Development and psychometric properties of the Functioning and Recovery Scale: A new measure to assess psychosocial functioning after a suicide attempt

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Abstract

Objective: Few measures have been developed to assess the efficacy of community-based suicide prevention and recovery services. The current study aimed to develop a scale to provide accurate assessment and monitoring of functional recovery for people following a recent suicide attempt at The Way Back Support Service in Australia.

Method: The study was conducted in multiple iterative stages: 1) literature review to identify existing scales; 2) structured informant interview with people with lived experience of a suicide attempt; 3) expert survey of researchers, clinicians, and people with lived experience on relevance and acceptability of candidate items; and, 4) quantitative survey of the pilot scale to assess psychometric properties.

Results: An 11-item scale assessing recovery in people who have recently attempted suicide was demonstrated to be a unidimensional measure with sound psychometric properties (α=0.94). The scale was highly acceptable to researchers, clinicians and people with lived experience. A short-form 6-item scale was also developed.

Conclusions: The Functioning and Recovery Scale is likely to be useful for evaluating suicide prevention programs. No existing scale captures the broad construct of psychosocial functioning with sound psychometric rigour and the involvement of people with lived experience of suicide attempt.

Community-based mental health services have an imperative to evaluate outcomes to demonstrate their value and effectiveness. Measuring the effectiveness of suicide prevention programs is an ongoing task for those working in this field (Hawton & Pirkis, 2017). However, few measures are designed to capture the value provided by holistic psychosocial services, such as those providing support to individuals after a suicide attempt. Consequently, such services may instead rely on ad-hoc service satisfaction measures that provide a subjective indication of service quality only. Alternatively, the use of scales assessing psychological distress, suicidal thoughts and behaviours, or symptoms of specific mental disorders potentially fail to capture the broader functional outcomes of these services. More comprehensive measurement is needed, covering recovery from suicidal crisis, as indicated by reduced risk suicidal thoughts and behaviours, along with positive facets such as connection to the community, meaningful social engagement, empowerment, subjective coping and hope for the future (Leamy, Bird, Le Boutillier, Williams, & Slade, 2011).

The global burden of suicide attempts and deaths on individuals, the bereaved and the wider community is significant (Czernin et al., 2012; Kerkhof, 2012). People who have been hospitalised as a result of a suicide attempt are at the most risk of re-attempt during the subsequent three months (Chung et al., 2017). Care after a suicide attempt is consequently one of the key targets for suicide prevention efforts (Krysinska et al., 2016; Zalsman et al., 2016). However, emergency health systems are rarely designed to integrate and coordinate care after an individual is discharged following a suicide attempt, with most individuals receiving little to no follow-up after discharge (Shand et al., 2017). This gap in the health system is the impetus for services such as The Way Back Support Service, a suicide prevention service providing tailored support for up to three months to individuals who have presented to hospital Emergency Departments following a suicide attempt. Provided by non-clinical Support Coordinators under clinical supervision, this service assists people

recovering from a suicide attempt by: (1) providing practical and psychosocial support for up to three months following discharge from hospital, (2) helping people to follow their hospital discharge and safety plan, and (3) supporting people to connect with their GP and other services that may help them in their journey to recovery, including referrals to services to support housing, substance use, relationship and financial needs.

Adequate evaluation of The Way Back Support Service and similar community-based services for mental health and suicide prevention requires consideration of what a positive outcome looks like for individuals within the service. Individuals engaged in these services start out in crisis, so improvements in psychological distress may be attributable to a high baseline rather the effects of the service. Furthermore, individuals engaged in such services may continue to experience suicidal ideation but with an improved recovery focus, including more positive coping and better psychosocial functioning that protects them from future suicide attempts. Measuring these outcomes of a suicide aftercare service was the motivation for the current study.

The aim of this study was to develop a scale to comprehensively assess the impact of an aftercare service for people who have attempted suicide, on the spectrum from risk (factors associated with risk of future suicide attempt) to recovery (factors enabling greater psychosocial functioning). This scale was primarily designed to evaluate a specific service: The Way Back Support Service, in Australia. However, it could also be applied in the evaluation of other community-based and clinical support services for individuals experiencing suicidal thoughts or behaviours, or severe mental illness.

