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# The Adaptation of a Measure of Confidence in Assessing, Formulating, and Managing Suicide Risk

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**Abstract.** *Background:* To date little has been done to evaluate the effectiveness of suicide risk formulation training. *Aims:* We aimed to investigate the psychometric properties of a new scale measuring clinicians' confidence in assessing, formulating, and managing suicide risk. *Method:* A total of 128 mental health practitioners from an UK National Health Service Trust completed the scale. Of them, 85 from an Improving Access to Psychological Therapies service did so before and after training in Risk Assessment, Formulation, and Management (RAFM); 28 practitioners from the Older Adults service also completed the measure. For test–retest analysis, a further 15 completed the scale again 1 week after baseline without attending any training. Of the training group, 52 (61%) completed the measure at the 6-month follow-up. *Results:* Analysis indicated a single-factor structure, good test–retest reliability, and statistically significant increases in confidence between pre- and post-training and between pretraining and 6 month follow-up. Cohen's effect size values suggest a moderate-to-large effect. *Limitations:* The relatively small sample sizes indicate that this study should be considered a preliminary investigation of a new measure, which warrants further replication. *Conclusion:* This measure could be useful in gauging practitioners' confidence in the RAFM approach and in evaluating and developing training.

**Keywords:** improving access to psychological therapies (IAPT), suicide, risk assessment, risk formulation



Every year, worldwide, approximately 800,000 people die by suicide (World Health Organization, 2019), with around 20 times this number making suicide attempts (World Health Organization, 2014). A broad range of suicide prevention strategies have been implemented, from the wider public health initiatives such as restricting access to means to the more focused efforts of risk assessment within higher-risk groups. The present study was conducted in the context of suicide prevention for people with common mental health problems within a primary care psychological therapy service.

A range of risk assessment tools are employed in mental health services; however, such tools are poor at predicting who will engage in self-harm or suicidal behavior (Quinlivan et al., 2017; Steeg et al., 2018). Indeed, best-practice guidance has, for over a decade, cautioned that decisions on risk management should not be based solely on the use of assessment tools but on the broader application of structured clinical judgment and risk formulation (Department of Health, 2007). As a result, the emphasis has shifted from prediction to prevention, providing a narrative account of what is known about the individual to develop a safety plan that promotes positive risk management. With risk formulation the presence and relevance of risk factors (the predisposing factors) are considered alongside details of an individual's current situation (the perpetuating factors) and any potential imminent experiences (the precipitating factors) and these are balanced against known strengths and resources (the protective factors). This narrative approach is an effective way to communicate risk and it should result in the development of a proportionate and jointly prepared safety plan (Lewis & Doyle, 2009).

While best practice guidance on managing risk recommends training in, and application of, structured clinical judgment and risk formulation (Department of Health,



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2007), little has been published on attempts to evaluate the impact of training on this approach (Doyle et al., 2003). One established method of evaluating risk training is to use the Risk Assessment and Management Self-Efficacy Scale (RAMSES) designed to assess practitioners' levels of perceived confidence in risk assessment and management. The RAMSES is a widely used scale and has been shown to have high internal consistency, Cronbach's $\alpha = .96$ ($n = 110$), and to display good construct validity (Delgadillo et al., 2014). Its psychometric properties have also been supported in further studies (Chongtham et al., 2015; Maina et al., 2019). However, this scale does not include questions specifically related to risk formulation. Therefore, in the current study, we report on the adaptation of this scale originally developed by Delgadillo et al. (2014) and on its expansion to incorporate questions specific to the risk formulation approach. Such a scale would aid in gauging the effectiveness of risk formulation training and potentially guide the design of future training by identifying areas requiring improvement or further emphasis.

In short, this study aimed to investigate the utility of this new measure by exploring the following questions:

1. What is the underlying factor structure of the measure?
2. What are the internal consistency and test–retest properties of the measure?
3. Is this measure sensitive to change in confidence following the delivery of training?

# Method

## Participants

In total, 128 practitioners from a UK National Health Service (NHS) Trust took part in this study. Recruitment took place between October 2014 and October 2016. Overall, 85 practitioners from the Improving Access to Psychological Therapies (IAPTs) service within the Trust completed the measure before (pretraining) and after (posttraining) attending training on risk assessment, management, and formulation and in the use of the Galatean Risk and Safety Technology (GRiST; Vail et al., 2012) risk assessment tool. This risk assessment tool is recommended in best practice guidelines (Department of Health, 2007) and supports clinicians in gathering the necessary information to assess risk in six areas (suicide, self-harm, harm to others, self-neglect, risk to dependents, and vulnerability) and then supports the formulation and communication of any identified risk. The tool was designed through expert consensus (Buckingham et al., 2008; Vail et al., 2012), and refined through feedback from use in practice (Zaher & Buckingham, 2017). The English IAPT (Clark, 2011) services are part of an initiative to increase access to mental health care.

