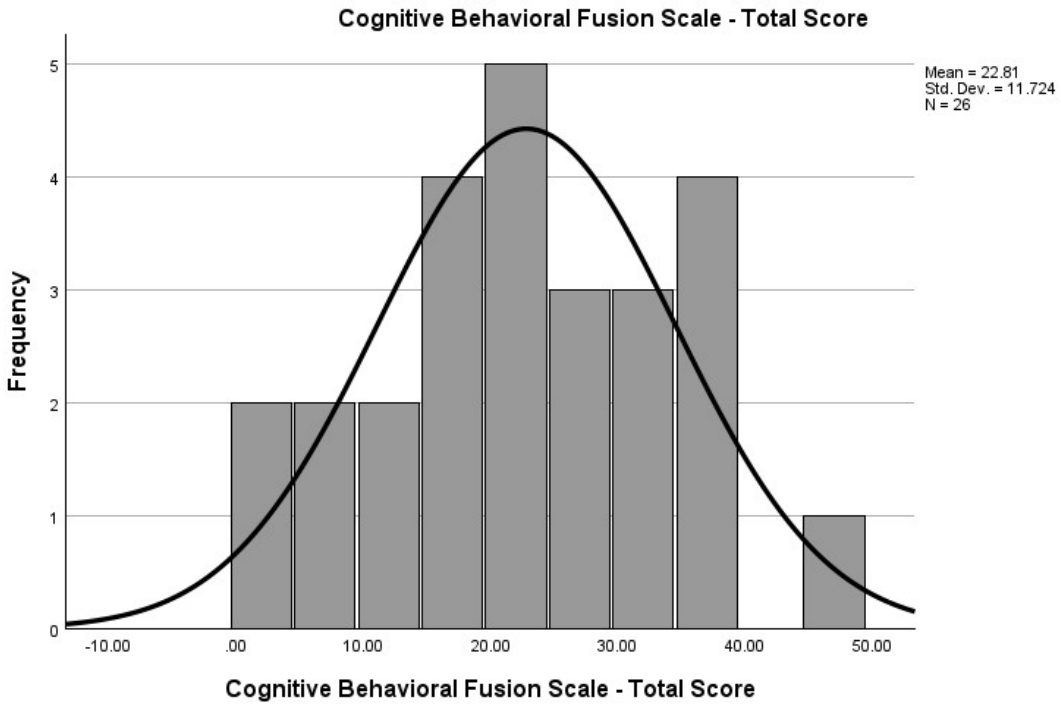
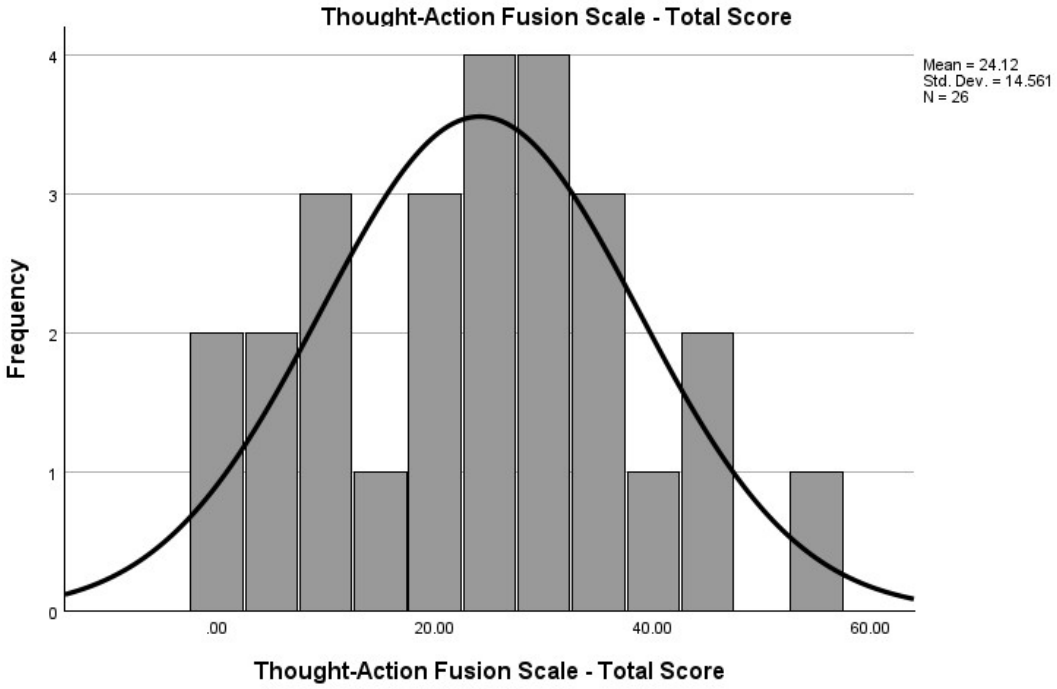


Figure 2

Distribution of Total Score on the Thought-Action Fusion Scale



Appendix A

Rate how much you disagree or agree with the following statements. Please select only one agreement level per statement.

		Disagree Strongly	Disagree	Neutral	Agree	Agree Strongly
1.	I am morally responsible for my thoughts.	0	1	2	3	4
2.	Having thoughts about harming others is as bad as harming that person.	0	1	2	3	4
3.	A sexual thought regarding someone is as if I am acting on that sexual thought.	0	1	2	3	4
4.	My negative thoughts make me a bad person.	0	1	2	3	4
5.	Having thoughts about harming myself is as bad as hurting myself.	0	1	2	3	4
6.	A thought against the Bible is as sinful as a sinful action.	0	1	2	3	4
7.	An image of someone else other than my spouse/partner while I am having sex with my spouse/partner is the same as having sex with that person.	0	1	2	3	4
8.	Having sexual thoughts about a Bible character is as sinful as committing a sinful act.	0	1	2	3	4
9.	Thinking that a pastor is ill-advised/wrong is as bad as committing a sinful act.	0	1	2	3	4
10.	Thinking about cursing at someone is as bad as actually doing it.	0	1	2	3	4

11.	If I think I will get sick, I am more likely to get sick.	0	1	2	3	4
12.	If I think about being involved in a plane crash, it increases the probability that I will be involved in a plane crash.	0	1	2	3	4
13.	If I think of a sinful thought, it increases the probability that I will engage in the sinful action.	0	1	2	3	4
14.	If I think about someone dying from a medical disease, that person is more likely to die from a medical disease.	0	1	2	3	4
15.	If I think about harm coming to someone, it increases the likelihood that harm will occur to that person.	0	1	2	3	4
16.	If I think a business is likely to fail, it has a higher chance of closing.	0	1	2	3	4
17.	Thinking about someone failing at a task increases the chance they will fail.	0	1	2	3	4
18.	Thinking about someone dying increases the chances of them dying.	0	1	2	3	4
19.	Thinking a person is going to hell increases the chances of them going to hell.	0	1	2	3	4