Method

The design of the scale broadly followed the approach used in other comprehensive scale development studies (Batterham et al., 2016), and proceeded in four parts as described

below: (1) a literature review to identify candidate items, (2) a structured key informant interview involving people with lived experience of suicide attempt to ensure appropriate domains of measurement were selected, (3) expert feedback (qualitative and quantitative) on the relevance and acceptability of candidate domains and items for the scale, and (4) a quantitative survey to refine and test the psychometric properties of the final scale. The ethical aspects of the study were approved by the ANU Human Research Ethics Committee (Protocols 2017/059 and 2018/020) and the ACT Health Human Research Ethics Committee (ETH.10.17.229).

Participants

Eligible participants for parts 1, 3, and 4 of the study were Australian adults aged over 18 years who were fluent in English, within three main groups: a) clinicians or researchers with expertise in suicide prevention, b) people with a lived experience of a suicide attempt (between 6 months and 10 years prior to the study) who were not currently experiencing distress, and c) current clients of The Way Back Support Service (i.e., with a recent suicide attempt). All participants provided informed consent prior to their involvement in the research and were offered a gift card to acknowledge the time and effort expended.

Stage 1: Literature review

A literature review was conducted to identify and evaluate appropriate existing items from validated scales that could be used or adapted into a pool of candidate items to develop the scale. Targeted domains included: non-specific psychological distress, wellbeing and resilience, mental health conditions that are established risk factors for suicidal ideation/behaviour (e.g., major depression, generalised anxiety disorder, post-traumatic stress disorder), alcohol/substance use, consumer experience with health services, recovery, interpersonal and psychosocial factors implicated as proximal risk factors for suicide (thwarted belongingness, perceived burdensomeness, capability for suicide, agitation,

entrapment, reasons for living, impulsivity, trauma, social support, hopelessness, mastery), and, demographic characteristics associated with suicide (including age, gender, sexual orientation, employment, education).

The evaluation of suicidality measures updated a previous systematic review of suicide measures for use in population-based research (Batterham et al., 2015b). Additional literature searches were conducted in PsycINFO, PubMed/Medline and Cochrane databases to identify commonly-used self-report scales for the identified factors related to suicide risk and recovery (noted above). Search terms included a combination of keywords for each risk factor, and terms related to psychometrics and scales. Scales were also sourced through a previous review (Batterham et al., 2015a) identifying screening scales for a range of mental health problems. For each domain, a selection of 2-4 scales that met all criteria for inclusion (brief and easy to administer, freely available for public use, yielding quantitative data, sound psychometric properties) were retained and the items from the scales used as candidate items in the item pool.

Stage 2: Structured qualitative interview

To inform the development of the scale, a 60-minute structured interview aimed to identify whether people with a lived experience of a suicide attempt perceived the same factors to be associated with suicide risk and recovery as those observed in the literature. Five expert informants were recruited through an email invitation to mental health and suicide recovery organisations in the Canberra, Australia region. The interview was conducted at the Australian National University in January 2018, and led by a highly skilled lived experience researcher (MB). Another lived experience researcher (AG) co-moderated the interview and was present as an observer in case of participant distress. Finally, a research assistant (CP) was present for observation and note-taking. Written informed consent was obtained from each participant prior to the discussion. The facilitator led the interview, which explored the

participants' views on: (1) factors associated with recovery from suicide attempt (unprompted); (2) predetermined risk or protective factors for potential inclusion in the scale based on existing literature (e.g., Beautrais, 2000; Franklin et al., 2017; Hawton, Casanas, Haw, & Saunders, 2013); and, (3) when/how these factors should be measured as part of a scale. Other considerations such as timing, mode of administration and optimal length of the scale were also explored. The interview was audio-recorded, summarised, and subsequently organised into key themes by members of the research team (CP and AG).