For test–retest analysis, a further 15 IAPT practitioners completed the measure and then repeated it following a 1 week interval without undergoing any further training in the interim period. A convenience sample of a further 28 mental health practitioners from the Older Adults service also completed the measure to give a total of 128 completed measures for the factor analysis (see Table E1 in Electronic Supplementary Material 1 [ESM 1]). In addition, 52 of the IAPT training group (61%) completed the measure at the 6 month follow-up (follow-up group).

## Measures

### Demographics

All practitioners were asked to complete a demographics questionnaire recording gender, age, current role, years of experience in mental healthcare, and experience of working with people at risk of suicide.

### Therapist Confidence in Suicide Risk Assessment Formulation and Management

The Confidence in Suicide Risk Assessment, Formulation, and Safety Planning scale was developed from an existing measure of practitioners' confidence in assessment and management of risk, the RAMSES (Delgadillo et al., 2014) with the authors' permission. The original scale has 18 items (rated 0–10) comprising three subscales of Assessment (six items), Case Management (six items), and Intervention (six items). The scale was revised to focus on suicide risk and to ensure that it captured all of the core elements of risk formulation and subsequent actions, including four items adapted from the RAMSES Assessment subscale and two items adapted from the Interventions scale. One item from the Case Management subscale was used with the original wording. The other six items on assessment and formulation were developed specifically for this scale based on the risk formulation approach (Lewis & Doyle, 2009). Selection of items and wording for new items were discussed and agreed by the first, third, and fourth authors over the course of two consensus meetings.

The new scale therefore comprised 13 items covering risk assessment, formulation, and safety planning (see Table 1). There was no intention to create subscales within this measure. It was intended to capture confidence in the overall skills required for the assessment, formulation, and management of the risk of suicide. It includes new questions on identifying predisposing, precipitating, perpetuating, and protective factors, in combining risk factors

 

**Table 1.** Scale factor loadings ($n$ = 128)

| Item | How confident are you that you can ... | Item *M* | *SD* | Corrected item–total correlation | Factor loadings |
|---|---|---|---|---|---|
| 1 | Use Galatean Risk and Safety Technology to assess risk of suicide? | 1.14 | 1.14 | .48[a] | n/a[a] |
| 2 | Use your clinical skills to gather suicide risk information from patients? | 2.74 | 0.66 | .72 | .774 |
| 3 | Identify a person who presents a risk of suicide? | 2.66 | 0.70 | .75 | .804 |
| 4 | Communicate a suicide risk management plan to appropriate colleagues and services? | 2.39 | 0.87 | .84 | .903 |
| 5 | Identify relevant historic predisposing factors? | 2.45 | 0.77 | .82 | .887 |
| 6 | Identify relevant precipitating (current and future) factors? | 2.53 | 0.70 | .83 | .914 |
| 7 | Identify relevant perpetuating factors? | 2.38 | 0.73 | .82 | .896 |
| 8 | Identify relevant protective factors? | 2.72 | 0.65 | .78 | .837 |
| 9 | Combine general and individual risk factors into a suicide risk formulation? | 2.12 | 0.85 | .81 | .811 |
| 10 | Use the information from your formulation to develop an individual risk management plan? | 2.16 | 0.94 | .84 | .851 |
| 11 | Identify an appropriate service to refer someone to on the basis of risk? | 2.45 | 0.82 | .74 | .736 |
| 12 | Develop rapport with people who present significant risk of suicide? | 2.64 | 0.81 | .69 | .725 |
| 13 | Help people to minimize the risk of suicide? | 2.27 | 0.84 | .77 | .790 |

*Note.* [a]Item excluded from scale. Maximum likelihood extraction method was used in combination with an oblimin rotation for factor analysis.

into a suicide risk formulation and communicating a risk management plan. These were combined with the original questions on developing a risk management plan ("How confident are you that you can use the information from your formulation to develop an individual risk management plan?"), developing rapport and referring on to an appropriate service if level of risk indicates this. The measure asks people to rate their confidence on a 5-point Likert-type scale (reduced from the 10-point scale used on RAMSES for ease of use and evidence that scales beyond 6 points confer no psychometric advantage; Simms et al., 2019) anchored at *not confident*, *slightly confident*, *moderately confident*, *confident,* and *highly confident*.

