



## The role of social identity and self-efficacy in predicting service providers' use of Stepping Stones Triple P following training

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### ABSTRACT

**Background:** Identifying factors that may contribute to the use of programs following the completion of training by practitioners is of practical and theoretical importance.

**Aim:** This study examined the role of social identity and self-efficacy in contributing to the delivery of an evidence-based parenting program.

**Methods and Procedures:** A sample of 63 multi-disciplinary professionals trained in the Stepping Stones Triple P-Positive Parenting Program, for parents of children with developmental disability, as part of a statewide roll-out were interviewed two years after training. Data on the number of hours of delivery during the 2-year period was analysed along with quantitative data obtained during interviews that assessed professionals' self-efficacy and social identity as a Stepping Stones professional.

**Outcomes and Results:** Social identity was associated with the use of SSTP in an independent analysis, but the association was no longer significant when other factors were included in a regression model. Self-efficacy predicted the use of SSTP and was found to be a mediator in the relationship between social identity and use of SSTP.

**Conclusions and Implications:** This first investigation into the role of social identity in the implementation of evidence-based parenting programs showed that social identity could play an important role. The role of self-efficacy in predicting program use was further supported in this study and the mediator function of self-efficacy is explored. The practical and theoretical implications of the role of self-efficacy and social identity in the training of professionals are discussed.

### 1. Introduction

Implementation research has sought to examine which factors predict whether professionals trained to deliver programs actually deliver them and in what quantities. Multiple conceptual frameworks have been developed to predict and describe the successful implementation and sustained delivery of parenting programs. These models consistently include factors within the following domains: the socio-political environment, organisational factors (e.g., resources and support), process factors (e.g., training and supervision), intervention characteristics (e.g., adaptability and program fit), and implementer characteristics (e.g., skills and confidence) (Aarons et al., 2011; Damschroder et al., 2009;

Stirman et al., 2012). One factor that has been widely studied in the organisational training literature and has been shown to be a strong predictor of program implementation is practitioners' self-efficacy (Mathieu et al., 1993; Machin & Fogarty, 1997; Turner et al., 2011).

Self-efficacy has been described as the belief in one's ability to organise and execute the tasks or actions required to produce outcomes/attainments (Bandura, 1977). It stands to reason that a person's belief in their ability to perform the skills and apply learnings from a training will indeed influence their behaviours in whether they implement what they have learnt in training. Self-efficacy has been widely studied in the training literature and has been consistently found to contribute to outcomes of training (Eden & Aviram, 1993; Ford et al., 1998; Mathieu

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et al., 1993; Salas & Cannon-Bowers, 2001). Self-efficacy has also been demonstrated to be strongly related to task choice, effort, and persistence relating to task achievement (Gist & Mitchell, 1992).

When applied to the implementation context, the decision to implement what has been learnt and the amount of effort invested in implementing that training is influenced by the extent to which people believe they have the ability to do so successfully. Furthermore, it has been demonstrated in the literature, that self-efficacy can often mediate, or act as the pathway by which other variables affect training outcomes (Saks, 1995; Martocchio & Judge, 1997; Holladay & Quinones, 2003; Gist & Mitchell, 1992). Whilst self-efficacy is consistently acknowledged in the implementation literature as an important factor predicting delivery following training and can also provide a relationship between variables and training outcomes, there are other factors which have been less explored in implementation research. Studies have shown that employees with greater psychological identification with work, and who place greater importance on their job in terms of their self-concept, are more likely to use skills after training (Brett & VandeWalle, 1999). It follows that practitioners who deliver programs as part of their job may form a social identity within this role, and this social identity could contribute to delivery outcomes following training.

Social identity has been defined as the aspect of an individual's self-concept that is derived from one's knowledge of membership of a social group/s, alongside the value and emotional significance one associates with membership to this group (Tajfel, 1978). If an individual identifies as being a member of a particular social group, then they are more likely to behave in a way that promotes the interests and goals of that group (Tajfel et al. 1971). The early formulation of Social Identity Theory was bolstered by what is referred to as 'minimal group' studies. In these studies, random assignment to groups that had no substantive basis in reality demonstrated that individuals favour members of their own ingroup over those in another outgroup (Tajfel et al., 1971). The premise of these findings was that an individual, having defined themselves according to a particular identity, acted and maintained a positive association with this group that influenced their subsequent behaviour (Tajfel et al., 1971). Individuals who categorise themselves as belonging to a social group have been shown to exhibit behaviours that are congruent with the advancement of that groups' interests when the identity of that group membership is salient (Ellemers et al. 1999; Hogg & Abrams, 1988; Oaks et al., 1994). Similarly, when an individual's social identity is defined by their membership to a work team or work group, the same desire to advance the interests of that group is apparent, as is the willingness to contribute to collective goals (Ellemers et al., 1998; Tyler, 1999; Tyler & Blader, 2000). This advancement of group goals has been demonstrated even at the expense of personal interests, showing that the formulation of social identification has the capacity to be used as a potent source of social capital, potentially eliciting positive organisational outcomes (Haslam et al., 2003; Haslam et al., 2020).

It has been argued that the key mechanism that can explain the link between the impact of social identity on group-advocated behaviour is self-efficacy (Guan & So, 2016). The impacts of both social identity and self-efficacy and relationships between these variables have been explored in relation to health-related behaviours. Research has supported a mediating effect of self-efficacy in the relationship between social identity and behavioural intention, such that stronger social identity predicted higher self-efficacy which predicted greater behavioural intention (Guan & So, 2016). The role of social identity and how it may impact on both self-efficacy and training outcomes in implementation research remains to be explored.