Stage 3: Item selection survey

In-depth feedback was collected in a consultation survey targeting two groups: (1) people with lived experience of a suicide attempt who self-reported an attempt (between 6 months and 10 years before the study), and had no current severe psychological distress or suicide plan, and (2) researchers and clinicians with self-reported expertise in suicide prevention and a qualification in mental health, psychology, psychiatry or a related discipline. All participants were invited to complete an online survey. People with lived experience were recruited through emails to relevant lived experience and mental health community-based organisations and online social media advertisements (Facebook), including posts to followers of existing mental health and suicide-prevention related groups. Academic and clinical experts were recruited through existing research networks by email invitation.

The survey sought feedback on the relevance and acceptability of a pool of items developed from parts 1 and 2 of the research. From a possible 228 items, the item pool was refined in advance to identify optimal items based on wording and response choices. Items removed at this point were duplicates, had wording incompatible with a frequency scale, or had limited relevance for people who have attempted suicide. The remaining pool of 178 items were rated by the consumers and academic/clinical experts on relevance and acceptability. Relevance was measured with the question: *"How relevant or important do you*

think this item is for assessing suicide risk or recovery in an individual who has had a recent suicide attempt?" Response choices were: Essential, Important, Peripheral/Less important, Not relevant, and Prefer not to answer/Don't know. Acceptability was assessed with the question: *"Do you think it would be acceptable to ask this item of an individual who has had a recent suicide attempt?"* Response choices were: Acceptable, Unacceptable, and Prefer not to answer/Don't know. Optional qualitative feedback about the wording of each item was also sought. Additional questions in the survey sought further feedback on the domains considered most important for assessing suicide risk and recovery, and the delivery timing, methods and optimal length for the scale. Participant age and gender were also collected.

Stage 4: Quantitative survey

After preliminary construction of the scale, a separate survey was used to finalise the items, evaluate psychometric properties, and assess the feasibility and acceptability of the scale. This survey was administered in two relevant groups: (1) people in the community with lived experience of a suicide attempt, and (2) current clients of The Way Back Support Service in the ACT. Similar to the recruitment for expert feedback, recruitment from the community used Facebook advertising to invite people with lived experience of a suicide attempt to complete the survey. Identical eligibility criteria were applied. Clients of The Way Back Support Service were invited by Support Coordinators from the service to complete the survey. Surveys were completed online for community participants and on paper for participants from The Way Back Support Service.

The survey was divided into two sections. The first section involved the completion of the pilot scale, which comprised 32 items. A frequency response 5-point scale was used to respond to each item: 0=Never, 1=Rarely, 2=Sometimes, 3=Often, and 4=Always. The timeframe asked participants to rate the frequency of feelings/symptoms they had experienced over the past 7 days. The second section of the survey sought feedback on

satisfaction with and acceptability of the 32-item scale. This section also enquired about views on optimal length, timing, and delivery mode of the scale, and collected basic demographic information. Finally, participants were invited to provide general comments on the scale in an open-ended question. The final version of the scale was formed by examination of its factor structure in exploratory factor analysis (EFA) with principal components extraction. Item intercorrelations and component loadings were inspected to retain an optimal but brief set of items, with internal consistency also assessed. To further verify whether the scale fit a unidimensional structure, a confirmatory factor analysis (CFA) was conducted using a robust maximum likelihood estimator, with good fit defined as values ≥0.95 for Comparative Fit Index (CFI) and Tucker-Lewis Fit Index (TLI) and values ≤0.05 for Root Mean Square Error of Approximation (RMSEA), whereas acceptable model fit was based on values ≥0.90 for CFI and TLI and ≤0.08 for RMSEA (Hu & Bentler, 1998; Hu & Bentler, 1999). All analyses were conducted in SPSS v25 (IBM Corp, Chicago IL USA), except for the CFA which was conducted in Mplus v7 (Muthén & Muthén, Los Angeles CA).

Results

Literature review

The literature review identified 228 items from 47 scales, covering 25 domains identified as having an association with suicide risk and recovery. As described above, 178 of these items were retained for the expert survey.

