

# Development and validation of the professional sense of competence scale (ProSOCS) for practitioners who treat disruptive behaviours in children

Measuring  
professional  
sense of  
competence

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Received 21 August 2021  
Revised 1 November 2021  
Accepted 1 November 2021

## Abstract

**Purpose** – The purpose of this paper is to develop a measure of practitioner sense of competence when treating children with disruptive behaviours.

**Design/methodology/approach** – Two online surveys were conducted with health, social work and psychology practitioners ( $n = 113$  and  $n = 239$ , respectively) working within varied Australian clinical settings. Study 1 developed scale items and conducted an exploratory factor analysis of the initial Professional Sense of Competence Scale (ProSOCS). Study 2 conducted confirmatory factor analysis and tested the construct validity of the scale.

**Findings** – Study 1 established a three-factor model, which accounted for 56.9% of variance in the ProSOCS items. Study 2 confirmed the three-factor model and considered an alternative unidimensional model. Study 2 demonstrated good convergent validity with measures of knowledge and general sense of competence.

**Originality/value** – The ProSOCS is a valid and reliable way to measure three subscales of a more global composite score of practitioner sense of competence when treating children with disruptive behaviours. Disruptive behaviour represents one of the most common reasons for child presentation in mental health care settings. Understanding how sense of competence among professionals who treat disruptive behaviours in children relates to their level of training, treatment decisions and outcomes could help to enhance use of evidence-based treatment strategies and complement strategies for measuring competence-based training in post-graduate settings.

**Keywords** Self-efficacy, Practitioners, Measurement development, Disruptive behaviours, Sense of competence

**Paper type** Research paper

Sense of competence refers to an individual's belief in their ability to perform a specific skill (Bandura, 1997). Systematic reviews and meta-analyses have established that sense of competence (sometimes studied as perceived self-efficacy) is strongly and positively associated with educational and job performance across many professions (e.g. Gist, 1989; Klassen and Tze, 2014; Richardson *et al.*, 2012; Spreitzer, 1995; Stajkovic and Luthens, 1998; Steel *et al.*, 1989; Stone and Stone, 1984; Wech *et al.*, 1998). However, there is not yet a comprehensive measure that captures sense of competence in core aspects of work among professionals who treat disruptive behaviours in children. Core aspects of work can include locating and using appropriate psychological interventions and treatments, providing effective treatment to clients, and feeling capable of producing positive outcomes for clients. The aim of the current study was to develop and validate a measure of sense of competence designed for use with professional practitioners who treat children with disruptive behaviours.



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## Literature review

Treating disruptive behaviours is common, representing one of the leading reasons for referral to psychological services. Although prevalence varies across studies, disruptive behaviours among children aged three to six years consistently feature in the top three reasons for seeking mental health and parenting/family services (Garland *et al.*, 2010; Merikangas *et al.*, 2009; Sawyer *et al.*, 2001). There are diverse clinical strategies for the management of disruptive behaviours (Leijten *et al.*, 2019). However, practitioner use of empirically supported strategies has been found to be narrow and to lack depth (Burgess *et al.*, 2017; Garland *et al.*, 2010; Vroom and Massey, 2021). Investigations of clinical strategies implemented by practitioners who treat disruptive behaviours in children show that only a small selection of common strategies, such as affect education and positive reinforcement, are used frequently (Chorpita and Daleiden, 2009; Higa-McMillan *et al.*, 2017). Directive strategies such as behavioural rehearsal and modelling, which have been associated with greater improvements in disruptive behaviours in children, are not widely used by practitioners (Chorpita and Daleiden, 2009; Kaminski and Claussen, 2017). The reasons for this apparent gap between empirical evidence and clinical practice, are still somewhat unclear.

The high rate of presentation of disruptive behaviour in mental health care settings and inconsistencies in use of evidence-based treatment strategies underscore the need to understand how a sense of competence among professionals who treat disruptive behaviours in children might relate to their level of training, treatment decisions and outcomes. This study develops a measure that can help future researchers to better understand this relationship and potentially identify factors that can support practitioners to implement increased evidence-based treatment strategies in clinical practice.

## Measuring sense of competence

Researchers agree that the construct of sense of competence is multidimensional, but disagreement exists around the content of the most relevant dimensions. This disagreement is likely because of Bandura's seminal work on self-efficacy, which outlined how meaningful measures of sense of competence are required to be domain specific because of their divergence across domains (Bandura, 2006). As an example, Miller and Byers' (2008) Sexual Intervention Self Efficacy Questionnaire, consists of three factors: sex therapy skills, relaying sexual information and exhibiting comfort with sexual topics. Whereas the clinical self-efficacy component of the Knowledge and Self-Efficacy Questionnaire for ASD (autism spectrum disorders) has four reported factors; self-efficacy in ASD clinical skills, available resources, need for training and communicating with parents about their ASD concerns (Atun-Einy and Ben-Sasson, 2018).

