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Reliability and validity of the Self-Reflection and Insight Scale for psychologists and the development and validation of the revised short version

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Abstract

Self-reflection is broadly considered a core competency for psychologists; however, there is an absence of measures of self-reflection, limiting the extent to which self-reflection can be assessed in both research and practice contexts. Whilst the Self-Reflection and Insight Scale (Grant et al., 2002) has been validated in a range of formats with different populations, it has not yet been validated with psychologists. Further, the psychometric properties of a short version of the scale (Silvia, 2021) have not been examined for use with psychologists. This study tested the factor structure, internal consistency and convergent and divergent validity of the Self-Reflection and Insight Scale with registered psychologists ($N = 123$), finding both the full scale and short version to have sound psychometrics. However, as there were low loading items across both versions of the measure, and the short version also excluded high-loading items, the SRIS-Revised (SRIS-R) was formed through model improvement, retaining a total of 14 items. This revised version of the scale captures high loading items without redundancy of low-loading items, resulting in a measure that parsimoniously captures the construct of self-reflection as relevant to psychologists. The SRIS-R demonstrated good internal consistency ($\alpha = .882$), convergent, divergent and construct validity. Scores on the SRIS-R were used to test whether there was a correlation between self-reflection and years of professional registration, with this not being significant.

KEYWORDS
insight, reflective practice, self-assessment, self-reflection, SRIS

1 | INTRODUCTION

Self-reflection has been the source of much research interest within the helping professions over recent years (e.g., Lilienfeld & Basterfield, 2020), with a focus on engaging in self-reflection as a regular part of one's practice, and applying learnings to future scenarios to ultimately improve practice outcomes. Whilst there has been significant discussion within the literature around the definition of self-reflection (Nguyen et al., 2014), it can be defined as a psychological introspective process of observing and analysing one's thoughts, feelings and behaviours (American Psychological Association, 2020). Difficulty in observing and defining self-reflection contributes to

difficulties in quantitative measurement, and as a result, there is a dearth of measures for self-reflection. Despite this, self-reflection has long been associated with skill development, with John Dewey (1933) emphasising the role of reflective thought in one's capacity to learn. Self-reflection is considered a core competency for psychologists (Rice et al., 2022) and thought to have implications for development in other areas such as cultural reflexivity (Smith et al., 2021) and development of therapeutic rapport (Prasko et al., 2012).

Dewey's (1933) seminal work on reflective practice led to a burgeoning of further theories, including the work of Schön (1983), who proposed two forms of self-reflection based on the timing at which one self-reflects in relation to the subject of reflection. Schön proposed that reflection may occur following the experience (reflection-on-action), or in situ, where one engages in reflective thought whilst still in the scenario (reflection-in-action). Schön's work has been extended by contemporaries, with a third form of reflection described as 'reflection-for-action' (Killion & Todnem, 1991) highlighting the way in which reflection can assist with planning for future actionable change, and, in combination with reflection-on-action and reflection-in-action, 'is a process that encompasses all time designations, past, present, and future simultaneously' (Killion & Todnem, 1991, p. 15). This concept of reflection resulting in concrete, actionable behaviour change is mirrored in other common models of reflection (e.g., Kolb's, 1984, Experiential Learning Theory; the Lawrence-Wilkes and Ashmore, 2014, REFLECT model).

Given its longstanding connection with learning, self-reflection has also been implemented in professional development and learning sequences, most notably in the learning acquisition approach of self-practice/self-reflection, where practitioners implement and then subsequently reflect on newly acquired skills within a therapeutic modality (Bennett-Levy et al., 2001). The focus on self-reflection as part of learning acquisition aligns with theories of deliberate practice (Ericsson et al., 1993), which posit that it is not merely experience that results in learning but the reflection on experience and subsequent targeted learning activities.

Self-reflection is recognised as a core competency for registered psychologists in various countries around the world (e.g., Australian Psychology Accreditation Council [APAC], 2019; British Psychological Society [BPS], 2019). As a result, self-reflection is not merely an adjunct to practice but sits alongside other core competencies, such as assessment and intervention, as an integral component of a psychologist's role. In addition to self-reflection being recognised as a core competency in itself, this skill facilitates the development of other core competencies. For example, practitioners who are self-reflective are able to obtain and maintain high standards and be effective clinicians (Sharpless & Barber, 2009). Self-reflection is considered to be essential to sustaining competency development and growth (Knapp et al., 2017) and contributes to greater self-awareness, professional expertise and overall greater quality practice (Cooper & Wieckowski, 2017). A cube model of competencies has been formulated by Rodolfa et al. (2005), which proposes that reflective practice and self-assessment is a foundational competency, and one of the 'building blocks of what psychologists do' (Rodolfa et al., 2005,

Key Practitioner Message
- Self-reflection is a core competency for psychologists, although minimal measures of self-reflection exist.
- This research aimed to validate the Self-Reflection and Insight Scale (Grant et al., 2002) for use by psychologists.
- A shortened version of the Self-Reflection and Insight Scale, the SRIS-Revised, demonstrated promising psychometrics and is recommended for use by psychologists for self-assessment of self-reflection.
- This research provides initial support for the use of the SRIS-R in psychology practice, research or training.

p. 350). Accordingly, self-refection forms the basis for the development of other skills such as assessment and intervention.

1.1 | Developing self-reflection

Core professional competencies are no longer considered a final destination of tertiary education but as a dynamic, continuing process of development throughout one's career (Rodolfa et al., 2013; Rodolfa & Schaffer, 2019; Stevens et al., 2017). As a core competency of psychologists, self-reflection is also expected to develop in accordance with practice and experience. Activities that may facilitate self-reflection for psychologists include journaling, supervision, mindfulness and engagement in peer networks (Knapp et al., 2017).