Structured interview

Expert informants with lived experience of suicide attempt (*n*=5) identified areas that were considered important in assessing suicide risk and recovery for inclusion in the scale, which were found to be widely comparable to those identified in the literature. Topics included: coping, hopefulness, reasons for living, isolation/social support, and psychological

risk factors and triggers for attempt, including entrapment. Domains that were viewed by participants as less acceptable to measure included: alcohol or drug use (may not be universally relevant, respondent may feel criticised), specific mental or physical health conditions (not universally relevant) and demographic characteristics (may duplicate existing data within services). Asking about wellbeing and recovery shortly after an attempt was seen as inappropriate by some participants. It was noted that the length and delivery of the scale could be tailored to the time at which it was administered. Some participants favoured the possibility of a short form being used at intake into a service when an individual may have limited capacity to respond, with a longer, more recovery-oriented version administered at later time points.

Item selection survey

Forty-two participants completed the online survey, which included rating the 178 items identified from the literature review on the basis of relevance and acceptability. The sample comprised 28 participants with a lived experience of suicide attempt in the last 10 years and 14 researchers/clinicians with expertise and qualifications relevant to suicide prevention. Participants in both groups were predominantly female (researcher/clinician: 78.6%, lived experience: 82.1%). The two groups had different age distributions with researchers/clinicians mostly middle-aged: 39.4% of lived experience group vs 28.6% of the researchers were aged ≤35 years, and 32.1% vs 14.3% respectively were aged ≥51 years.

The most relevant items for both researchers/clinicians and lived experience participants were related to suicidal thoughts and behaviours. The majority of respondents (mean=91% across all items) considered most items to be acceptable to ask of a person who has recently attempted suicide. Eligibility criteria used for inclusion of items in the pilot scale were: high relevance ratings from people with lived experience (>20% rated essential AND >90% rated important or essential) and researchers/clinicians (>20% rated essential AND

>80% rated important or essential; different criteria were due to generally lower ratings from researchers/clinicians) and high acceptability (>90% rated as acceptable by both groups). To ensure both risk and recovery dimensions were represented in the scale, a selection of positively worded items were also included, with slightly lower criteria for inclusion (>80% acceptable AND >70% important/essential for people with lived experience; >80% acceptable AND >60% for researchers/clinicians). Items meeting the criteria for inclusion in the pilot scale were reviewed to remove further items with overlapping meanings and adapt wording based on qualitative feedback. In cases where items had significant overlap, the item with the highest overall rating and/or clearest wording was retained (12 items were removed due to duplication of themes). Three items that assessed important additional constructs identified in qualitative feedback were also retained. These were: *"I felt intense emotional pain," "I felt hope for the future,"* and *"I have felt able to carry out daily activities, such as work, household tasks or social activities."* After this selection process, 32 items remained, forming the pilot scale. Table 1 displays these items, along with relevance and acceptability ratings of each item.

Most participants in both groups preferred a brief questionnaire; 15 questions was the preferred length for 32% of lived experience participants and 43% of researchers/clinicians. The majority of participants in both groups were amenable to a questionnaire being presented in the early days following a suicidal crisis, with the preferred timeframe to administer the scale before discharge from hospital. Other popular choices were 1 week after discharge, 1 month and 3 months post-discharge. A mixture of delivery formats was endorsed, although most lived experience participants favoured a paper format while researchers/clinicians typically had a preference for online administration.

Quantitative survey: Psychometric properties of the scale

A total of 106 participants completed the pilot scale and survey: 95 recruited online from the community and 11 recruited from The Way Back Support Service. Participants were predominantly female (80%, *n*=85). Almost 40% (*n*=42) were in the 18-25 year age group, and 26% were in the '51 or above' age group (*n*=28). Table 1 displays the means and standard deviations for each of the 32 items of the pilot scale. Mean scores were coded from 0 (never) to 4 (always). The Way Back Support Service clients scored higher than community participants on all negatively worded items and lower on most positively worded items, which may be related to the relative recency of their suicide attempt (past 3 months versus 6-120 months). The exception was items regarding perceptions of social support, which were similar for both groups.