In the development of a sense of competence measure, specific to the treatment of disruptive behaviours in children, Bandura's guide to constructing self-efficacy scales outlines that self-efficacy scales depend upon a good conceptual analysis of the specific area of functioning (2006). Not only must scales be tailored to a specific domain, but also the factors must represent quality of functioning in that domain (Bandura, 2006). Bandura further highlights that it is important for self-efficacy scales to address the multiple ways in which efficacy beliefs function within that specific domain.

## Existing sense of competence measures

Multiple broad measures of sense of competence are available, as well as those specific to family life or psychological practice with children. These examples of how researchers have tackled domain specific sense of competence include the Questionnaire Measure of Sense of Competence (Wagner and Morse, 1975), Parenting Sense of Competence scale (Gibaud-Wallston and Wandersman, 1978) and Sense of Competence in Dementia Care Staff

(Schepers *et al.*, 2012). First, The Questionnaire Measure of Sense of Competence (Wagner and Morse, 1975) pre-dates Bandura's work on self-efficacy and instead builds on motivation, personality and psychoanalytic theory to address the construct of perceived competence (e.g. White, 1959). As one of the earliest measures of sense of competence, this measure has formed a foundation from which many scales have been adapted and revised (e.g. Ben-Porat, 2017; Fagbenro and Olasupo, 2020). However, owing to the broad content domain and questionable internal consistency, this measure could not be directly applied to treating children with disruptive behaviours.

Second, Gibaud-Wallston and Wandersman's (1978) Parenting Sense of Competence scale has been subjected to multiple psychometric evaluations to date (Gilmore and Cuskelly, 2009; Johnston and Mash, 1989; Ohan *et al.*, 2000; Rogers and Matthews, 2004). Despite some variation in factor structure, the scale has consistently demonstrated acceptable reliability and validity. However, the personal nature of the parenting role does not allow for translation to a professional sense of competence.

Third, the Sense of Competence in Dementia Care Staff Scale (Schepers *et al.*, 2012) is both domain specific and within the context of a professional role. While this scale has also demonstrated acceptable reliability and validity, the factors that determine quality of functioning in caring for a person with dementia do not resemble those involved in treating disruptive behaviours in children, (e.g. "Use information about their past when talking to a person with dementia") (Schepers *et al.*, 2012). These three examples from the literature demonstrate the importance of matching the relevant areas of sense of competence with domain specific function. While the measures serve as helpful guides, they also highlight the need for a new specific measure relating to treating disruptive behaviours, as one does not yet exist and could be useful for future research that aims to understand, for example, training needs of practitioners, as well as considering how a sense of competence might impact on service decisions and provision, training uptake, and client outcomes.

### Developing items for the Professional Sense of Competence Scale

To develop items for the sense of competence scale specifically in the domain of treating disruptive behaviours in children, treatments including Parent-Child Interaction Therapy (Eyberg, 1988), and Triple P Parenting (Sanders, 2003), were reviewed to ensure sufficient conceptual coverage within the disruptive behaviour domain. These two treatments represent two of the most widely known and disseminated evidence-based parent training programs for children with disruptive behaviours as listed on the California Evidence-Based Clearinghouse for Child Welfare (2021).

Based on Bandura's conceptualisation of self-efficacy (1997) and social cognitive theory (1986), perceived knowledge, perceived ability and predicted outcome were the three dimensions of practitioner's sense of competence that guided the development of items for our new measure. "Perceived knowledge", in some form, has been included across both client focused and practitioner focused measures of sense of competence (e.g. Atun-Einy and Ben-Sasson, 2018), and was consistent with Bandura's recommendations for constructing self-efficacy scales (2006). "Perceived ability" was relevant to the delivery of psychological treatment (Bandura, 2010; Watt *et al.*, 2019), and was consistent with social cognitive theory. Finally, Bandura (2006) describes predicted outcome and differentiates it from self-efficacy. Self-efficacy is a personal judgement of the capacity to perform a task, whereas predicted outcome relates to judgements about the likely outcomes of performing that task (Bandura, 2006). Predicted outcome was considered important to include here because it was relevant to one's predictions about the success/failure of effort in a specific area of functioning, and belief in one's influence on events (e.g. therapeutic work) forms a foundation for human motivation and performance accomplishments (Bandura 1997, 2006).

The phrasing of items from broad and domain specific measures (Gibaud-Wallston and Wandersman, 1978; Schepers *et al.*, 2012; Wagner and Morse, 1975) provided useful guides

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for the specificity of items within a domain. Further, Bandura's guide to constructing self-efficacy scales (2006) encourages differentiation between intention and judgement. It was suggested items should be presented as *can do* rather than *will do*, because *can* is a judgment of capability, whereas *will* implies intention.

### Validation measures and testing

To test validity and demonstrate uniqueness of the Professional Sense of Competence Scale (ProSOCS) for use with practitioners who treat child disruptive behaviours, additional measures of theoretically related but also divergent constructs, such as knowledge of domain specific treatments, were identified. Included in these measures was a general measure of sense of competence in psychology, namely the Psychologist and Counsellor Self-Efficacy Scale (PCSES; Watt *et al.*, 2019). The PCSES captures self-efficacy in general tasks related to the role of psychologists and counsellors and has been used in identifying areas for further training during post-graduate study. While this measure lacks the specificity needed to examine a specific area of functioning, such as treating children with disruptive behaviours, it is useful as a measure of general sense of competence (in counselling and clinical psychology) and allowed us to examine the uniqueness of the new domain specific scale.