Further, developmental models of supervision within the helping professions, such as Stoltenberg and McNeill's (2010) Integrative Developmental Model of Supervision, suggest that the capacity to reflect is facilitated through supervision and also that it increases in accordance with experience and overall skill development. Hawkins and McMahon (2020) described this 'development of reflective capacity as somewhat like developing an emotional-cognitive muscle …' (p. 21). Whilst both self-reflection and psychological competencies more broadly may develop beyond initial accreditation as a psychologist, and throughout the career trajectory (i.e., Hitzeman et al., 2020; Rønnestad & Skovholt, 2003), there is also the possibility that self-reflection may be greater for early career psychologists given the prevlanece of imposter syndrome (Maftei et al., 2021). Overall, there is limited empirical evidence exploring the development of self-reflection for practitioners.

1.2 | Self-assessment

Feedback is an essential component of performance improvement (Ericsson et al., 1993), and a key method of gathering feedback is self-assessment (Sheridan, 2021). Self-assessment is a process of reflection and evaluation of how closely achievements align with the explicit learning criteria (Boud, 1995, p. 12). A practitioner's ability to

self-assess can help to develop and maintain competence and highlight areas for development (Loades & Myles, 2016). Whilst self-reflection and self-assessment are closely aligned, self-assessment places a greater emphasis on the comparison between current performance and desired performance. Furthermore, self-assessment and self-reflection are considered ethical behaviours and essential in practitioners' competence evaluation (Rubin et al., 2007) with poor self-assessment a major impediment to reflective practice (Lilienfeld & Basterfield, 2020). Accuracy of both self-reflection and self-assessment can be improved through structured measures (Sheridan, 2021), enabling a systematic evaluation of the components of each competency, as well as enabling change to be tracked over time. Without structured and intentional self-assessment, self-reflection is subjective and variable and may not holistically include all of the components of a skill. Structured self-assessment of competency is a valuable aspect of self-reflection and may help to inform competency development and monitoring throughout a career (Roberts et al., 2005). Therefore, there is considerable value and need for a valid measure of self-reflection for psychologists in both practice and research.

1.3 | Measures of self-reflection

Self-assessment of self-reflection and empirical research on self-reflection are both limited by a current lack of measures validated for psychologists. Thus, despite self-reflection being recognised as a core competency for psychologists (APAC, 2019; BPS, 2019; Rice et al., 2022), and there being a number of measures existing for other psychology competencies (e.g., therapy rating scales and assessment checklists), there is a dearth of validated measures to facilitate self-assessment and research. It follows that systematic reviews of measures of self-reflection for health practitioners are scarce, with Ooi et al. (2021) authoring the only such review in a peer-reviewed journal at the time of publication. In their review, Ooi et al. (2021) noted there was 'comparatively little evidence-based research focusing on its [self-reflection's] measurement' (Ooi et al., 2021, p. 3) and a lack of consensus around the most appropriate measures of reflective practice for health practitioners (Ooi et al., 2021). From their systematic review of self-report measures of reflective practice for health professionals, Ooi et al. (2021) recommended the Reflective Questionnaire (Kember et al., 2000) and the Self-Reflection and Insight Scale ([SRIS], Grant et al., 2002) for use by health practitioners. Whilst Ooi et al. (2021) reviewed nine other measures, they concluded that as the Reflective Questionnaire (Kember et al., 2000) and SRIS (Grant et al., 2002) had been subject to broader use and psychometric evaluation across different populations, these measures were better suited to use by health practitioners in assessing reflective practice. Despite recommending the Reflective Questionnaire, Ooi et al. (2021) noted that a limitation of the measure was that it was developed for student use in an academic context, and modification would be required before use in healthcare settings. The items were written explicitly for students in course and learning-specific language, such as 'To pass

this course you need to ...', 'understand material taught by the teacher ...' and '... remember handout material for examinations' (Kember et al., 2000, p. 395). Thus, many of the items on the Reflective Questionnaire were deemed unsuitable for psychologists in practice. In contrast, Ooi and colleagues noted the range of existing adaptations of the SRIS in healthcare settings, and the items were more applicable to practice settings; therefore, it was anticipated that the SRIS could be modified and applied to accommodate other healthcare practitioners.

With its relative speed of administration and simplicity of structure, the SRIS (Grant et al., 2002) appears to be a promising instrument for the purpose of measuring self-reflection. This measure assesses both self-reflection, operationalised as 'the inspection and evaluation of one's thoughts, feelings and behaviour' (p. 821), and insight defined as 'the clarity of understanding of one's thoughts, feelings and behaviour' (p. 821). These definitions overlap with earlier definitions of reflection and are flexibly applied to reflection-in-action and reflection-on-action (Schön, 1983) and reflection-for action (Killion & Todnem, 1991). Grant et al. posited that both self-reflection and insight play a key role in the effectiveness of goal attainment and change. The 20-item SRIS was initially composed of three subscales: Insight, Need for Self-Reflection and Engagement in Self-Reflection. However, the questionnaire was further refined to combine the two self-reflection subscales into one scale, producing a two-factor solution (Grant et al., 2002). In initial studies with undergraduate psychology student samples, the SRIS demonstrated sound factor structure, good convergent and divergent validity and good test–retest reliability (Grant et al., 2002). Since this initial validation, the SRIS has been utilised across a range of populations including medical students (Naeimi et al., 2019), nurses (Aydin et al., 2023), individuals living with depression (Herdi & Berksun, 2021) and young people in a therapeutic context (Sauter et al., 2010). It has been translated and used in a number of languages (e.g., Aşkun & Çetin, 2017; Naeimi et al.). Additionally, a short form of the measure, retaining 12 of the items in the two-factor structure, was developed by Silvia (2021) with undergraduate psychology students and demonstrated strong psychometrics (Silvia, 2021). However, to date, the measure has not been validated with psychologists.