Exploratory factor analysis using principal component extraction was used to determine the factor structure and identify the most appropriate items for the final scale. A total of 56.9% of variance was explained by one factor. As this factor accounted for 8.6 times as much variance as the subsequent factor, it was concluded that the scale was unidimensional. This construct was labelled "psychosocial functioning" as it covers a broad range of psychological and social attributes that are relevant to individuals who have attempted suicide. Table 1 also includes the factor loadings for each item. Based on the criteria of Costello and Osborne (Costello & Osborne, 2005), all of the evaluated items had adequate loadings and all but one had strong loadings on the factor, indicating that every item may be useful in measuring the construct.

Of the 23 negatively-worded items in the pilot scale, the 11 items with the highest loadings (above 0.8) were reviewed to eliminate potential redundancy. Based on high inter-item correlations, five items were identified as being potentially redundant and therefore excluded; the remaining six items were retained. Of the nine positively-worded items, two

items related to social support were identified as being redundant, based on inter-item correlations. An additional two items with the lowest factor loadings were not retained. The remaining five items were retained, resulting in a final scale of 11 items, including six negatively-worded and five positively-worded items. The scale is titled the "Functioning and Recovery Scale" (FRS), provided in Box 1.

To confirm that a unidimensional construct remained for the FRS, these items were subjected to a separate factor analysis. This analysis revealed that all retained factor loadings were greater than 0.75, with one exception, indicating strong loadings on the factor. The exception was item 11, which loaded at 0.67; however, this item was retained as qualitative feedback from both the interview and expert survey indicated that assessing "daily functioning" was an important consideration. These results confirmed that the unidimensional construct had been preserved in the 11-item scale. The final 11-item scale showed good internal consistency (Cronbach α=0.94), as did the 32-item scale (α=0.98). Correlation between scores on the 32-item scale and the 11-item scale was very high (r=0.98, p<.001), suggesting that the 11-item scale adequately reflects the overall construct and could be used instead of the 32-item scale. CFA suggested inadequate fit of a unidimensional model for the scale (CFI=0.899, TLI=0.874, RMSEA=0.130). However, modification indices suggested redundancy in items 2 and 9 and items 1 and 10. After rerunning the model accounting for correlations between error terms for these item pairs, the scale had adequate fit to a unidimensional structure (CFI=0.975, TLI=0.967, RMSEA=0.067).

<u>Box 1</u>: The 11-item Functioning and Recovery Scale

We would like to know how often you have had certain thoughts or feelings over the past week. For each statement, please choose a response from 'Never' to 'Always' that best describes your situation over the past seven days.	Never	Rarely	Sometimes	Often	Always
I thought that it may be possible for me to help myself.	☐	☐	☐	☐	☐
I felt that I was close to other people.	☐	☐	☐	☐	☐
I felt that I had nothing to look forward to.	☐	☐	☐	☐	☐
I felt there was nothing I could do to help myself.	☐	☐	☐	☐	☐
I felt that my life was out of my control.	☐	☐	☐	☐	☐
I thought that taking my life was the only way out of my problems.	☐	☐	☐	☐	☐
I felt that I made things worse for the people in my life.	☐	☐	☐	☐	☐
I felt that I was completely unworthy of love.	☐	☐	☐	☐	☐
I felt like I belonged.	☐	☐	☐	☐	☐
I felt hope for the future.	☐	☐	☐	☐	☐
I felt able to carry out daily activities, such as work, household tasks or social activities.	☐	☐	☐	☐	☐

To explore potential effects of age, gender and recruitment mode on participants' total scores on the FRS, a regression analysis of total scores based on age group, gender and recruitment mode was conducted ($F(4,101)=1.26$, ns; $R^2=0.05$). There was no effect of age group ($p=.84$) or gender ($p=.49$) on total score. These results suggest that age and gender did not have an effect on participants' total score on the scale. Source of recruitment was not significantly associated with total score ($p=.058$), although it showed a moderate effect size (Hedges' $g=0.66$). Clients of The Way Back Support Service had higher scores ($M=26.1$, $SD=5.2$) than community participants ($M=19.6$, $SD=10.2$). Although non-significant (likely due to limited power), the moderate effect size for recruitment suggests that those closer to a suicide attempt had higher scores and that the scale may be sensitive to change.