### The current study aims

The aim of this study was to develop and validate the ProSOCS in samples of professionals who treat child disruptive behaviours. In Study 1, items were generated for inclusion in the ProSOCS and exploratory factor analysis was conducted to establish the factor structure of the ProSOCS. In Study 2, slightly modified items were subjected to confirmatory factor analysis to confirm the factor structure. Moreover, reliability and validity were investigated. As evidence of criterion validity, a positive correlation between total scores on the ProSOCS and job satisfaction was expected. To test convergent validity, a positive correlation between total scores on the ProSOCS and scores on the Knowledge of Evidence Based Services Questionnaire-Revised (PracticeWise, LLC, 2017) was expected. A general psychology and counselling self-efficacy scale was also included to examine the uniqueness of the more specialised, ProSOCS, over and above general sense of competence as a practitioner, as well as to further demonstrate convergent validity. It was further expected that total ProSOCS scores for practitioners who report treating disruptive behaviours would be significantly higher compared with those that did not report treating disruptive behaviours.

### Study 1 method

#### *Participants*

Study 1 included 113 Australian individuals providing direct mental health services to adults, families, or children (85% female, 15% male), aged 24–70 years ( $M = 42.1$ ,  $SD = 13.35$ ). Most participants were registered psychologists (72%), located in a major city with at least 10 years of experience. Participant characteristics are presented in Table 1. Another 57 individuals attempted the questionnaire but were excluded from the analyses because of 2 or more missing ProSOCS items.

#### *ProSOCS item development and study procedure*

*Item generation.* Sixty items were generated for the first, expert feedback, phase of measurement development. Items were designed to reflect three sense of competence domains related to clinical practice in disruptive behaviours: perceived knowledge of the area, perceived ability to implement strategies, and expected outcomes.

Demographic		Study 1	Study 2	Measuring professional sense of competence
Ethnicity	Anglo/Caucasian	95.0%	87.40%	
	Asian	–	2.10%	
	Other (e.g. Greek, East Indian, Indigenous Australian, Lebanese, Afro-Caribbean)	1.0% (each)	<1.15% (each)	
Years in Profession	Mean (SD)	12.0 (10.8)	16.69 (11.72)	
	Range	1–42 years	1–52 years	
Qualification (Multiple selections allowed)	Masters	51.3%	59.40%	
	Bachelor	49.9%	48.50%	
	Honours/Post Graduate Diploma	41.6%	45.60%	
	Doctoral/PhD	16.8%	25.90%	
	Post Graduate Certificate	10.6%	11.30%	
Type of Registration	Other	3.5%	10.00%	
	AHPRA Psychologist	72.6%	87.40%	
	ACA Counsellor	5.3%	3.30%	
	AASW Social Worker	4.4%	5.90%	
	Guidance Officer	4.4%	1.30%	
	Speech Therapist	1.8%	–	
	Other (e.g. nurse)	<1% (each)	1.3% (each)	
Practice Setting (Multiple selections allowed)	Private Practice	53.1%	85.8%	
	NGO	25.7%	5.0	
	University Clinic	12.4%	5.4	
	Community Health	10.6%	–	
	Hospital Outpatient	8%	2.5	
	School	7.1%	–	
	Hospital Inpatient	1.8%	4.6	
	Other	–	–	
Treat Children with Disruptive Behaviours	Yes	100%	56.50%	
Weekly Contact Hours with Clients	Mean (SD)	18.4 (9.1)	20.69 (9.23)	
	Range	2–40	0–48	

**Table 1.**  
Practitioner characteristics

*Expert feedback and reduction of items.* Three research psychologists card sorted items according to subscale and rated items for clarity. Qualitative feedback about item content was also collected. Card sort discrepancies were resolved through discussion, unclear items were re-written to improve clarity, and a total of 30 items were deleted where it was agreed the item was unnecessary, repetitive or less clear than other items. The final list of 30 items were pilot tested with a new sample of six psychologists specialising in child and adolescent psychology, whereby practitioners completed the items and had the opportunity to comment on the clarity and usefulness of items. Minor adjustments for content and clarity were made following written feedback from the psychologists.

*Procedure.* Participants were identified using online searches for publicly available contact details. Psychology clinics and individual practitioners were contacted by email and invited to participate in the online questionnaire by following an electronic link. A total of four follow-up emails were sent over a 4-month period.

## Study 1 results

### *Factorability of ProSOCS items*

The 30 ProSOCS items correlated between 0.30 and 0.80 with at least one other item, meeting the recommendations for minimum and maximum item correlations for factor analysis

(Tabachnick and Fidell, 2007; Yong and Pearce, 2013). The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was good (KMO = 0.90), and Bartlett's test of sphericity was significant,  $\chi^2(435) = 2,511, p < 0.001$ , indicating that the data were acceptable for factor analysis.