Whilst the SRIS (Grant et al., 2002) was initially assessed with Australian students enrolled in undergraduate psychology courses, it has not yet been assessed for use with practising, registered psychologists who have completed extensive study and supervision to meet competency standards. Given that psychologists have obtained a tertiary psychology qualification and are engaged in a course of practice that requires ongoing competency monitoring and development throughout their career, previous research supporting the utility of the SRIS must be considered with caution when applying it to psychologists. Whilst there is some support for the use of the scale in other health professions (Ooi et al., 2021), evidence is needed specifically for psychologists given the recognition of self-reflection as a core competency in the profession (e.g., APAC, 2019; BPS, 2019).

1.4 | Aims

The present study sought to explore the validity of the SRIS and the 12-item short form version with a sample of Australian psychologists. The primary aim was to evaluate the factor structure and potentially adapt the measure to form a revised version to capture items most relevant to the constructs of self-reflection and insight for psychologists. A secondary aim was to explore whether the capacity to self-reflect differs in accordance with years of experience as a psychologist.

The research aims were as followed:

1. To assess the reliability and validity of the SRIS two-factor and three-factor questionnaire (Grant et al., 2002) as a measure of self-reflection and insight in Australian psychologists.
2. To assess the reliability and validity of the SRIS 12-item short version (Silvia, 2021) as a measure of self-reflection and insight in Australian psychologists.
3. To assess the relationship between years of registration as a psychologist with self-reflection and insight, including linear and u-shaped relationships.

2 | MATERIALS AND METHODS

2.1 | Participants

Inclusion criteria were currently holding registration as a psychologist (including psychologists who are registered, specialised or completing postgraduate training) with the Australian Health Practitioner Regulation Agency. A total of 123 Australian psychologists completed the survey. Of these participants, 103 held full registration as a psychologist with the Australian Health Practitioner Regulation Agency (83.7%), and 20 held provisional registration (currently in final stages of training and able to work under close supervision) (16.3%). Of the sample, three participants identified as Aboriginal or Torres Strait Islander (2.4%), and five participants identified as culturally and linguistically diverse (4.1%). The sample was predominantly female, with 99 females (80.5%) and 22 males (17.9%) and two respondents not stipulating their gender (1.6%). This sample of 123 participants was used for the confirmatory factor analysis (CFA) and initial internal consistency analysis of the scale. Whilst some rules of thumb indicate a total sample of at least 100, with at least five participants for each variable, is sufficient for factor analysis (e.g., Gorsuch, 1983), Kyriazos (2018) suggests that smaller sample sizes (e.g., 50) may be sufficient where models have a larger number of variables per factor (e.g., 6–12). As the SRIS (Grant et al., 2002) has between six and eight factors per variable, the sample size of 123 is considered sufficient for CFA.

A second sample of 30 different participants was used for a replication of internal consistency. Bujang et al. (2018) assert a sample size of less than 30 participants is possible to detect an effect size of 0.7 when using Cronbach's alpha. The demographics of this second sample were similar to that of the first. Of this sample, 21 participants held full registration as a psychologist with the Australian Health Practitioner Regulation Agency (70%), and 9 participants held provisional registration (30%). Two participants identified as culturally and linguistically diverse (6.7%). The sample was again predominantly female with 25 female participants (83.3%) and 5 male participants (16.7%).

2.2 | Measures

2.2.1 | SRIS

The SRIS (Grant et al., 2002) is a 20-item self-report questionnaire consisting of two subscales of self-reflection and insight. The items (e.g., 'I frequently take time to reflect on my thoughts') are rated on a 6-point Likert scale ranging from 1 (*Strongly Disagree*) to 6 (*Strongly Agree*). A total of nine items are reverse-scored, with four of these being included in the self-reflection subscale and five items included in the insight subscale. Scores are summed for each subscale and for a total score. There are no current cut-offs or scoring bands to interpret the summed scores. As reported in earlier studies using the SRIS (Grant et al., 2002, e.g., Naeimi et al., 2019), the total scale was conceptualised as an overall score of self-reflection and insight and tested for internal consistency across all iterations of the measure. The total scale for the 20-item version demonstrated good internal consistency in the present study's sample ($\alpha = .885$). Reliabilities for subscales formed part of the outcomes of this study and are reported in the results below.

The 12-item version of the SRIS (Silvia, 2021) contains 12 of the original items from the SRIS, with six items in each of the SRIS scales, with five of the six items in the Insight scale being reverse scored. The total scale for the 12-item version (Silvia, 2021) demonstrated good internal consistency in the present study's sample ($\alpha = .882$). Reliabilities for subscales of both the 20-item (Grant et al., 2002) and 12-item (Silvia, 2021) measures formed part of the outcomes of the present study and are reported in the results section below.

2.2.2 | Career Futures Inventory—9 Item (CFI-9)

Participants completed the CFI-9 (McIlveen et al., 2013) as a measure of divergent validity. The CFI-9 is a short measure with three subscales of career optimism, adaptability and perceived knowledge (e.g., understanding employment trends) with high internal consistency, construct validity and concurrent validity (McIlveen et al., 2013). The three items of the perceived knowledge subscale of the CFI-9 were used, as these were expected to least overlap with

self-reflection. The subscale demonstrated good internal consistency when tested in this sample ($\alpha = .855$).

