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A Practical Guide to Assessing Adult Firesetters' Fire-Specific Treatment Needs Using the Four Factor Fire Scales

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[†] Note to editors/copy-editors: The first author's surname is Ó Ciardha. The Ó should not be mistaken for an initial

Abstract

Objective: Practitioners working with offenders who have set fires have access to very few measures examining fire-specific treatment needs (e.g., fire interest, fire attitudes). In this paper, we examine the new Four Factor Fire Scales (Ó Ciardha et al., 2014), which may be used by practitioners to examine fire-specific treatment needs for offenders who have set deliberate fires. We present a standardized scoring procedure when using these scales, as well as an associated scoring template for practitioner use. **Method:** Norm data are based on male and female firesetters (n=378) and non-firesetters (n=187) recruited from 19 prison establishments (including 6 female establishments, 1 Young Offender Institutions) and 12 secure mixed gender mental health settings. **Results:** We present a full overview of all data we have collected to date relating to the Four Factor Fire Scales across prison, mental health and young offending participants. For each population, we present mean scores as well as associated cut off scores and reliable change indices to aid practitioners in their interpretation of scores. **Conclusions:** The Four Factor Fire Scale provides professionals working in the area with a robust template for administering, scoring, and interpreting the fire-specific factors currently identified as playing a role in deliberate firesetting behavior. Strengths and limitations of the measure are discussed.

Introduction

The research literature examining deliberate firesetting in adults is growing but remains in relative infancy. As a result, it remains a challenge for practitioners working with adult firesetters to identify and use valid self-report questionnaires to address their treatment needs. More recently, however, researchers have identified a number of key treatment needs associated with adult firesetting. Some of these identified treatment needs map onto non-firesetting offenders' needs (e.g., offence-supportive attitudes), and can be assessed using established measures (see Gannon, Ó Ciardha, Barnoux, Tyler, Mozova, & Alleyne, 2013). However, other documented treatment needs (i.e., fire-specific variables such as fire interest and attitudes towards fire) represent unique treatment needs associated with few established measures (Gannon et al., 2013; Gannon et al., 2014).

There is currently one published long-standing fire-specific questionnaire. The 14-item *Fire Interest Rating Scale* (FIRS; Murphy & Claire, 1996) examines respondents' self-reported affect when imagining various fire related situations (e.g., "Watching a house burn down") on a Likert scale from (1) *most upsetting or absolutely horrible* to (7) *very exciting, lovely, very nice.* Higher scores on this measure indicate increased levels of fire interest. However, various fire situations are presented; some of which appear relatively innocuous (e.g., "Watching an ordinary coal fire burn in a grate"). There is one other long-standing (unpublished) questionnaire that appears to be used by clinicians. The 20-item *Fire Attitude Scale* (FAS; Muckley, 1997) is designed to examine respondents' attitudes in relation to fire. Questions spanning numerous situations and behaviors (e.g., "They should teach you about fire prevention at school", "Most people have set a few small fires just for fun") are totaled to provide an overall attitude score where higher scores indicate more problematic attitudes towards fire. Interestingly, neither the FIRS nor the FAS have received any thorough psychometric examination or validation (Curtis, McVilly, & Day, 2014) and yet both have

been used substantially in clinical practice due to the paucity of measures available in this area.

In light of this, Ó Ciardha et al. (2014) recently published a detailed examination of these questionnaires. They also examined the properties of a new unpublished 10-item measure designed to examine identification with fire (*Identification with Fire Questionnaire* [IFQ]; Gannon, Ó Ciardha, & Barnoux, 2011). Ó Ciardha et al. administered all three questionnaires to UK imprisoned adult male firesetters (*n* = 117) and comparable imprisoned male non-firesetters (*n* = 117). Ó Ciardha et al. were particularly interested in whether the three questionnaires examined three unique and distinct constructs as intended (i.e., fire interest, fire attitudes, and identification with fire). Factor analysis revealed five rather than three distinct constructs. The first factor, labeled identification with fire, examined fire as being essential to personal identity or functioning and consisted of 11 IFQ and FAS items (e.g., "Fire is part of me", "Setting just a small fire can make you feel a lot better"). The second factor, labeled serious fire interest, reflected excitement associated with destructive or life threatening fires and consisted of 7 FIRS items (e.g., "Seeing a hotel on fire in the TV news"). The third factor—poor fire safety—involved a perceived lack of fire safety knowledge and minimization of fire safety importance consisting of 6 FAS items (e.g., "They should teach you about fire prevention in school"). The fourth factor, labeled everyday fire interest, reflected excitement associated with non-dangerous normative firesetting scenarios and consisted of 6 FIRS items (e.g., "Watching a bonfire outdoors, like on bonfire night"). Finally, the fifth factor—firesetting as normal—reflected views that setting fires was a relatively usual occurrence and was comprised of 7 FAS items (e.g., "Most people's friends have lit a fire or two"). Several items from the FIRS, FAS, and IFQ did not contribute to any of the five factors. Ó Ciardha et al. concluded that using the more elaborate factor scores was likely to offer a clear advantage over the use of the original questionnaire scores since the