### Therapist General Confidence in Clinical Self-Efficacy

The General Clinical Efficacy Scale (GCES; Dagnan et al., 2015) is a measure of general clinical efficacy. The GCES was adapted (Dagnan et al., 2015) from the General Self-efficacy Scale (Schwarzer & Jerusalem, 1995) and comprises five questions on perceived efficacy such as, "I can always manage to solve difficult clinical problems if I try hard enough." Items are rated on a 5-point Likert-type scale anchored at *strongly agree*, *agree*, *don't know*, *disagree*, *strongly disagree*. The measure was reported to have a Cronbach's α of .69 and an adjusted item-total correlation range of 0.31–0.51 (Dagnan et al., 2015). In this study the scale was used to provide a measure of general clinical efficacy against which to compare the new scale developed to specifically measure confidence in suicide risk assessment, formulation, and management (RAFM).

## Data Analysis

The internal consistency of the new scale and of the GCES was examined using McDonald's ω.

An exploratory factor analysis (EFA) was conducted on the new scale responses ($n$ = 128). EFA was conducted using the Psych package (Revelle, 2018) in R (R: The R Project for Statistical Computing, 2019) with a maximum likelihood extraction method and oblimin rotation, to allow for correlation between factors. The sample size yielded a measure-to-item ratio of 9.8:1. As data are ordinal and not continuous, we used polychoric correlations instead of Pearson's correlations to reduce the likelihood of overfitting (Holgado–Tello et al., 2010; Watkins, 2018). We first conducted parallel analysis (PA) in order to obtain a recommendation of the number of factors to retain. PA indicated that one factor should be retained and consequently we conducted an EFA specifying a single factor. Visual inspection of data using histograms of responses to individual items showed the data were relatively normally distributed, therefore the EFA was conducted upon the correlation matrix (Watkins, 2018). Items with loadings below .3 were suppressed (Costello & Osborne, 2005). Inspection of inter-item correlations demonstrated that Item 1 ("How confident are you that you can use GRiST to assess risk of suicide?") did not correlate well with any of the other items in the scale, and therefore it was removed prior to factor analysis.

R markdown code is available on the Open Science Framework (OSF) project page for the study (https://osf.io/9erbt/). Sharing de-identified data is not possible due to

the nature of informed consent obtained in the original study: however, following Kirtley et al. (2020) and Quintana (2020) we have created a synthetic dataset using the synthpop package (Nowok et al., 2020) and made this available for the purposes of analytic reproducibility. Synthetic datasets mimic the original dataset distributions and covariance matrix. They can be used to verify that the code for the original analysis runs correctly and will produce similar (but not identical) results. The synthetic dataset was screened for *replicated uniques*, that is, values from the real dataset that were replicated in the synthetic dataset by chance and any such values were removed (Nowok et al., 2019). The questionnaire used in the study is also available on the OSF.

Differences between mean scores at baseline were examined either by independent-samples *t* test (gender) or by one-way analysis of variance (age, role, experience) with post hoc Bonferroni corrections applied.

Differences between mean scores before and after training and at 6 month follow-up were examined by repeated measures one-way analysis of variance. The data were normally distributed, as assessed by Normal Q-Q Plot. Mauchly's test of sphericity was employed, and the Greenhouse–Geisser correction was applied if the assumption of sphericity was violated. These analyses were conducted using Jamovi 1.6 (The Jamovi Project, 2020). The α value for all tests was .05.

# Results

## Factor Analysis

Initial calculations of correlations suggested the exclusion of Item 1 from the scale. The item-total correlation for Item 1 was .48 compared with a range of .69–.84 for the remaining 12 items. Inter-item correlations for Items 2–13 were all above .4 (range .44–.82); however, correlations between Item 1 and Items 2–13 were between .12 and .38. Item 1 was therefore excluded from the questionnaire and a factor analysis was performed on Items 2–13 ($n = 128$). Bartlett's test of sphericity ($\chi^2 = 1{,}174$, $df = 66$, $p < .001$) and the Kaiser–Meyer–Olkin measure of sampling adequacy (.92) for the measures ($n = 128$) both indicated that the data were suitable for factor analysis. The item questions, *M*, *SD*s, and the correlation for each item with the scale total for the scales completed by 128 practitioners are shown in Table 1. The breakdown of the 128 practitioners by occupational group with descriptives is provided for reference in Table E1 is ESM 1.

The PA indicated a one-factor structure. The single factor accounted for 59% of the variance in the measure and all unrotated factor loadings were greater than .6. Factor loadings for the scale are presented in Table 1. As only one factor was extracted, no factor rotation could be performed.