2.2.3 | Competences of Professional Psychology Rating Scales (COPPR Scales)

The Self-Reflection subscale of the COPPR Scales (Rice et al., 2022) was used as a convergent measure. The COPPR Scales provide a standardised measure of psychologist competencies as per the Australian accreditation standards (APAC, 2019) applicable to registered psychologists. Whilst the COPPR Scales are in the initial stages of psychometric evaluation, there exists no other measure of self-reflection validated for a population of Australian psychologists, and so the self-reflection subscale from this measure was deemed most suitable. The self-reflection subscale is composed of eight items rated on a 7-point Likert scale ranging from 1 (*Not Yet Competent*) to 7 (*Expert*). Preliminary assessment of the measure with a pilot sample indicated the measure has content validity, strong convergent and divergent validity and the capacity to differentiate between novice and experienced practitioners (Rice et al., 2022). The COPPR self-reflection subscale demonstrated excellent internal consistency within the present study's sample ($\alpha = .971$).

2.3 | Procedure

The University Human Research Ethics Committee provided approval for the study, and the survey was promoted online, including targeted advertisements through social media and professional networking sites and email invitations through professional psychology bodies. Participants provided informed consent and then completed both demographic questions and study measures via an online Qualtrics (Provo, UT) survey, with the three scales used for this study included as part of a larger study of self-reflection and self-assessment, of approximately 30-min duration. In this study, participants completed other questionnaires including the COPPR Scales (Rice et al., 2022) first, before undertaking the SRIS (Grant et al., 2002). The recruitment strategy and procedure were the same for both samples.

2.4 | Statistical analysis

SPSS Statistics for Windows, Version 28 (IBM Corp., 2021) statistical software and SPSS Amos, Version 28 (IBM Corp., 2022) were used for analyses. Given prior evaluation of the measure using exploratory factor analysis (Grant et al., 2002) and item response theory (Silvia, 2021), the first research aim was explored using CFA of the initial 20-item scale (Grant et al., 2002) with both the original three factors (Insight, Need for Self-Reflection and Engagement in Self-Reflection) and modified two-factor structure (Insight and Self-Reflection). A third CFA was conducted in order to test the second

research aim regarding the factor structure of the 12-item measure (Silvia, 2021).

Model fit was tested through goodness-of-fit indices, with *CMIN/DF* scores ≤ 5 indicating a reasonable fit (Marsh & Hocevar, 1985) and *NFI*, *IFI* and *CFI* scores approaching 1 indicating greater fit (Goretzko et al., 2023). *RMSEA* scores were interpreted within the thresholds suggested by MacCallum et al. (1996, p. 134), with an RMSEA of .08 to .1 indicating 'mediocre fit'. Model improvement was then conducted, eliminating items with a loading of less than .5 as recommended by Hair et al. (2010) whilst ensuring all included items captured self-reflection and insight across the domains of thoughts, feelings and behaviours in order to form a revised model of the SRIS (SRIS-R). The SRIS-R was then tested for reliability and validity and reviewed through expert assessment of the items and constructs (Taherdoost, 2016). To test face validity, five Australian psychologists were asked to consider the items in the scale and whether these aligned with the constructs of self-reflection and insight as pertinent to psychologists.

Reliability of the measures was assessed for internal consistency using Cronbach's alpha and conventions recommended by George and Mallery (2003), with $\alpha < .60$ (poor), .60–.70 (questionable), .70–.80 (acceptable), .80–.90 (good) and ≥.90 (excellent). Divergent and convergent validity was tested through correlation using bootstrapped Pearson's *r* of scores on each subscale of the SRIS with the Perceived Knowledge subscale from the CFI-9 (McIlveen et al., 2013) and the Self-Reflection subscale of the COPPR Scales (Rice et al., 2022), respectively.

To explore the third research aim, that scores on the SRIS would differ across years of registration as a psychologist, Pearson's product–moment correlations were calculated to test the possibility of a linear relationship. The possibility of a u-shaped relationship was also tested through curve estimation regression analysis.

3 | RESULTS

3.1 | SRIS structure

CFA of the two- and three-factor structures of the SRIS indicated acceptable fit for the two-factor measure (*CMIN/DF* = 2.847, *NFI* = .642, *IFI* = .734, *CFI* = .729) and the three-factor measure (*CMIN/DF* = 2.710, *NFI* = .663, *IFI* = .757, *CFI* = .752). The *RMSEA* values were above the upper recommended threshold of .08–.1 indicating 'mediocre fit' (MacCallum et al., 1996, p. 134) for both the two-factor solution (*RMSEA* = .131) and the three-factor solution (*RMSEA* = .125). Both the two-factor and three-factor models had multiple items with a factor loading of less than .5, which is the recommended cut-off for exclusion (Hair et al., 2010). See Table 1 for factor loadings across the CFAs.

To test the second research aim, CFA was used to test the structure of the 12-item measure as proposed by Silvia (2021). The 12-item measure indicated acceptable fit (*CMIN/DF* = 2.626, *NFI* = .787, *IFI* = .857, *CFI* = .853), with one item having a

TABLE 1 Factor loadings for model items.