factor scores allow the practitioner to form a clearer picture of the exact nature of the fire-specific treatment needs held by each client. For example, an individual may hold no particular interest in fires but hold a very poor awareness or regard for fire safety. Importantly, however, although individual factor scores and the total score was able to adequately discriminate firesetting individuals from non-firesetting individuals; one factor—everyday fire interest factor—did not demonstrate discriminative ability (see also Gannon et al., 2013). This suggests that everyday fire interest does not represent a relevant treatment need for firesetters.

In Ó Ciardha et al.'s (2014) study and previous studies (e.g. Gannon et al., 2013) using the Fire Factor Scales, varying scoring algorithms have been used to accommodate the fact that items across the three component questionnaires are scored using differing Likert scales. This could be confusing for consulting clinicians. In this paper, we would like to present clinicians with a standard guide for administering and scoring the Fire Factor Scales. Readers should note that we have now labeled the Scales the Four Factor Fire Scales since we will not focus on everyday fire interest given its lack of discriminative ability. We present an overview of all data we have collected to date relating to the Four Factor Fire Scales (i.e., across prison, mental health, and young offending participants). For each population, we present mean scores, cut off scores, and reliable change indices for the Four Factor Fire Scales to aid the clinician in their interpretation of scores.

Method and Scoring Procedure

Administration and Scoring of the Fire Factor Scales

Three pre-existing questionnaires must be administered to obtain each of the subscale and total scores associated with the Four Factor Fire Scales: the *Fire Interest Rating Scale* (Murphy & Clare, 1996), *Fire Attitude Scale* (Muckley, 1997), and *Identification with Fire*

Questionnaire (Gannon et al. 2011). The Four Factor Fire Scales (identification with fire, serious fire interest, poor fire safety, and firesetting as normal) have generally good internal consistency (αs = .88, .86, .68, .73 respectively; Gannon et al., 2013) and hold demonstrable discriminative ability (see Gannon et al., 2013; Ó Ciardha et al., 2014). The summed total score of these items is also reported to hold excellent internal consistency (α = .90; see Gannon et al., 2014).

The Handscoring Template (Appendix 1) illustrates—in bold—which measure items make up each of the Four Factor Fire Scales and associated total score. Clinicians can either choose to administer each of the three pre-existing questionnaires in full and score the relevant bolded items only. Alternatively, clinicians can administer only the bolded 30-items from the pre-existing questionnaires that make up the Four Factor Fire Scales and associated Total Score. The Handscoring Template outlines exactly how clinicians can calculate each of the Four Factor Fire Scales and associated total score. In short, the scores for the identification with fire, poor fire safety, and firesetting as normal factors are simply the sum of their respective items (including some items that are reverse scored) since they were scored on a 5-point Likert scale. Where a factor has missing data the sum is prorated to reflect the missing value(s). The serious fire interest factor, however, is scored on a 7-point Likert scale. Thus, for uniformity, the summed total of this factor is rescaled to approximate the 5-point scales (i.e., the total score [prorated for missing values] is divided by 7 and multiplied by 5; see formula E of the Handscoring Template).

Available Norms

Participants and Procedure

The total sample size was 565 (378 firesetters, 187 controls); reflecting all the published (see Gannon et al., 2013; Gannon et al., 2014; Ó Ciardha et al., 2014) and unpublished data we have collected to date on the Four Factor Fire Scales. The final data set

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includes males, females, firesetters, and non-firesetters recruited from 19 prison establishments (including 6 female establishments, 1 Young Offender Institutions) and 12 secure mixed gender mental health settings. All participants were recruited as part of on-going data collection projects associated with deliberate firesetting and as such were administered the questionnaires underpinning the Four Factor Fire Scales amongst a series of additional measures. Individuals allocated to the firesetter group were selected due to them holding either a conviction for firesetting, some incidence of documented deliberate firesetting, or serious threats to set fires.