#### *Exploratory factor analysis, ProSOCS subscales and interitem correlations*

Exploratory factor analysis was conducted using principal axis factoring (PAF) with oblique (i.e. direct oblimin) rotation. The initial solution extracted six factors with eigenvalues over 1 (range = 1.04 to 14.16) and accounted for 70.8% of the total variance in the items. However, the scree plot suggested 2 or 3 factors might be acceptable and more parsimonious. Therefore, additional PAF analyses were conducted extracting 2 or 3 factors. Based on the percentage of variance accounted for by the items, and the interpretability and parsimony of the factor solution, a three-factor solution was determined to be the most interpretable and was retained for further analyses. After removing items that failed to load highly on one of the three factors, or had cross-loadings on two or more factors, 18 items were maintained, and the three factors accounted for 56.9% of the variance in the items. All items had high loadings (>0.50) on only one of three factors. No item had a high cross-loading (>0.30) on another factor. Communalities for all items were above 0.40, and there were 41 (26%) non-redundant residuals with absolute values greater than 0.05.

The first factor, named "Perceived Knowledge", had high loadings from six items relating to self-reported knowledge of treatments and research in disruptive behaviour. The second factor also had high loadings from six items and reflected the underlying theme of "Relatability" (i.e. ability to relate to and empathise with, caregivers of children who have disruptive behaviours). Although still within the theme of ability, this finding was somewhat unexpected. However, for professionals working with families and children, it is understandable that "interpersonal", rather than "personal", ability emerged as a factor of sense of competence. Finally, factor 3, also high loadings from six items, and related to practitioner expectations around the outcome of therapy, implemented by them. This factor was named "Expected Outcome".

Items that loaded highly on each factor were averaged to produce three subscale scores. Means and SDs for scores on each subscale are shown in Table 2. The distributions of all three subscale scores were within the acceptable limits for skewness ( $\pm 2$ ) and kurtosis ( $\pm 4$ ) (Tabachnick and Fidell, 2007). Reliability was "very good" for each of the three subscales (Table 2), while the overall scale was "excellent"  $\alpha = 0.93$  and  $\Omega = 0.93$ .

Correlations between the three subscale scores demonstrated significant, strong, positive correlations between each of the ProSOCS factors. Between Perceived Knowledge and Relatability  $r = 0.60, p < 0.001$ ; Perceived Knowledge and Expected Outcome  $r = 0.64, p < 0.001$ ; Relatability and Expected Outcome  $r = 0.60, p < 0.001$ .

## **Study 2 method**

### *Participants and procedure*

Participants were 239 practitioners who identified as female (74.90%), male (24.30%), and non-binary (0.4%), aged 24–76 years ( $M = 47.76, SD = 13.52$ ). Participants were mostly practicing psychologists (87.40%), with 14 or more years of experience in the profession. No incentives were offered for participation. Participant characteristics, including practice setting and client contact hours, are presented in Table 1. Another 61 participants attempted the questionnaire but were removed for missing four or more ProSOCS items (see the section below on the ProSOCS measure for more information).

Participants were recruited using the same strategy as in Study 1. However, Study 2 sought a mix of practitioner areas of practice (i.e. those who treated children with disruptive

ProSOCS items	Perceived knowledge	Factor loadings		Expected outcome	Measuring professional sense of competence
		Relatability			
I have expert level knowledge of treating disruptive behaviours in children	-0.82	0.04		0.03	<hr/> <b>Table 2.</b> Study 1 final solution for the professional sense of competence scale (ProSOCS (N = 113))
I am very knowledgeable about the strategies to use for treating children's disruptive behaviours	-0.81	0.10		0.12	
My knowledge on disruptive behaviours is up to date	-0.73	0.05		0.05	
I know the research on the causes and consequences of disruptive behaviours in children	-0.72	0.16		0.15	
I am knowledgeable in behaviour change strategies	-0.58	0.16		0.07	
I am knowledgeable in the parenting strategies necessary for managing disruptive behaviours in children	-0.51	0.23		0.15	
I understand the feelings of caregivers who have children that display disruptive behaviours	0.00	0.76		0.11	
I know how to communicate with caregivers of children with disruptive behaviours	0.10	0.68		0.19	
I understand the struggles families face when disruptive behaviours are not treated appropriately	0.08	0.68		0.00	
I am knowledgeable in parent-child relationships	0.07	0.66		0.03	
I understand the challenges faced by caregivers of children with disruptive behaviours	0.08	0.59		-0.10	
I am able to develop a good therapeutic relationship with caregivers of children who have disruptive behaviours	-0.04	0.59		-0.15	
When children display disruptive behaviours around me, I am able to manage them	-0.12	0.13		-0.86	
If a child's behaviour escalates during therapy, I will contain the situation effectively	-0.01	-0.03		-0.80	
Generally, my clients are likely to report a positive experience of therapy	0.05	0.14		0.63	
Caregivers will be satisfied with the treatment I provide	0.09	0.11		0.60	
Treatments I implement will be at least as effective as treatments implemented by other therapists in the same field	0.28	-0.13		-0.60	
Treatments I use for disruptive behaviours in children will generally have positive results	0.14	0.15		-0.55	
Eigenvalue	8.45	1.59		1.46	
% of item variance	44.60	6.40		5.93	
Mean (SD)	3.94 (0.57)	4.23 (0.40)		3.95 (0.47)	
Observed range	2.67-5.00	3.17-5.00		2.50-5.00	
Cronbach's alpha	0.89	0.86		0.88	
McDonald's Omega	0.90	0.86		0.88	