Item	Two-factor, 20-item (Grant et al., 2002)	Three-factor, 20-item (Grant et al., 2002)	Two-factor, 12-item (Silvia, 2021)
Engagement in self-reflection			
I don't often think about my thoughts (R)	.33	.34	
I rarely spend time in self-reflection (R)	.34	.38	
I frequently examine my feelings	.45	.59	.50
I don't really think about why I behave in the way that I do (R)	.24	.31	
I frequently take time to reflect on my thoughts	.54	.74	.60
I often think about the way I feel about things	.49	.62	.57
Need for self-reflection			
I am not really interested in analysing my behaviour (R)	.55	.55	
It is important for me to evaluate the things that I do	.63	.62	.69
I am very interested in examining what I think about	.82	.82	.80
It is important for me to try to understand what my feelings mean	.89	.89	.79
I have a definite need to understand the way that my mind works	.87	.88	
It is important for me to be able to understand how my thoughts arise	.81	.82	
Insight			
I am usually aware of my thoughts	.53	.53	
I'm often confused about the way that I really feel about things (R)	.64	.64	.66
I usually have a very clear idea about why I've behaved in a certain way	.52	.52	
I'm often aware that I'm having a feeling, but I often don't quite know what it is (R)	.56	.56	.58
My behaviour often puzzles me (R)	.71	.71	.72
Thinking about my thoughts makes me more confused (R)	.83	.83	.82
Often I find it difficult to make sense of the way I feel about things (R)	.77	.77	.82
I usually know why I feel the way I do	.36	.36	.31

factor loading below .5. Again, the *RMSEA* value was above the recommended threshold of .1 (MacCallum et al., 1996; *RMSEA* = .127). However, this is interpreted with caution given the statistical limitations of this model fit index (Kenny et al., 2015).

There were flaws in the factor structure of both the 20-item and the 12-item models, with both models included two low loading items, and the 12-item measure excluded two items that were high loading in the full measure. Further, there was some redundancy with multiple items capturing similar constructs, such as 'I don't often think about my thoughts' and 'I frequently take time to reflect on my thoughts', with the second item being retained in preference of the former due to the higher factor loading (see Table 1). As a result, the 20-item, two-factor model (Grant et al., 2002) was improved through the deletion of all items with a factor loading equal to or less than .5, which left a total of 14 items, with seven in each subscale. For this revised model (see Figure 1), the RMSEA remained outside of the recommended threshold (*RMSEA* = .138). However, more interpretable model indices indicated sound model fit overall (*CMIN/DF* = 3.319, *NFI* = .751, *IFI* = .812, *CFI* = .809).
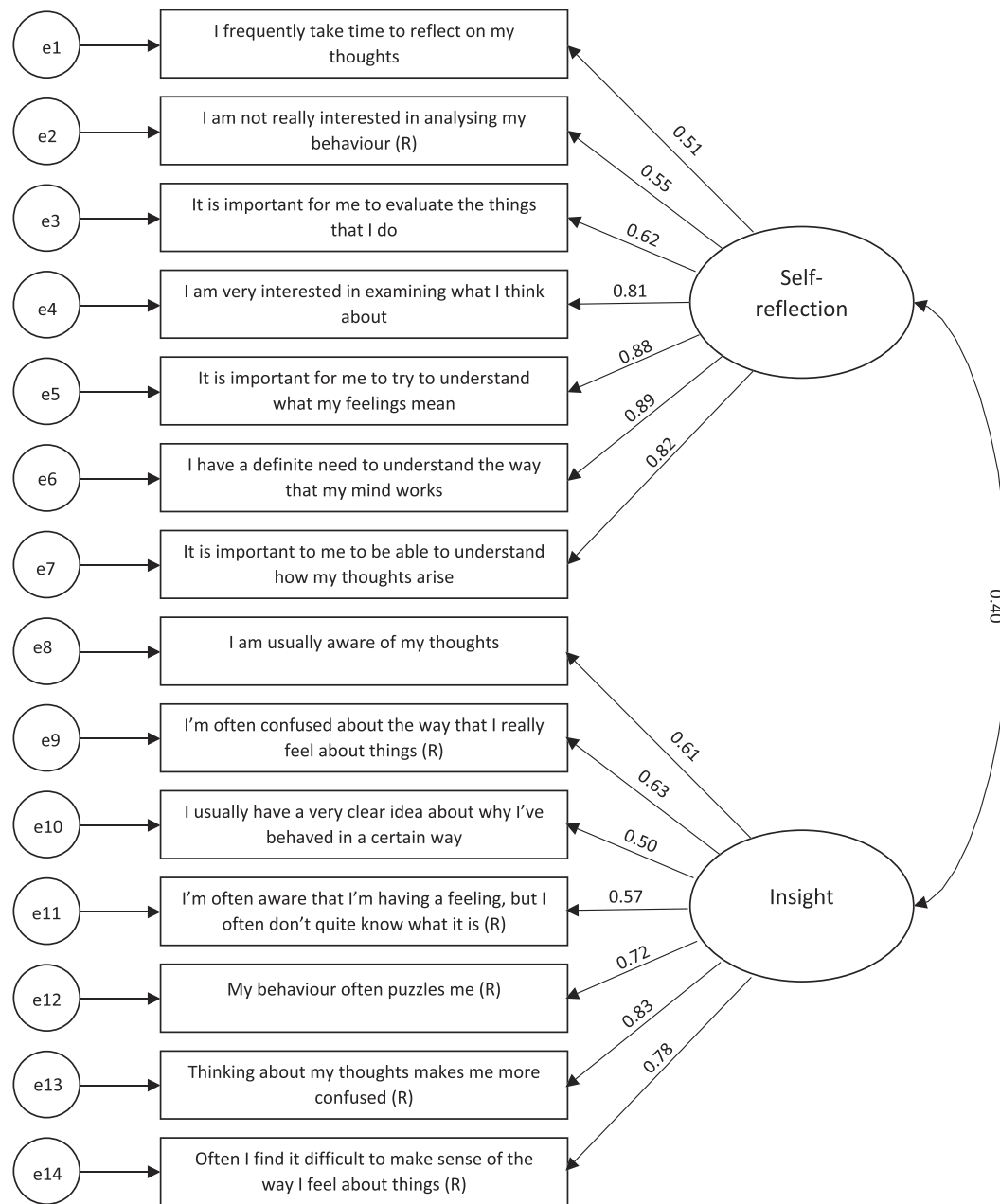
FIGURE 1 Final model structure of the SRIS-Revised.