A total score can be calculated for the FRS, ranging from 0 to 44, with higher scores on the scale indicating greater challenges in psychosocial functioning, and lower scores likely to indicate greater recovery. The inclusion of positively-worded items in the scale requires that these items (the first two and last three items) be reverse-coded (i.e., 4=Never, 3=Rarely, 2=Sometimes, 1=Often, and 0=Always). Once these items have been reverse-coded, the total score is calculated by summing the responses across the 11 items. Within the present sample, the mean score was 20.3 (*SD*=10.0); scores in the lowest quartile on the 11-item scale corresponded to a score of 12 or less, with scores in the middle two quartiles ranging from 13-26, and scores in the highest quartile ranging from 27-44. While this categorisation may be representative of individuals with a lived experience of a suicide attempt, scores may be higher in individuals with a recent suicide attempt and lower in the general population.

Short form scale

A short form scale may be useful in certain circumstances, such as when limited time is available or to reduce the burden on clients. With this in mind, a six-item short-form (FRS-SF) was also developed. The items in the FRS-SF were selected based on strong factor loadings, low redundancy (i.e., lower inter-item correlations), and coverage of subdomains. The short form is presented in Box 2. The FRS-SF also showed high internal consistency (α= 0.91). Correlations between scores on the FRS-SF with both the FRS and original item bank of 32 items were both high (0.98, 0.97 respectively), suggesting that the FRS-SF has strong comparability to the longer forms and could be used when required (e.g., for people who would find a longer scale too challenging). Total short-form scores range from 0-24, with two positively worded items reverse-scored (items 1 and 6) and the total score calculated by summing the responses across the 6 items. Based on the high correlation between the 6- and 11-item versions, scores on the 6-item version could be converted to the 11-item equivalent by multiplying by 1.83 and rounding. Using this conversion method in the present sample,

estimated 11-item scores were within 3 points of actual 11-item scores for 92% of

respondents. The FRS-SF scale had a mean score of 11.0 (SD=5.9) in the present sample.

Similarly to the 11-item scale, CFA for the short form indicated adequate fit to a

unidimensional structure (CFI=0.955, TLI=0.932, RMSEA=0.119), which was improved by

accounting for the correlation between items 1 and 6 (CFI>0.999, TLI>0.999,

RMSEA<0.001).

Box 2: The 6-item Functioning and Recovery Scale: Short-Form

We would like to know how often you have had certain thoughts or feelings over the past week. For each statement, please choose a response from 'Never' to 'Always' that best describes your situation over the past seven days.

	Never	Rarely	Sometimes	Often	Always
I felt like I belonged.	☐	☐	☐	☐	☐
I felt that I was completely unworthy of love.	☐	☐	☐	☐	☐
I felt that my life was out of my control.	☐	☐	☐	☐	☐
I thought that taking my life was the only way out of my problems.	☐	☐	☐	☐	☐
I felt that I had nothing to look forward to.	☐	☐	☐	☐	☐
I felt hope for the future.	☐	☐	☐	☐	☐

Feedback on the scale

Of the 106 participants in the community and client trials, 74% were either very

satisfied or satisfied with the pilot scale, based on the 32 items presented. Less than a quarter

(24%) were neutral and very few (2%) were dissatisfied. No participants were very

dissatisfied.

Discussion

This study used a four-stage process to develop a new scale of psychosocial functioning for use in evaluating suicide aftercare services, with potential for application in assessing other services related to suicide or severe mental illness, or in a research context. The new 11-item scale was called the Functioning and Recovery Scale (FRS). Items were pooled from a range of domains related to suicide risk and recovery. The scale and its short form was demonstrated to be unidimensional with sound psychometric properties relative to the full item bank, and highly acceptable to people with lived experience of a suicide attempt. CFA analyses supported the unidimensionality of the scale after accounting for correlations between two item pairs.