behaviours “treaters”; and those who did not “non-treaters”) to compare responses of those with and without a history of treating children with disruptive behaviour problems. Two participants requested hard copies of the questionnaire, which were posted and returned in the envelope provided. Both online and hard copies of the questionnaire included a letter of information and consent to participate. A total of four follow-up emails were sent over a three-month period.

### Measures

*Professional sense of competence scale (ProSOCS).* The ProSOCS contained 18 items with a five-point Likert scale ranging from (1) *strongly disagree* to (5) *strongly agree*. An alternative

option *I do not know* was also included on this occasion because a portion of practitioners did not typically treat disruptive behaviours in children. This inclusion was also to preserve the middle point as a truly neutral option. Items were summed to form subscale scores and a total score. To maintain participants ( $n = 36$ ) who answered *I do not know* to three or fewer ProSOCS items, the missing values were assigned the average score for other items on the same subscale for that participant. Where practitioners indicated *I do not know* on four or more occasions ( $n = 61$ ), they were not included in this study.

*Knowledge of evidence based services questionnaire-revised (KEBSQ-R)*. The KEBSQ-R (PracticeWise, LLC, 2017) measured practitioners' knowledge of evidence-based treatments in the treatment of youth psychopathology. This measure contains 17 items, and a selection of 12 of these were used in the current study to reflect clinical problem areas commonly associated with the treatment of young children with disruptive behaviours, consistent with Okamura *et al.* (2018). Respondents were presented with a list of descriptions of therapeutic strategies (e.g. exposure), and indicated whether the strategy has been included in empirically supported treatment protocols for a range of common clinical presentations; Anxious/Avoidant, Depressed/Withdrawn, Disruptive Behaviour and Attention/Hyperactivity. Respondents were also able to select *none*, if the treatment strategy is not included in any empirically supported protocols for treatment of these presentations. Scoring of the KEBSQ-R involves summing the correct responses. A higher score indicated a higher level of knowledge of evidence-based treatments.

*The Psychologist and Counsellor Self-Efficacy scale (PCSES)*. The PCSES (Watt *et al.*, 2019) measures students' perceived competencies and identifies trainees' and practitioners' self-perceived gaps in knowledge. The PCSES addresses identified competencies within professional standards from national and related international frameworks for psychologists and counsellors, in an Australian context. The PCSES had a five-point response scale from (1) *not at all* to (5) *extremely* and contained 31 items across five subscales. Only three of the five subscales were used in the current study: Assessment and Measurement, Intervention, and Research, totalling 22 items. Ethics and Legal Matters were omitted. Example items from the included subscales are: "How confident are you that you have the ability to recognise the special needs of children whose parents have mental health problems?" and "How confident are you that you have the ability to help clients to identify situations that increase their risk of getting worse?" Authors reported good reliability for all scales using the Person Separation Index (PSIs  $> 0.73$ ). To produce a composite score, responses to items on each subscale were averaged. A higher score indicated a higher level of self-efficacy.

*Job satisfaction*. Job Satisfaction was measured using the single item measure "Taking everything into consideration, how do you feel about your job as a whole?", as used by Dolbier *et al.* (2005). Responses were recorded via a 7-point Likert scale from (1) "Very Dissatisfied" to (7) "Very Satisfied".

## Study 2 results

### *Confirmatory factor analysis*

Confirmatory factor analysis was conducted via AMOS with maximum likelihood estimation. The three-factor model (M1), with six covariances freed between item errors, had a significant chi-square [ $\chi^2(126) = 410.87, p < 0.001$ ]. Other model fit indices were acceptable and are presented in Table 3. Freeing covariances between measurement errors improved the fit but had little effect on the factor loadings.

As shown in Figure 1, factor loadings ranged from 0.50 to 0.89, with all significantly larger than zero, and the correlations between the three factors ranged from  $r = 0.77$  to 0.92. Therefore, a three-factor solution was also fit to the data (M2). In the alternative model (M2)



the  $\chi^2$  was significant,  $\chi^2(129) = 527.33, p < 0.001$ . Other model fit indices suggested a mostly acceptable fit (see Table 3). Factor loadings ranged from 0.54 to 0.82 and were all significantly larger than zero. This model and factor loadings were presented in Figure 2.