Non-firesetters were selected at random from each establishment and their files cross-checked to ensure that they did not hold any firesetting activity or threats on record. Table 1 gives a breakdown of the number of participants across key groupings along with mean ages. It should be noted that although non-firesetter scores are available for prison samples they have not been yet been collected for patients within mental health settings. Also, separate figures are presented for male prisoners incarcerated in a young offenders institution or who are aged 21 or younger. Readers should be aware that these individuals are also included in the overall male adult prison sample.

Factor score data was missing for very few participants (fewer than 2% of cases on any one variable). Where there was missing data, values were replaced using Hot Deck imputation, as recommended by Myers (2011). In this process a missing data point for any one individual is replaced by the value of a data point from the same variable selected at random from a 'deck' of participants; in this case participants who match the individual on firesetting status, gender, and setting (prison or mental health).

Results

Examining the sample as a whole, the firesetter ($n = 378$) group self-reported significantly higher mean scores across each of the four factors as well as the associated total

score relative to controls ($n = 187$; all ps $\leq$ .001). In other words, each of the factors and the associated total score show discriminative ability.

Table 2 presents mean and standard deviations on each of the factors for participants separated by gender, setting, firesetting status, and youth offending status. Also presented are means and standard deviations of the associated total score. In order to decide whether separate normative data was required for male and females, and also for those in prison and mental health settings, we carried out a factorial MANOVA with the four factors as outcome variables and gender and setting as grouping variables. Only firesetters were included in this analysis. Results indicated a significant effect of both gender; $V = .05$, $F(4,365) = 4.76$, $p = .001$; and setting; $V = .11$, $F(8,730) = 5.24$, $p < .001$; on participant scores. Because of this, clinicians should consult norms based on both the gender and institutional setting of any particular client. In other words, firesetters should not be treated as a homogenous group when examining the normative data associated with the Four Factor Fire Scales.

Interpreting Clinical Scores

It is possible to calculate the point at which a participant appears more similar to the non-firesetting population mean than the firesetting population mean, thus establishing a clinical cutoff. The clinician may use this point as a guide, pre treatment, to establish exactly which areas of fire-specific needs may require work within treatment (i.e., which areas are above or below the cutoff). When making interpretation at the individual level, clinicians should ensure that they measure and take into consideration socially desirable responses. However, they should also remain aware that all scores presented in this paper remain unadjusted for socially desirable responses. Gannon et al (2013) found that adult imprisoned male firesetters did not differ from a matched group of non-firesetting male prisoners on impression management. In the absence of further research on socially desirable responding in firesetters, we recommend that clinicians investigate impression management as they

would in case formulation for other forensic clients. It is important to note that Mills and Kroner (2005) urge caution around the use of measures of socially desirable responding with correctional populations.

We have calculated a basic clinical cutoff using formula *c* from Jacobson and Truax (1991). Clients scoring below this cutoff are those whose responses appear more similar to the non-firesetting prison population mean and are likely to be non-problematic (see Table 3). It is important to note, however, that for mental health participants, the cutoff represents the point at which clients report attitudes closer to the mean response of these non-firesetting prisoners and *not* non-firesetting mentally disordered patients.

Clinicians may face some difficulty interpreting clients' scores that remain just above cutoff. In other words, how far above cutoff is definitely problematic? Because of this, we have adapted Jacobson and Truax's (1991) formula of reliable change to the data:

$$y = 1.96\sqrt{2(s_x\sqrt{1 - r_x})^2} \tag{1}$$

Jacobson and Truax's (1991) formula calculates the level of change required to be deemed reliable and unlikely to be subject to chance. When this Reliable Change Index exceeds 1.96, they explain that this change is greater than would be expected to occur by chance alone ($p < .05$). Using formula 1, where s_x is the standard deviation from all participants, and r_x is the test-retest reliability of the scale (see Table 4), we have calculated how much of a shift (i.e., *y*) would be required to achieve a Reliable Change Index score of 1.96 across the four fire factors and combined total (see Table 4). We have added these figures to the minimum cutoff points calculated to provide a further estimate cutoff score

regarding the point at which an individual's score on the fire factors or associated total score becomes most obviously problematic. Table 3 illustrates the key cutoff points we have calculated along with information on how individual scores may be interpreted using this information. For example, using Table 3, a male prisoner who scores 15 on the Identification with Fire Scale would be interpreted as falling within the range of scores similar to non-firesetter prisoners and thus non-problematic. However, a female prisoner who scores 15 would fall at the cutoff point bordering non-problematic/potentially problematic responding (illustrated by the fact that a score of 15 is entered within each 'bin'). In such a case, this borderline score should be noted by the clinician as falling at the cut off between non-problematic and problematic scoring.