The findings of the interview and expert survey highlighted several important domains for consideration in assessing suicide risk and recovery. The literature review identified measures across identified domains, including suicidality, psychological distress, wellbeing and resilience, specific mental health and substance use disorders, recovery, and a range of interpersonal and psychological factors. A theme evident throughout the project was an emphasis on measuring positive changes to indicate recovery, as opposed to measuring the absence of symptoms. Unlike many existing measures of suicidality (Batterham et al., 2015b) and psychological distress (Batterham, Sunderland, Slade, Calear, & Carragher, 2018; Kessler et al., 2002), this measure captures both risk and recovery in people following a suicide attempt. In addition, to our knowledge no existing measure used to evaluate suicide prevention services has engaged in a rigorous development process combining lived experience perspectives, item banking, expert relevance and acceptability ratings, and psychometric evaluation. From this process, we identified a set of items that were found to be highly satisfactory to people with a lived experience of suicide attempt, which is crucial to ensuring accurate assessment at this vulnerable time.

The FRS is brief to administer (estimated 1-2 min, less for the FRS-SF), and highly relevant for the users of suicide aftercare services. It is also likely to be useful for the services themselves, as it measures feelings and behaviours that may be impacted by these services. Feedback from the service providers who were involved in the testing of the scale indicated that both users and providers found completing the scale to be a useful exercise in identifying strengths and challenges. Therefore, the scale may provide both an indicator of need and an opportunity to discuss specific challenges, informing case management and support for individuals following a suicide crisis. Feedback from respondents also indicated that the items were highly relevant to their situation and needs. Evaluation of services that uses more narrowly-defined distress measures or ad-hoc subjective service ratings may miss potential benefits of such services and be less relevant to respondents.

While the study presents a comprehensive program of research that culminated in the development of a sound measure of psychosocial functioning, there are some limitations to the study. First, while the literature search identified items from robust scales covering each identified domain, there may be other scales (or items) that are similarly robust but were not included. Second, only five participants with lived experience verified the factors identified from the literature review, although their perspective on risk and recovery were broadly consistent with the literature and with data from the subsequent survey. Third, the online samples of people with lived experience may not reflect the broader community of people who have experienced a suicide attempt. Online recruitment was used to gather data from a geographically spread and diverse sample over a short period of time, and may be similarly representative to other methods of recruitment (Batterham, 2014; Thornton et al., 2016). Fourth, the researchers and clinicians were identified through existing networks, with the intention of seeking diverse opinions, although their views of the relevance and acceptability of the items may not be universally held. Fifth, although we sought to gather ecologically

valid data from within The Way Back Support Service, the client flow and demands of the service precluded a larger sample from this setting. Further validation within service settings and using repeated measurements is recommended. Finally, the FRS was not validated against any existing scales, as there was no natural comparator. Further psychometric evaluation in other samples to investigate the robustness of the measure may be beneficial.

This study developed and provided evidence for the psychometric properties of a new scale assessing risk and recovery in people following a suicide attempt. The inclusion of lived experience perspectives throughout the development process is an important feature of the scale. The FRS is designed to evaluate community-based psychosocial services, particularly suicide attempt aftercare services, and it captures a range of factors likely to reflect the focus of such services on reducing risk and promoting recovery.

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Table 1: Items from the pilot scale, final scale (bold) and short-form scale (asterisk): relevance, acceptability, mean (SD) ratings and factor loadings