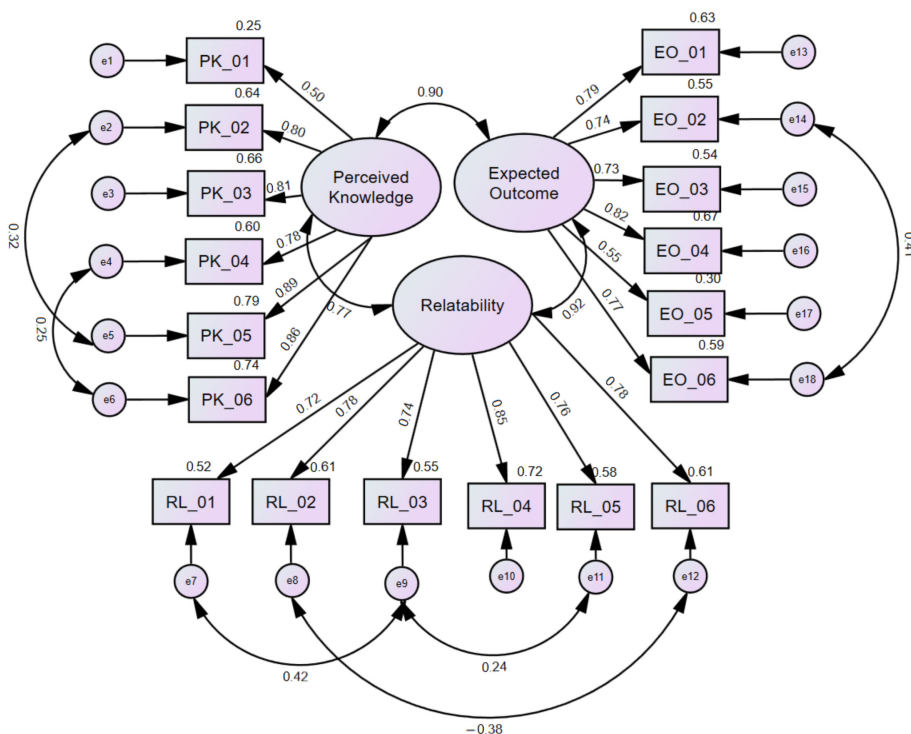
*Descriptives and reliability*

Descriptive information and reliability coefficients (alpha and omega) for the ProSOCS subscale items (and all items) and the validity measures were presented in Table 4. Inspection of these values showed that each measure demonstrated excellent reliability in the current sample.

Fit index	3-Factor model (M1)	1-Factor model (M2)	Criteria for good fit
$\chi^2/df$	3.26	4.10	3
Tucker–Lewis Index	0.90	0.87	>0.90 (Bentler and Bonett, 1980)
RMSEA	0.10	0.11	<0.08 (Browne and Cudeck, 1992)
NFI	0.88	0.85	>0.90
CFI	0.91	0.88	>0.90

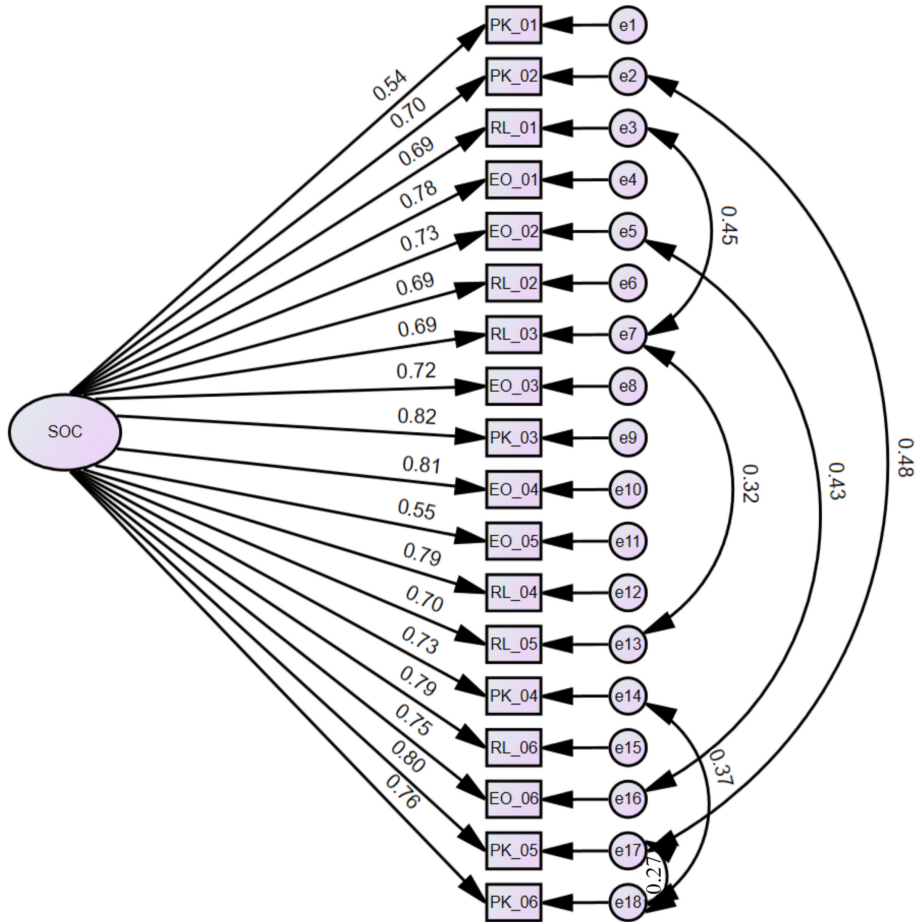
**Note(s):** RMSEA = Root Mean Square Error of Approximation. NFI = Normed Fit Index. CFI = Comparative Fit Index