Interpreting Shift

Cutoff scores only provide a guide as to whether a given score is closer to the mean of a firesetting or a non-firesetting population. This may tell the clinician that a treated firesetter has achieved a level of responding that may no longer be considered problematic relative to a non-firesetting forensic population. What it does not say is how much change has occurred. In this way an individual may go from being marginally above one of the cutoff scores to being marginally below but without making significant change. Alternatively an individual may make considerable gains but remain within the problematic or potentially problematic range of scores. Again, this would not be identified by looking solely at the cutoff value. Using the Reliable Change figures documented above (see Table 4), we can see how much of a shift would be required to achieve a Reliable Change Index score of 1.96 across the four criminogenic fire factors and the combined total. From Table 4, clinicians can determine the minimum reduction they would expect to see for each factor to confidently conclude that a client has made reliable change. For example, as illustrated in Table 4, a client's score on the serious fire interest factor would need to reduce by 9 to be considered reliable. If a reduction

of 9 also meant that a client's score dropped below the cutoff score for their group, then in the absence of concerns over social desirability one might conclude that the client's post treatment score is non-problematic.

Discussion

This paper sought to provide clarity to professionals working with deliberate firesetters regarding how they assess fire-specific treatment needs with this population. Previously, there has been very little published guidance available for professionals who are interested in the measurement of fire-specific factors such as fire interest or fire attitudes. Three pre-existing measure have been developed to assess fire specific factors in deliberate firesetters (i.e., the *Fire Interest Rating Scale*; Murphy & Clare, 1996; *Fire Attitude Scale;* Muckley, 1997; and *Identification with Fire Questionnaire*; Gannon et al. 2011). However, very little psychometric evaluation had been conducted on these measures until recently. Using factor analysis, Ó Ciardha et al. (2014) reported that these three measures were best conceptualized as four factors relevant to clinical practice: Identification with fire, serious fire interest, poor fire safety, and firesetting as normal. In a series of papers, these factors have been described and scored (see Ó Ciardha et al., 2014; Gannon et al., 2013, 2014). However, the scoring algorithm has differed across these papers and no normative data has been provided to aid clinicians in their interpretation of the Four Factor Fire Scales. In this paper, we have provided professionals with information on how to administer, score, and interpret the Four Factor Fire Scales; including a handscoring template incorporating a worked example (see Appendix 1). Our analysis has shown that professionals should take care to use norms associated with the population or setting in which they are working since scores were significantly discriminable on both gender and setting. Thus, we have provided normative data for male and female prisoners, male and female forensic hospital patients and young male prisoners. Furthermore, using this data, we generated clinical cutoff scores to create

three main scoring categories: *non-problematic scores* which indicate scores similar to non-firesetting prisoners, *potentially problematic scores* which indicate scores similar to firesetting prisoners, and *problematic scores* which indicate particularly elevated scores similar to firesetting prisoners. Using these scoring categories, clinical professionals can examine individual assessment scores and provide relative interpretations of these scores in order to inform risk assessments, treatment plans, as well as the interpretation of treatment shift. We have also provided calculations of reliable change figures to help professionals to identify when clients have made a reliable shift on each of the four factors or the related total score. In summary then, this paper represents the first published resource available to guide professionals in their assessment of four fire-specific factors that have been found to represent unique treatment needs associated with firesetting (Gannon et al., 2013; Gannon et al., 2014).