| | Expert survey (n=42) | | | | | | Quantitative survey (n=106) | | |
| | Lived experience (n=28) | | | Researchers/clinicians (n=14) | | | | | |
	Essential (%)	Important (%)	Acceptable (%)	Essential (%)	Important (%)	Acceptable (%)	M	SD	Loading
Negatively-worded items									
I had thoughts about suicide that I felt I couldn't control.	85.7	10.7	92.9	85.7	14.3	100.0	1.04	1.24	0.74
I made plans to kill myself.	85.7	7.1	96.4	78.6	21.4	100.0	0.66	1.02	0.63
I had thoughts of killing myself.	78.6	14.3	92.9	100.0	0.0	100.0	1.38	1.28	0.77
I felt that the people in my life would be better off if I were gone.	82.1	14.3	92.9	78.6	21.4	100.0	1.29	1.35	0.79
I couldn't see a way out of my current situation.	75.0	21.4	96.4	78.6	14.3	92.9	1.94	1.34	0.84
I thought that taking my life was the only way out of my problems.*	71.4	21.4	92.9	57.1	42.9	100.0	1.20	1.27	0.81
I felt defeated by life.	71.4	21.4	96.4	50.0	35.7	92.9	1.94	1.21	0.79
I felt hopeless.	60.7	32.1	92.9	64.3	35.7	100.0	1.95	1.16	0.85
I felt worthless.	60.7	35.7	96.4	50.0	50.0	100.0	1.89	1.18	0.80
I felt that I made things worse for the people in my life.	67.9	25.0	96.4	57.1	35.7	100.0	1.68	1.28	0.81
I felt that I was disconnected from other people.	67.9	28.6	100.0	42.9	50.0	100.0	2.13	1.27	0.77
I wanted to escape from my thoughts and feelings.	67.9	25.0	96.4	50.0	50.0	100.0	2.46	1.15	0.77
I felt there was nothing I could do to help myself.	64.3	32.1	96.4	50.0	35.7	92.9	1.76	1.19	0.85
I felt that my life was out of my control.*	53.6	39.3	96.4	57.1	35.7	92.9	1.97	1.25	0.83
My worries overwhelmed me.	57.1	39.3	96.4	42.9	57.1	100.0	2.04	0.94	0.73
I felt that I had nothing to look forward to.*	53.6	39.3	96.4	57.1	42.9	100.0	1.78	1.22	0.85
I felt like a failure.	57.1	39.3	96.4	35.7	50.0	100.0	2.23	1.14	0.75
I felt numb or detached from people, activities, or my surroundings.	64.3	28.6	96.4	35.7	50.0	100.0	2.11	1.24	0.80

| | Expert survey (n=42) | | | | | | Quantitative survey (n=106) | | |
| | Lived experience (n=28) | | | Researchers/clinicians (n=14) | | | | | |
	Essential (%)	Important (%)	Acceptable (%)	Essential (%)	Important (%)	Acceptable (%)	M	SD	Loading
I was in a situation I felt trapped in.	53.6	39.3	96.4	35.7	57.1	100.0	2.03	1.23	0.79
I felt helpless in dealing with the problems of life.	60.7	32.1	96.4	35.7	50.0	100.0	2.02	1.00	0.81
I felt that I was completely unworthy of love.*	50.0	46.4	96.4	50.0	35.7	100.0	1.72	1.20	0.82
I had sudden emotional or physical reactions when reminded of a traumatic event.	57.1	35.7	96.4	21.4	64.3	100.0	1.68	1.33	0.65
I felt intense emotional pain.	--	--	--	--	--	--	2.08	1.19	0.81
Positively-worded items									
I felt that there were people I could turn to in times of need.	57.1	28.6	92.9	64.3	28.6	100.0	2.09	1.19	-0.62
I felt that other people cared about me.	50.0	35.7	89.3	50.0	42.9	100.0	2.23	1.08	-0.67
I felt like I belonged.*	46.4	35.7	89.3	57.1	35.7	100.0	1.55	1.16	-0.74
I felt that I was close to other people.	35.7	50.0	89.3	28.6	42.9	100.0	1.75	1.08	-0.71
I believed I could find a purpose in life, a reason to live.	35.7	35.7	89.3	35.7	42.9	100.0	2.25	1.19	-0.61
I thought that it may be possible for me to help myself.	25.0	50.0	85.7	35.7	28.6	92.9	2.15	0.91	-0.70
My family and friends expressed interest in how I was doing.	21.4	50.0	92.9	21.4	57.1	100.0	1.93	1.23	-0.46
I felt hope for the future.*	--	--	--	--	--	--	2.09	1.01	-0.77
I felt able to carry out daily activities, such as work, household tasks or social activities.	--	--	--	--	--	--	2.31	1.02	-0.62

Note: **bold** items were included in the final scale; * indicates items included in the short form