**Table 3.** Confirmatory factor analysis fit indices for M1 and M2



**Figure 1.** Results of study 2 confirmatory factor analysis of the 3-factor ProSOCS model

**Note(s):** Standardised factor loadings and correlations between latent factors are shown



**Figure 2.** Results of study 2 confirmatory factor analysis of the alternative 1-factor ProSOCS model

**Note(s):** Standardised factor loadings are shown. SOC = sense of competence

**Table 4.** Description of study 2 ProSOCS and validity indicators

Measure/Subscale	No. of items	Observed range	<i>M</i> (SD)	Cronbach's Alpha	McDonald's Omega
ProSOCS Total ( <i>n</i> = 239)	18	1.0–5.0	3.89 (0.68)	0.95	0.95
Perceived Knowledge	6	1.0–5.0	3.60 (0.88)	0.90	0.92
Relatability	6	1.0–5.0	4.22 (0.66)	0.90	0.90
Expected Outcome	6	1.0–5.0	3.84 (0.68)	0.88	0.88
KEBSQ ( <i>n</i> = 197)	12	13.0–58.0	47.04 (8.50)	–	–
PCSES ( <i>n</i> = 208)	22	1.0–5.0	3.96 (0.50)	0.93	0.92

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### *Convergent validity*

There was a moderate positive correlation between ProSOCS and the KEBSQ-R,  $r = 0.32$ ,  $p < 0.001$ . A moderate positive correlation was found between ProSOCS and the PCSES,  $r = 0.47$ ,  $p < 0.001$ . Contrary to expectations, there was no correlation between ProSOCS and job satisfaction for treaters. There was also no correlation between the established measure of PCSES and Job Satisfaction.

The mean difference in scores on the ProSOCS between practitioners who treated disruptive behaviours ( $M = 4.21$ ,  $SD = 0.50$ ,  $n = 135$ ) and those who did not ( $M = 3.47$ ,  $SD = 0.66$ ,  $n = 104$ ), was significant  $t(185.82) = 9.59$ ,  $p < 0.001$ .

### **Discussion**

Two studies were conducted with two samples of professionals. The aim was to develop, test and validate a measure of professional sense of competence, specifically in the context of treating disruptive behaviours in children. A domain-specific measure, rather than a general sense of competence measure, has been the preferred approach in the research literature, because sense of competence is understood to be a differentiated set of self-beliefs related to distinct areas of functioning, and not best represented as a global trait (Bandura, 2006; Harter, 1982). The new measure developed here, the 18-item ProSOCS, provides a short and convenient way to measure a sense of competence in the distinct area of treating disruptive behaviours in children, which will be useful for future research, as well as for use in education and other practical settings.

### *Development of the ProSOCS*

The factor structure of the ProSOCS was established across two studies. In Study 1, the final solution retained 18 items evenly divided across three factors: Perceived Knowledge, Relatability and Expected Outcome. The model demonstrated good psychometric properties including strong factor loadings, excellent reliability and accounted for a good amount of variance. Items loading on each of the three factors made conceptual sense and were considered to cover sufficient breadth of the construct. Items were designed to tap three areas: perceived knowledge, perceived ability and expected outcomes. However, the factor structure suggested items aligned better with perceived knowledge, expected outcome and a third factor that was somewhat unexpected – relatability. It appears that in the domain of professional sense of competence it may be relatability, which included items that tapped a sense of interpersonal ability (e.g. practitioner ability/capacity to communicate with and relate to, and/or empathise with the caregivers and children involved in treatment) that is relevant to sense of competence rather than only a sense of personal ability. Nevertheless, a few personal ability items were retained, and these loaded highly on the Relatability factor, suggesting that personal and interpersonal ability items covary and are important subcomponent of a sense of competence. We expect that relatability is an important aspect of practitioners' sense of competence, which reflects overall sense of ability to work effectively with and without others in their work. This is consistent with other literature that has argued that relatability (or working alliance between practitioners and clients/patients) is a common factor associated with better therapeutic outcomes across all health and allied health disciplines and cultures (Peterson, 2019).

Results of the confirmatory factory analysis confirmed suitability of the three-factor model established in Study 1. However, the analysis also revealed the three factors were highly correlated suggesting a single factor might also fit the data. As such, a unidimensional model was also explored. Both the three factor and one factor models demonstrated high loadings on all the items. The fit indices for both models were acceptable, with the three-factor model demonstrating slightly better fit across all indices. The three-factor model might be

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useful where researchers are interested in capturing a detailed account of sense of competence (i.e. across the three subscales) among professionals working with children who have disruptive behaviour problems. Alternatively, when researchers are interested in a single total score for sense of competence, they can feel confident that collapsing across the three subscales is statistically reasonable.