3.2 | SRIS reliability

3.2.1 | 20-item solution

To explore the first research aim, the internal consistency of the 20-item measure (Grant et al., 2002) was tested using Cronbach's alpha. The 20-item solution (Grant et al., 2002) demonstrated good internal consistency ($\alpha = .885$) as a total scale (see Table 2). The combined Self-Reflection subscale of the two-factor solution demonstrated good internal consistency ($\alpha = .867$). In the three-factor solution, the Need for Self-Reflection subscale demonstrated good internal consistency ($\alpha = .893$). However, the Engagement in Self-Reflection subscale demonstrated questionable internal consistency ($\alpha = .668$).

3.2.2 | 12-item solution

Internal consistency was calculated to explore the second research aim of the validity of the 12-item measure (Silvia, 2021). Across the total scale, the 12-item solution demonstrated good internal consistency ($\alpha = .822$). The Self-Reflection subscale demonstrated good internal consistency ($\alpha = .837$), whilst the Insight subscale demonstrated acceptable internal consistency ($\alpha = .797$).

TABLE 2 Internal consistency statistics for model solutions and subscales.

Model/subscale	Cronbach's alpha
20-item solution (Grant et al., 2002)	
Total Score[a,b]	.885
Need for Self-Reflection Subscale Total Score[b]	.893
Engagement in Self-Reflection Subscale Total Score[b]	.668
Self-Reflection Subscale (Combined) Total Score[a]	.867
Insight Subscale Total Score[a,b]	.821
12-item solution (Silvia, 2021)	
Total Score	.822
Self-Reflection Subscale Total Score	.837
Insight Subscale Total Score	.797
14-item solution	
Total Score	.882
Self-Reflection Subscale Total Score	.888
Insight Subscale Total Score	.834

[a]Denotes subscales included in the 2-factor version of the 20-item SRIS (Grant et al., 2002).
[b]Denotes subscales included in the 3-factor version of the 20-item SRIS (Grant et al., 2002).

3.2.3 | 14-item improved solution (SRIS-R)

Internal consistency of the 14-item measure was good as a total scale in both the initial sample ($\alpha = .882$) and in the second sample ($n = 30$; $\alpha = .885$). The 14-item scale also demonstrated good internal consistency across both the Self-Reflection ($\alpha = .888$) and Insight subscales ($\alpha = .834$) in the larger sample. Internal consistency was similar in the second sample with good internal consistency for the Self-Reflection subscale ($\alpha = .912$) and acceptable internal consistency in the Insight subscale ($\alpha = .792$). Across the total scores and subscales, the 14-item revised solution was the only measure to demonstrate good internal consistency across both its total scale and all subscales.

3.3 | SRIS validity

As shown in Table 3, all iterations of the SRIS had positive and significant correlations with the Self-Reflection subscale of the COPPR (Rice et al., 2022). This held across both the total score, and all subscales of the 20-item version (Grant et al., 2002) including the Self-Reflection and Insight subscales as per the two-factor structure, and the Need for Self-Reflection, Engagement in Self-Reflection and Insight subscales as per the three-factor structure. Correlations between the Self-Reflection subscale of the COPPR Scales (Rice et al., 2022) were also positive and significant with both the total score and the Self-Reflection and Insight subscales of the 12-item version (Silvia, 2021) and the SRIS-R. This provides evidence of convergent validity for all tested forms of the SRIS and its subscales. Further,

correlations of both the total score and the subscales across all iterations of the SRIS and the Perceived Knowledge subscale of the CFI-9 (McIlveen et al., 2013) were not statistically significant, providing evidence of divergent validity of all tested forms of the SRIS and its subscales.

3.3.1 | Face validity of the SRIS-R

All psychologists reviewing the face validity of the SRIS-R concluded that the items represented the constructs of both self-reflection and insight as relevant to psychologists in practice, without redundancy of items.

3.4 | Self-reflection across years of registration

To explore the third research aim, the correlation between years of registration and scores on the SRIS-R was computed. Participants reported to have held registration (including provisional), for a mean of 12 years ($min = 0$, $max = 39$, $SD = 9.54$). Across the sample ($N = 123$), the mean total score on the 14-item SRIS-R was 67.05 ($min = 21$, $max = 84$, $SD = 10.15$). The mean score on the Insight subscale was 34.24 ($min = 9$, $max = 42$, $SD = 5.31$), and the mean score on the Self-Reflection subscale was 32.8 ($min = 12$, $max = 42$, $SD = 6.64$). Across both the total score and the subscale scores of the SRIS, there was no significant correlation with years of registration as a psychologist, and this was observed across the differing versions of the SRIS (See Table 3). In exploring the third research aim, the possibility of a u-shaped relationship between years of registration and scores of self-reflection and insight on the SRIS-R was tested through curve estimation regression analysis. The overall quadratic model using the SRIS-R total score was not statistically significant ($F(2, 120) = .919$, $p = .402$), indicating that the quadratic model did not provide a better fit to the data than a linear model. This was maintained at a subscale level, for both the SRIS-R self-reflection subscale ($F(2, 120) = .285$, $p = .753$) and the insight subscale ($F(2, 120) = 1.555$, $p = .215$).