Limitations

A key limitation associated with the Four Factor Fire Scale is that the original scales from which it was constructed were not derived from the latest theoretical literature on adult firesetting. Instead they were developed by their authors as tools to examine certain populations based, in some cases, on experience rather than theory. As a result, there may be other fire-specific treatment needs important in the etiology of deliberate firesetting that are not represented on this scale. Put simply, the Four Factor Fire Scales represent the 'best case' conceptualization of three pre-existing measures of fire-specific treatment needs. While Ó Ciardha et al (2014) demonstrated that the four factors related to firesetting status, and that identification with fire was a significant predictor of multiple firesetting, further work is needed to demonstrate the construct validity of these subscales. Additionally, the theoretical literature on the broad as well as fire-specific factors that underpin firesetting behavior among adults is growing. Interested readers should consult, in particular, the Multi-Trajectory

Theory of Adult Firesetting (Gannon, Ó Ciardha, Doley, & Alleyne, 2012) and Ó Ciardha & Gannon's (2011) conceptualization of the implicit theories of firesetters. Therefore, the Four Factor Fire Scales may well be revised or replaced as our understanding in this field of research gains further momentum.

A further limitation relates to the total score calculated from the four factor scale. In short, the unequal sizes of the subscales mean that greater weight is given to some (e.g., serious fire interest). Clinicians should remain aware of this when generating interpretations based upon the total score calculation. Furthermore, it should be noted that the normative data we have provided is likely to be a little less stable for client groups where we held less data. For example, the majority of our data set ($n = 397$) relates to male prisoners and so we can be confident in the figures provided in this area. However, female prisoners and offenders within mental health settings are less represented within our sample. Furthermore, the interpretation of clinical scores that we developed for offenders within mental health settings were based upon calculations examining the point at which mentally disordered offenders report attitudes closer to the mean response of non-firesetting prisoners rather than non-firesetting mentally disordered offenders. Thus, the scoring bins in this area will require updating when further data is collected from non-firesetting mentally disordered offenders. Future research should also explore the utility of the Four Factor Fire scale with individuals with an intellectual disability. Nevertheless, professionals working in the area now hold a robust template for administering, scoring, and interpreting the fire-specific factors currently identified as playing a role in deliberate firesetting behavior.

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Table 1

Sample Sizes and Mean Ages of Prison, Mental Health, and Young Offending Participants

	Prison			Mental Health			Male Young Offenders
	Male	Female	Total	Male	Female	Total	
n							
Firesetters	260	46	306	42	30	72	54
Controls	137	50	187	—	—	—	26
Total	397	96	493	—	—	—	80
Mean Age (SD)							
Firesetters	32.16	35.63	32.69	37.20	33.50	35.61	19.87
	(12.24)	(12.46)	(12.31)	(11.03)	(10.14)	(10.74)	(1.03)
Controls	33.79	35.10	34.15	—	—	—	19.58
	(12.81)	(10.35)	(12.18)				(0.99)
Total	32.72	35.35	33.24	—	—	—	19.78
	(12.44)	(11.35)	(12.27)				(1.02)

Note. Male Young Offenders represent prisoners incarcerated in a YOI or aged 21 or younger. These individuals are included in the male prison sample

Table 2

Mean Scores (SD) on the Fire Factors and Combined Score Across Prison, Mental Health, and Young Offending Participants

	Prison			Mental Health			Male Young Offenders
	Male $n = 397$	Female $n = 96$	Total	Male $n = 42$	Female $n = 30$	Total	$n = 80$
Identification with Fire							
Firesetters	16.9	17.39	16.98	20.6	22.03	21.2	16.51
	(6.67)	(9.42)	(7.14)	(10.67)	(11.9)	(11.14)	(6.39)
Controls	15.71	13.56	15.13	—	—	—	17.77
	(5.61)	(5.45)	(5.63)				(7.06)
Serious Fire Interest							
Firesetters	12.01	9.91	11.68	11.6	10.5	11.14	14.1
	(5.26)	(6.62)	(5.53)	(5.86)	(7.32)	(6.48)	(5.35)
Controls	9.9	7.62	9.29	—	—	—	11.36
	(4.55)	(2.8)	(4.27)				(5.5)
Fire Safety							
Firesetters	10.7	10.2	10.62	12.4	10.87	11.76	11.57
	(2.86)	(3.53)	(2.97)	(3.79)	(3.88)	(3.88)	(2.83)
Controls	9.53	9.3	9.47	—	—	—	10.5
	(3.04)	(2.58)	(2.92)				(2.86)
Firesetting as Normal							
Firesetters	20.78	20.01	20.66	19.94	21.97	20.78	22.68
	(5.06)	(6.57)	(5.31)	(5.17)	(6.41)	(5.76)	(4.27)
Controls	19.17	18.68	19.04	—	—	—	23.88
	(5.35)	(6.23)	(5.59)				(4.55)
Four Factor Total							
Firesetters	58.47	54.73	57.89	62.7	63.75	63.14	63
	(13.55)	(19.66)	(14.68)	(17.25)	(22.46)	(19.45)	(13.22)
Controls	52.95	48.05	51.64	—	—	—	62.02
	(12.4)	(10.57)	(12.11)				(13.4)