#### *Validity of the ProSOCS*

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As expected, and supporting the convergent validity of the ProSOCS and its subscales, practitioners' scores on the ProSOCS were related to other constructs, such as knowledge of empirically supported treatments (KEBSQ-R), general sense of self-efficacy as a practitioner (PCSES), and number of years in profession. Research focused on working specifically with children with autism spectrum disorders has found similar associations between sense of competence and measures of knowledge and efficacy (e.g. [Atun-Einy and Ben-Sasson, 2018](#)). Researchers in that study reported a significant correlation of 0.33 between practitioner knowledge of ASD and self-efficacy ([Atun-Eisy and Ben-Sasson, 2018](#)), whereas in the present study a correlation of 0.32 between practitioner knowledge of disruptive behaviour treatments and sense of competence was found. Another study from the education literature explored the relationship between teacher knowledge of technology and self-efficacy integrating technology in the classroom ([Abbitt, 2011](#)). Researchers reported correlations between 0.34 and 0.85 across different subscales of technology knowledge and self-efficacy ([Abbitt, 2011](#)). These findings demonstrate that the relationship between knowledge and sense of competence found in the current study is consistent with other fields and areas of clinical practice reported in the literature.

General self-efficacy as a psychologist or counsellor was positively related to the ProSOCS, as demonstrated by a significant moderate correlation. As the PCSES is a general measure and items are presented in a general context (e.g. "How confident are you that you have the ability to help clients to identify situations that increase their risk of getting worse?"; [Watt et al., 2019](#)), a moderate correlation demonstrates that the constructs are related, but importantly, also sufficiently different. The ProSOCS captures something unique from ones' general sense of competence in these domains.

Practitioners who indicated they treated disruptive behaviour in children had significantly higher scores on the ProSOCS compared with those who indicated they did not treat disruptive behaviours. Since it is expected that those who treat disruptive behaviours would have a greater sense of competence in doing so, this demonstrates the utility of the ProSOCS in distinguishing between those who treat and those who do not treat, disruptive behaviours in children.

#### *Limitations, implications and future directions*

In the context of measurement development, the sample sizes ( $n = 113$ ,  $n = 239$ ) might be considered small. The sample in Study 2 was well above then 10 responses per item suggested by [Nunnally \(1978\)](#). The diversity and range of experience of the professional participants is a benefit for the design of the measure, given that previous research on related topics has often been limited to new graduates. The knowledge subscale of the ProSOCS indicated ceiling effects amongst practitioners who treat disruptive behaviours. Therefore, refinement of knowledge items, or increased options on the response scale, as indicated in by [Bandura \(2006\)](#) (e.g. 0–100) may help to capture more variability in knowledge amongst practitioners treating disruptive behaviours in children.

Measuring professional sense of competence may have a range of uses within psychology practice, such as when exploring factors that improve effective practice in psychology (e.g. evidence-based practice). Also, measuring sense of competence may be useful for professional

training programs in evaluating competence, which is an emerging focus of regulatory bodies in ensuring psychologists are fit for practice.

Evidence-based practice, as a treatment approach, is commonly mandated in healthcare guidelines across disciplines, and is indeed reported to improve patient outcomes (Emparanza *et al.*, 2015). The relationship between sense of competence and evidence-based practice is not yet well understood. However, they are likely related because they are both important to *when* and *how* practitioners seek out new information about treatments. The relationship is worth exploring, and, in conjunction with other measures, the newly developed Professional Sense of Competence Scale can be used to do so.

Postgraduate training offers another example of potential uses of the ProSOCS. Becoming a fully registered psychologist in Australia involves a 6-year training program, during which competency-based assessments and evaluations by trained educators and other fully qualified practitioners are standard practice. However, the costs and planning involved in conducting such assessments, such as Objective Structured Clinical Examinations involving multiple tasks and observers, often mean they are conducted sparingly (e.g. twice in a 2-year clinical master's postgraduate university program). In the absence of more regular structured evaluations that involve observing competencies, administering an easy to implement measure of sense of competence in addition to observational evaluations may indicate a need for further training efforts or other interventions to explore self-perceptions of competence in more depth.

Psychology is just one area that relies on competency-based assessments involving observations by educators or supervisors in the training and evaluation of practitioners' fitness for practice. Primary health fields such as medicine, dentistry and nursing, as well as other allied health professions such as occupational therapy and physiotherapy also utilise competency-based assessments in the training and evaluation of practitioners. Across these contexts, sense of competence psychometric measures may be used more frequently to complement structured observations and other evaluations of competence, with little cost and time commitment.

## Conclusion

In two studies, a new measure of professional sense of competence in the clinical practice area of treating disruptive behaviours in children was developed, confirmed and validated. The factor structure remained robust across two samples, indicating the potential use of the ProSOCS in both expert (i.e. those who treat child disruptive behaviours) and novice (i.e. those who do not treat child disruptive behaviours) samples. This study also demonstrated that collapsing the subscales to create a unidimensional measure is also acceptable. The psychometric properties of the ProSOCS, together with good validity and reliability outcomes suggest this measure is suitable for use in research investigating factors that improve psychological practice, as well as evaluating post-graduate training and other professional development activities.

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