4 | DISCUSSION

Self-reflection is considered crucial to psychological practice both within the literature and as recognised in psychology accreditation standards (e.g., APAC, 2019; BPS, 2019). However, there is no tool validated specifically with psychologists to self-assess self-reflection and insight. The current study addresses this gap by providing a valid and reliable instrument for the self-assessment of self-reflection and insight for psychologists, by testing the psychometric properties of the SRIS 20-item (Grant et al., 2002) and 12-item (Silvia, 2021) versions in a psychologist sample. CFAs of both the 20-item (Grant et al., 2002) and 12-item (Silvia, 2021) versions of the SRIS both demonstrated sound model fit, and these scales demonstrated good internal consistency and convergent and divergent validity in a sample of

TABLE 3 Bootstrapped correlations for model solutions and subscales.

Model/subscale	CFI-9 PK subscale	COPPR Scale SR subscale	Years of registration
20-item solution (Grant et al., 2002)			
Total Score[a,b]	.083	.352**	.111
Need for Self-Reflection Subscale Total Score[b]	.046	.255**	.042
Engagement in Self-Reflection Subscale Total Score[b]	.094	.306**	.051
Self-Reflection Subscale (Combined) Total Score[a]	.074	.318**	.051
Insight Subscale Total Score[a]	.070	.283**	.167
12-item solution (Silvia, 2021)			
Total Score	.078	.293**	.091
Self-Reflection Subscale Total Score	.074	.268**	.041
Insight Subscale Total Score	.050	.197*	.111
14-item improved solution			
Total Score	.085	.349**	.119
Self-Reflection Subscale Total Score	.064	.321**	.055
Insight Subscale Total Score	.082	.265**	.159

[a]Denotes subscales included in the 2-factor version of the 20-item SRIS (Grant et al., 2002).
[b]Denotes subscales included in the 3-factor version of the 20-item SRIS (Grant et al., 2002).
*Correlation is significant at the .05 level (two-tailed).
**Correlation is significant at the .01 level two-tailed).

psychologists. However, both versions included a number of low loading items, and the 12-item version excluded high loading items. This suggests that these measures do not wholly capture self-reflection and insight, with redundancy in the 20-item measure and missing items in the 12-item measure. As a result, model improvement of the 20-item version allowed for item reduction to only include high loading items, resulting in a brief version of the measure, with equally numbered seven-item subscales (see Figure 2). As a result, this measure only includes those items most related to the constructs of self-reflection and insight as reported by the sample of psychologists, therefore more accurately capturing the constructs of self-reflection and insight for psychologists than earlier versions of the SRIS (Grant et al., 2002; Silvia, 2021). All measures, including the 14-item revised measure (SRIS-R), demonstrated good internal consistency and divergent and convergent validity, suggesting that the SRIS 20-item (Grant et al., 2002) and 12-item (Silvia, 2021) are suitable for measuring self-reflection and insight in psychologists. Given that the strong psychometric properties of the earlier SRIS versions were maintained in the SRIS-R, whilst optimising items for both brevity and relevance whilst maintaining construct validity, the SRIS-R appears superior for use by psychologists for self-assessment of self-reflection and insight.

The third research aim of the present study was to explore whether self-reflection and insight differs in accordance with years of registration as a psychologist. Neither linear correlations nor the quadratic model was supported by the data, suggesting that self-reflection may not change throughout the career, which may imply that this core competency develops early and is relatively unaltered throughout the career. However, given the lack of normative data and the absence of a cut-off score or comparative levels for psychologists

at different stages of the career, further exploration of the developmental trajectory of this competency is needed. Years of registration was used to operationalise experience as a psychologist; however, it is possible that this did not adequately capture changes in the career trajectory. For example, years of registration may fail to account for absences (e.g., parental leave), age, professional work experience (e.g., client hours each week), level of training, stage of career, or type of registration and, therefore, ongoing research to further consider vocational experience, age, level of training and career stage in the role of self-reflection development would be beneficial.

A valid and reliable measure serves not only to offer psychologists a tool to assess their self-reflection but also enables the possibility of measuring change in self-reflection. The newly created SRIS-R provides a promising direction for future research as a valid and reliable measure. This enables research to examine changes in self-reflection through professional development and supervision activities. Whilst a number of activities such as journaling (Knapp et al., 2017) have been suggested to facilitate self-reflection, iterations of the SRIS including the SRIS-R offer the capacity to examine the efficacy of such activities. Further, the measures have utility in educational settings where competencies are being developed and assessed, such as in reviewing student development of competence including during internships and practicums. Supervisors may also utilise the measures to assess the effectiveness of supervision for increasing self-reflective capacity. Of theoretical interest is whether change occurs across both insight and self-reflection together or in isolation. For greatest utility, future research may identify a set point for what can be considered 'clinically meaningful' change in scores on the newly revised SRIS-R.

FIGURE 2   Response form for the SRIS-Revised (SRIS-R).

Self-Reflection and Insight Scale Revised (SRIS-R)

Please read the following questions and circle the response that indicates the degree to which you agree or disagree with each of the statements. Try to be accurate, but work quite quickly. Do not spend too much time on any question.