Note. Male Young Offenders represent prisoners incarcerated in a YOI or aged 21 or younger. These individuals are included in the male prison sample

Table 3

Interpretation of Clinical Scores using Cutoff Scores for the Four Fire Factors and

Associated Total Score

	Interpretation	Prison		Mental Health		Male Young Offenders
		Male	Female	Male	Female	
Identification with Fire	Non-Problematic	11-16	11-15	11-17	11-16	11-17
	Potentially Problematic	16-32	15-30	17-33	16-31	17-32
	Problematic	32-55	30-55	33-55	31-55	32-55
Serious Fire Interest	Non-Problematic	5-11	5-8	5-11	5-8	5-13
	Potentially Problematic	11-19	8-17	11-19	8-17	13-21
	Problematic	19-35	17-35	19-35	17-35	21-35
Poor Fire Safety	Non-Problematic	6-10	6-10	6-11	6-10	6-11
	Potentially Problematic	10-16	10-16	11-17	10-16	11-17
	Problematic	16-30	16-30	17-30	16-30	17-30
Firesetting as Normal	Non-Problematic	7-20	7-19	7-20	7-20	7-23
	Potentially Problematic	20-28	19-27	20-27	20-28	23-31
	Problematic	28-35	27-35	27-35	28-35	31-35
Four Factor Total	Non-Problematic	28-56	28-50	28-57	28-53	28-63
	Potentially Problematic	56-76	50-71	57-78	53-74	63-83
	Problematic	76-150	71-150	78-150	74-150	83-150

Note. Male Young Offenders represent prisoners incarcerated in a YOI or aged 21 or younger. These individuals are included in the male prison sample. *Non-problematic* indicates a score similar to non-firesetter prisoners. *Potentially problematic* or *problematic* indicates a score similar to firesetter prisoners. Readers should note that bins 'overlap' (e.g., a male prisoner's Poor Fire Safety Score of 10 borders between Non-Problematic and Potentially Problematic scoring). Clinicians should highlight this.

Table 4

Minimum Pre-Post Treatment Change Required to be Considered Reliable (and Variables in the Equation)

	Standard Deviation (s_x)	Test-Retest Correlation (r_x)	Minimum Reliable Change (y)
Identification with Fire	7.56	.47	15
Serious Fire Interest	5.39	.67	9
Fire Safety	3.17	.54	6
Firesetting as Normal	5.51	.73	8
Four Factor Total	15.07	.75	21

Note. Test-retest was determined by the correlation between responses at separate times in a subset of the participants ($n = 45$), all of whom were prison-based firesetters and completed the follow up after approximately 6 months, and who received no tailored firesetting treatment in that period.