## Reliability

McDonald's ω for the 12-item scale was .95 indicating a high level of internal consistency for this scale. For the GCSE scale McDonald's ω was .90, again indicating high internal consistency.

Comparison between scores on the new scale and the General Clinical Self-Efficacy scale for 85 practitioners completed at pretraining indicated that the scores were positively correlated ($r = .40$, $p < .001$).

## Test–Retest

Correlation between the test and retest total score was estimated using Pearson's correlation co-efficient, $r(13) = .95$, $p < .001$, which indicates good test–retest reliability.

## Comparisons of Confidence Scores at Baseline (Pretraining)

At baseline for the training group (see Table E2 is ESM 1) there was no statistically significant difference in the mean confidence scores reported between females (28.70; *SD*: ±7.73) and males (31.37; *SD*: ±6.09), $t(83) = 1.386$, $p = .170$. Although visual inspection suggests that the mean confidence score increased with age, there were no statistically significant differences between the age ranges, $F(3) = 2.303$, $p = .083$. Analyses for years of experience working in mental health yielded a statistically significant difference, $F(3) = 12.901$, $p < .01$, between year ranges, although post hoc testing showed that the significant difference was between the group with most experience (>16 years) and each of the other groups, while all other comparisons were not significant. Similarly, analyses for experience of working with people at some risk of suicide suggested a statistically significant difference between groups, $F(3) = 10.15$, $p < .001$. However, post hoc Bonferroni tests showed that the significant differences were between the group with most exposure and the other three groups, while all other comparisons were not significant.

## Change in Confidence Ratings Following Training

A total of 52 participants completed questionnaires at pretraining, posttraining, and at 6 month follow-up. The



 

mean confidence measure scores for these are shown in Table E3 in ESM 1.

A repeated measures analysis of variance determined that mean confidence scores differed statistically significantly across the three time points (pretraining, posttraining, 6 month follow-up), $F(1.763,13.985) = 28.490$, $p < .001$. Post hoc Bonferroni analyses revealed a statistically significant increase in confidence between pre- and posttraining ($t = 7.12$, $p < .001$) and between pretraining and 6 month follow-up ($t = 5.73$, $p < .001$). Cohen's effect size values ($d = 0.718$, $d = 0.577$) suggested a moderate-to-high significance in both cases. No significant change was evident between posttraining and 6 month follow-up ($d = 0.168$, $t = 1.40$, $p = .359$).

Next, change over time in broader confidence levels as measured by the GCES was examined. A repeated measures analysis of variance determined that mean confidence scores did not differ statistically significantly between the three time points (pretraining, posttraining, 6 month follow-up), $F(1.273,47.089) = 1.805$, $p =$ ns.

## Discussion

This article reports on the adaptation of an existing scale to develop a measure of practitioners' confidence in the assessment, formulation, and management of suicide risk. The main aims were to investigate the factor structure as well as the internal and test–retest consistency of the measure, and to determine whether it appeared sensitive to change following training. Factor analysis supports the one-factor structure of this new measure. In terms of psychometric properties, it displays good internal consistency and good test–retest reliability. The new measure appears sensitive to change in confidence following the delivery of training.

Currently around one third of people who die by suicide have been in contact with specialist mental health services in the year before their death, and two-thirds have seen their GP (Department of Health, 2017). The risk assessment tools used in these settings are poor at predicting self-harm or suicidal behavior and decisions on risk management should be based on structured clinical judgment and risk formulation. With this approach a narrative account of the relevance of risk factors to the individual is used to develop a safety plan. However, 10 years on from the publication of the best-practice guidance, a report into the assessment of clinical risk in mental health services found evidence of inconsistent use of risk assessment tools, of these tools still being used as checklists to predict future behavior and guide risk management, and of other problems such as lack of training (National Confidential Inquiry into Suicide and Safety in Mental Health [NCISH], 2018). The report concluded with recommendations to improve risk assessment; these included ensuring staff were comfortable asking about suicidal ideation and that they received training in the assessment, formulation, and management of risk. To this end, an initiative within a northern English NHS Mental Health Trust involved the use of a train-the-trainer approach to support individual services to deliver training on RAFM. With risk formulation the presence and relevance of risk factors (the predisposing factors) are considered alongside details of the individual's current situation (the perpetuating factors) and any potential imminent experiences (the precipitating factors) and these are balanced against known strengths and resources (the protective factors). A narrative account of these factors effectively communicates risk and supports the development of a jointly agreed safety plan.

The new measure developed for this study was designed to monitor the training on the RAFM approach. It includes questions related to the assessment, formulation, and management of suicide risk, including specific items on risk formulation (Predisposing, Perpetuating, Precipitating, and Protective factors). Further questions assess confidence in establishing rapport and identifying appropriate services. Despite the breadth of questions, the measure appears to coalesce around a one-factor structure, representing the construct of confidence in applying the risk formulation approach.