1.	I am not really interested in analysing my behaviour	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
2.	I am usually aware of my thoughts	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
3.	I'm often confused about the way that I really feel about things	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
4.	It is important for me to evaluate the things that I do	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
5.	I usually have a very clear idea about why I've behaved in a certain way	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
6.	I am very interested in examining what I think about	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
7.	I'm often aware that I'm having a feeling, but I often don't quite know what it is	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
8.	My behaviour often puzzles me	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
9.	It is important for me to try to understand what my feelings mean	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
10.	Thinking about my thoughts makes me more confused	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
11.	I have a definite need to understand the way that my mind works	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
12.	I frequently take time to reflect on my thoughts	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
13.	Often I find it difficult to make sense of the way I feel about things	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
14.	It is important for me to be able to understand how my thoughts arise	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree

SCORING: Calculate a total score and subscale scores.
Items 2, 4, 5, 6, 9, 11,12, 14: Score 1 to 6 across the scale, with Strongly Disagree = 1, Disagree = 2, Slightly Disagree = 3, Slightly Agree = 4, Agree = 5, Strongly Agree = 6.
Items 1, 3, 7, 8, 10, 13: Reverse score following inverse of instructions above (i.e., Strongly Disagree = 6; Strongly Agree = 1).
To calculate subscale scores, add scored items (as above):
Self-Reflection Items: 1, 4, 6, 9, 11, 12, 14.
Insight Items: 2, 3, 5, 7, 8, 10, 13.

4.1 | Limitations and directions for future research

There are a number of limitations in this study and directions for future research. While the current study exceeded the minimum sample size of at least 100 participants that is often recommended for CFA (e.g., Kline, 2016), additional participants may increase the power and allow for greater confidence in interpreting the RMSEA index of model fit. There was discrepancy between the model fit indices, with the *CMIN/DF* demonstrating sound model fit, whilst the *RMSEA* across all iterations of the SRIS were below the recommended threshold. However, the *RMSEA* results are interpreted with caution, with some evidence to suggest that these *RMSEA* values may be artificially inflated and, therefore, not interpretable given the relatively small sample size (Kenny et al., 2015). Further, whilst the *CFI* scores were slightly below the widely recommended threshold of .95 (Hu & Bentler, 1999), there are some concerns around the validity of approximate goodness-of-fit indexes in latent variable models, as they can be impacted by a range of factors including the sample size and model structure in terms of number of factors and items per factor (Goretzko et al., 2023; McNeish et al., 2018; van Laar & Braeken, 2021). By contrast, the CMIN/DF scores that are less pervious to sample size (Hooper et al., 2008) were below ≤5 across all SRIS iterations indicating a reasonable fit (Marsh & Hocevar, 1985). Future research is needed to replicate the results, with larger samples to assist with interpretability of model fit indices, in particular beyond the overall model fit index of *CMIN/DF*, to measures of fit such as the *RMSEA* and *CFI*. Furthermore, whilst there was evidence of strong convergent and divergent validity, this must be interpreted within the context and limitations of the measures used, and future research could also consider additional measures to test validity, beyond self-report scales. For example, supervisor ratings or rated self-reflection tasks could be utilised for more objective measures of convergent validity.

Whilst the present study provides an important initial step towards assessing self-reflection and insight by offering a validated revised version of a measure for psychologists, further research is required to assess the stability and replicability of the SRIS-R. For example, future research evaluating test–retest reliability would assist practitioners in understanding the measure's sensitivity to change and therefore how frequently it may be used. Whilst Grant et al. (2002) reported test–retest reliability of .77 for the self-reflection subscale and .78 for the insight subscale over a 7-week period, it is possible this will differ in the context of the SRIS-R given its different structure and context. Research on sensitivity to change of the subscales would also provide context to the total score, which was analysed for internal consistency given the correlations between subscales and the earlier precedent in the literature (e.g., Naeimi et al., 2019). It is possible the rate of change in total score will differ on the rate of change on both subscales or one subscale in particular. To aid practitioners in interpreting scores on the SRIS-R, future research may demarcate clinically significant change scores over time and cut-off scores for high and low levels of insight and reflection. As such, longitudinal research is needed, to provide additional validation of the use of the instrument over time, as well as investigating changes in self-reflection longitudinally.

Longitudinal research would also offer the opportunity to explore changes in self-reflection and insight throughout the career. Furthermore, additional measures of professional experience should also be considered, as years of registration may not fully capture professional competence and changes across the career trajectory. Future research may consider the possible role of engagement in self-reflection activities, such as supervision or journaling, within the relationship between professional experience and self-reflection and insight.

Whilst the SRIS-R items capture reflection of thoughts, feelings and behaviours in a way that is commensurate with Schön's (1983) model of reflection-in-action and reflection-on-action, it does not capture planning for future actions as per other models of reflection (e.g., reflection-for action [Killion & Todnem, 1991] or Gibbs' [1988] reflective cycle). Future research could consider devising and testing items that specifically address planning for future actions and further align the SRIS-R to existing models of reflective practice with an action-oriented component.

In their review of measures of reflective practice, Ooi et al. (2021) recommended testing the SRIS with heterogenous samples to further support its generalisability across health practitioners. Whilst this study has focussed on psychologists given the uniqueness of this role and associated core competencies, it would be beneficial to further explore the psychometric properties of the SRIS-R with other health professions (e.g., nurses or social workers) and diverse groups (e.g., Aboriginal and Torres Strait Islander health professionals and those from culturally and linguistically diverse backgrounds).

4.2 | Conclusion

Overall, the current study offers the first validation of a dedicated measure of self-reflection and insight specifically for psychologists, through validating the SRIS 20-item (Grant et al., 2002) and 12-item (Silvia, 2021) versions, and the construction and validation of a revised version (SRIS-R) in a psychologist sample. This new, revised measure, the SRIS-R, was found to be reliable and valid and preferable to the previous versions as it included the high loading items and removed low loading items, to offer an efficient measure of self-reflection and insight that is valid for psychologists. It is hoped the SRIS-R will be useful in a range of applications in education, training, research and practice. This revised version may be particularly useful to guide psychologist professional development and continuing education, in supervision, and tertiary education.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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