Scale	Item	Questions	Raw Scores	Identification with Fire	Serious Fire Interest	Poor Fire Safety	Firesetting as Normal
FIRS	1	Having a box of matches in your pocket	4				
FIRS	2	Watching an ordinary coal fire burn in a grate	5				
FIRS	3	Watching a bonfire outdoors, like on bonfire night	5				
FIRS	4	Seeing firemen get their equipment ready	3				
FIRS	5	Watching a fire engine come down the road	4				
FIRS	6	Striking a match to light a cigarette	4				
FIRS	7	Watching a house burn down	1	→	→	1	
FIRS	8	Going to a police station to be questioned about a fire	1	→	→	1	
FIRS	9	Watching people run from a fire	1	→	→	1	
FIRS	10	Watching a person with his clothes on fire	1	→	→	1	
FIRS	11	Striking a match to set fire to a building	3	→	→	3	
FIRS	12	Seeing a hotel on fire in the TV news	2	→	→	2	
FIRS	13	Seeing firemen hosing a fire	3	→	→	3	
FIRS	14	Giving matches back to someone	4				
IFQ	1	Fire is an important part of my identity	5	→ 5			
IFQ	2	I don't need fire	1				
IFQ	3	Fire is almost part of my personality	3	→ 3			
IFQ	4	If I never saw another fire again it wouldn't bother me	2				
IFQ	5	Fire is an important part of my life	4	→ 4			
IFQ	6	I don't know who I am without fire	4	→ 4			
IFQ	7	I need fire in my life		→			
IFQ	8	Without fire, I am nobody	3	→ 3			
IFQ	9	Fire is a part of me	4	→ 4			
IFQ	10	I have to have fire in my life	3	→ 3			
FAS	1	Most people carry a box of matches or a lighter around	2				
FAS	2	People often set fires when they are angry.	3				
FAS	3	I would like to work as a fireman.	1				
FAS	4	The best thing about fire is watching it spread.	2	→ 2			
FAS	5	I have never put a fire out.	2				
FAS	6	I know a lot about how to prevent fires.*	4	→	→	Reverse 2	
FAS	7	Setting just a small fire can make you feel a lot better.	4	→ 4			
FAS	8	Fires can easily get out of control.*	5	→	→	Reverse 1	
FAS	9	I get bored very easily in my spare time.	4	→	→	→	4
FAS	10	People who set fires should be locked up.	4				
FAS	11	When you're with your mates, you act now and think later.	3	→	→	→	3
FAS	12	If you've got problems, a small fire can help you sort them out.	1	→ 1	→	1	
FAS	13	Most families have had a fire accident at home.	3	→	→	→	3
FAS	14	Parents should spend money on buying a fire extinguisher.*	3	→	→	Reverse 3	
FAS	15	Most people have set a few small fires just for fun.	4	→	→	→	4
FAS	16	I usually go along with what my mates decide.	1	→	→	→	1
FAS	17	Playing with matches can be very dangerous.*	3	→	→	Reverse 3	
FAS	18	Most people have been questioned about fires by the police.	1	→	→	→	1
FAS	19	They should teach you about fire prevention at school.*	4	→	→	Reverse 2	
FAS	20	Most people's friends have lit a fire or two.	3	→	→	→	3
Add up total for each column			**(A)**	33	12	12	19
Note number of responses in each column			**(B)**	10	7	6	7
Number of responses if no values missing			**(C)**	11	7	6	7
Calculate for all factors: (A ÷ B) x C			**(D)**	36.3	12	12	19
For 2nd factor, calculate: (D ÷ 7) x 5			(see footnote 1)	↓	8.57	↓	↓
				↓	↓	↓	↓
Subscale Scores (values from box above, round to nearest whole number)				36	9	12	19

Reverse Scoring guide					
Original value	1	2	3	4	5
New value	5	4	3	2	1

Calculating Total Score	Identification with Fire		Serious Fire Interest		Poor Fire Safety		Firesetting as Normal		
Sum the four factor scores	36	+	9	+	12	+	19	=	76
Determine value of FAS 12								-	1
Subtract FAS12 from the sum of the factor scores to yield Total Score (see footnote 2)							Total Score	=	75

Summary of Results	Final Scores	Minimum	Maximum	Number of Missing Values
Identification with Fire	36	11	55	1
Serious Fire Interest[1]	9	5	35	0
Poor Fire Safety	12	6	30	0
Firesetting as Normal	19	7	35	0
Total[2]	75	28	150	

Interpretation
Higher scores are more problematic; e.g. greater serious fire interest, and poorer fire safety awareness (or riskier fire safety attitudes)
Elevated scores on any of the four subscales may represent areas of treatment need. However, considering individual answers and contextual factors may aid case formulation.
If an individual has more than one missing value on a subscale, clinicians should exercise caution when interpreting that subscale.
Practitioners should consult the following manuscript for mean scores for different offending populations: Ó Ciardha, C., Tyler, N., & Gannon, T.A. (2014). *A practical guide to assessing adult firesetters' fire-related treatment needs.* [Typesetters to insert correct reference here]

Notes

- Questionnaire items in **bold** belong to four Fire Factor subscales based on:
  Ó Ciardha, C., Barnoux, M. F. L., Alleyne, E. K. A., Tyler, N., Mozova, K. and Gannon, T. A. (2014), Multiple factors in the assessment of firesetters' fire interest and attitudes. Legal and Criminological Psychology. doi: 10.1111/lcrp.12065
- **This scoring guide overrides any other unpublished scoring template or spreadsheet. Using other resources will not yield the same values.**

*These items must be reverse scored
[1]Serious fire interest is answered using a 7 point scale. Results are therefore rescaled to match the range of responses in the other scales (5 point scale)
[2]One item (FAS 12) is included in two scales. However it is only counted once in the grand total