The measure displayed some ability to discriminate between groups based on mental health experience and experience of working with people who were suicidal. This makes intuitive sense, as it might be expected that confidence would increase with experience. The new measure was able to detect increases in confidence following training and that this was maintained at 6 month follow-up. The GCES for the same time points did not indicate any significant changes and this may support the hypothesis that increase in confidence in RAFM was related to the training rather than a more global increase in clinical efficacy over time.

Conceptually it made sense to exclude Item 1 for two reasons. First, this item had been added to the questionnaire to specifically ask about confidence in using a particular risk assessment tool, namely, the GRiST (Vail et al., 2012). As this was the first time most people in the training group had been introduced to this tool it was likely that the impact of the training would be more pronounced as measured by Item 1 when compared with the remaining items. This may therefore have exaggerated the sensitivity of the questionnaire in measuring change in confidence in the more generic RAFM skills that it was being developed to assess. Second, the aim was

to develop a measure that could be used generally to track changes in confidence and not to be specific to one particular assessment tool.

It may be of interest to note that the highest-rated item at baseline was confidence in identifying protective factors, despite that fact that it is acknowledged that we know less about these than protective factors (Nock et al., 2013). It would be important to explore why this is the case. Could this be related to professional practice beliefs or attitudes of the practitioners? It may be reassuring and indeed desirable to be able to highlight protective factors, but could confidence in the ability to do so be misplaced?

### Clinical Implications

To our knowledge, this is the first scale to specifically measure confidence in the RAFM approach and the only scale developed specifically to study the impact of training on using this approach. Clinicians have highlighted the need for, and importance of, training in risk formulation, and the benefit of improving staff confidence in the use of risk tools, recording of information, and managing identified risk (Graney et al., 2020). Improving practitioners' confidence in their ability to implement a risk formulation approach to suicide may help them to more effectively engage in suicide prevention. Ultimately, if training can improve practitioners' confidence in RAFM, this has the potential to improve their therapeutic effectiveness (Vail et al., 2012). This would help services meet one of the recommendations of the NCISH report, to ensure practitioners are comfortable in asking about suicidal ideation. Additionally, it is important to guard against the inconsistent use of risk assessment tools or their use as checklists aimed at predicting future behavior and guiding risk management. We feel that using this newly developed measure could contribute to these goals by focusing on the RAFM approach. Further, it may assist in the refinement and appraisal of training in order to best meet the identified problems with lack of training (Graney et al., 2020; NCISH, 2018).

## Limitations

Although this study reports on the development of a measure of confidence, it should be noted that this does not measure knowledge, or quality, of RAFM. Ideally, a measure of these skills would also be utilized to get a more complete indication of performance in this important area of practice. Due to a methodological oversight, the demographic data were not collected for the mental health practitioners from the Older Adult service whose responses were included in the factor analysis.

The sample size for the number of completed measures was relatively low, yielding a measure-to-item ratio of just 9.8:1, rising slightly to 10:1 following the omission of one item. Although there is no clear consensus on the acceptable ratio of participants to items for factor analysis, this could be considered to be the minimum requirement, with ratios of greater than 10:1 considered acceptable and greater than 30:1 as desirable (Yong & Pearce, 2013). The sample size for the impact of training analysis was also small, with a further reduction at follow-up. This low follow-up response rate (61%) may reflect the fact that follow-up contact was made by email rather than face to face, and also that some practitioners had since left the service. This study should therefore be considered a preliminary investigation of a new measure, which warrants further replication.

## Conclusion

Analyses of this measure yielded a single-factor structure for this sample. The measure appears to have good psychometric properties, although this finding requires replication, and the scale appeared sensitive to change in confidence following the delivery of training. This measure could be clinically useful in evaluating and developing training focused on the currently recommended approach to the assessment, formulation, and management of suicide risk.

## Electronic Supplementary Material

The electronic supplementary material is available with the online version of the article at https://doi.org/10.1027/0227-5910/a000830.

**ESM 1.** Tables with descriptives of practitioners by occupation, comparisons of confidence scores at pretraining, and change in scores after training are provided

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The authors have none to report.

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**Authorship**
David Sandford: writing – first draft, investigation, data curation. Olivia Kirtley: software, writing – review and editing, supervision. Richard Thwaites: conceptualization, methodology, writing – review. Dave Dagnan: conceptualization, methodology, writing – review. Rory O'Connor: Writing – review and editing, supervision.

**Open Data**
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