There is a growing body of work exploring the implementation processes and factors in the delivery of parenting programs. Most of the well-researched parenting programs that are available internationally aim to improve family functioning by increasing the skills, confidence, and knowledge of parents, and show improvements in outcomes for both children and parents (Sanders et al., 2014, Scott, 2010). The Triple P-Positive Parenting Program, with its system of interventions varying

according to intensity and population reach, is one of the most widely disseminated parenting programs (Sanders & Mazzucchelli, 2017). Triple P has been shown to be effective across a range of populations and delivery formats, with interventions modified to suit the needs of different populations (Sanders et al., 2014). Stepping Stones Triple P (SSTP) refers to the suite of programs designed specifically for parents of children with a disability (Mazzucchelli & Sanders, 2012). SSTP programs, including seminars delivered to large parent groups, a 3–4 brief session intervention, and 10-session group or individually-delivered programs, have been demonstrated to be effective in improving outcomes for families (Ruane & Carr, 2018). Despite the benefits that parenting programs like SSTP may have for children with disabilities and their families, only a small proportion of parents have accessed these programs (Prinz & Sanders, 2007). In investigating the facilitators and barriers to the implementation and dissemination of parenting programs, self-efficacy is one facilitator which has received considerable attention.

Self-efficacy has been consistently shown to be linked to delivery of parenting programs. Self-efficacy is targeted as a core component in parenting programs and practitioners are taught using an active skills training approach to improve the self-efficacy of both practitioners and parents over time (Sanders & Mazzucchelli, 2013). Self-efficacy has been demonstrated to predict use of Triple P by trained practitioners (Charest & Gagne, 2019; Turner et al., 2011). However, the relationship between self-efficacy and program use is likely to be bi-directional with practitioners who feel more confident being more willing to use the program, and more experience in program delivery contributing to improvements in practitioners' self-efficacy. Evidence also suggests that self-efficacy may also play a key role as a mediator in the impact of other factors on program use. Practitioner self-efficacy has been shown to partially mediate the impact of factors such as organisational support, ease of delivery, and direct program support on sustained program use (McWilliam, 2016; Turner et al., 2011). Self-efficacy has been established as one important predictor in research investigating the range of organisational factors, process factors, intervention characteristics, and practitioner characteristics on program delivery. Demographic characteristics including age, and years in the field can also affect program use and are frequently included in implementation frameworks (Aarons et al., 2010; Damschroder et al., 2009). Despite research investigating this diverse range of facilitators and barriers to program use, a large degree of variance in the prediction of program delivery has yet to be explained (Ma et al., 2023).

To date, social identity has not been explored within the parenting program implementation literature as a factor that may influence program use. What beneficial role might social identity play in the context of training professionals to deliver SSTP? If an individual constructs (and internalises) an identity in terms of membership to a group of professionals trained in SSTP with the shared goal of helping families with children with disabilities, then this should influence behaviours relevant to this goal. Specifically, identifying highly with this group could motivate professionals to perform the duties of the identity required to successfully conduct sessions of SSTP. If identity formation occurs following meaningless random assignment to groups as demonstrated via the aforementioned 'minimal group studies' (Tajfel et al., 1971), then professionals who are share similarities by virtue of attending a specific training program are likely to form a group identity which will contribute to the subsequent delivery of the program (Haslam et al., 2020). Based on past implementation research showing the mediating effect of self-efficacy on training outcomes (including program delivery), and past theory and research supporting the mediational role of self-efficacy in the relationship between social identity and behaviour, it is predicted that self-efficacy may play a mediating role in the relationship between social identity and program delivery. If an individual develops a social identity associated with membership to a group of trained professionals, and also has high perceptions of self-efficacy associated with the acquired knowledge and skills, it could be

hypothesised that the intentions to advance the goals of the group by actually delivering SSTP would be facilitated. The current study aims to examine the roles of practitioner social identity and self-efficacy in the delivery of SSTP.

As part of a wider project, a group of geographically dispersed multidisciplinary professionals attended training to become facilitators in one or more SSTP programs. Social identity and self-efficacy were assessed at the end of the 2-year implementation period and their relationships with hours spent delivering sessions were explored (after controlling for age and time in role). It was hypothesised that: (1) higher ratings of self-efficacy would be positively associated with higher use of SSTP, (2) higher ratings of social identity would be positively associated with higher use of SSTP, and (3) the predictive capacity of social identity on use of SSTP would be mediated by self-efficacy.

## 2. Materials and methods

### 2.1. Participants

Participants were professionals in Queensland, Australia who were trained in SSTP as part of the Mental Health of Young People with Developmental Disabilities project (MHYPeDD; Sofronoff et al., 2018). Of the pool of 120 professionals who were trained in Queensland, 63 professionals (5 males and 58 females) aged between 25 and 66 years agreed to participate in the current study. Professional roles included 11 school guidance officers/counsellors, 10 teachers employed in various school roles, 9 psychologists, 8 professionals employed in director/coordinator positions, 5 speech pathologists, 3 occupational therapists, 2 nurses, 1 physiotherapist, 1 social worker, 5 professionals in varied counselling/clinical roles, and 8 professionals in other child disability services roles. Professionals' time in role ranged between 1 and 27 years. Professionals worked in several geographical locations across the state of Queensland, Australia, with the majority located in Brisbane.

### 2.2. Measures

During the telephone survey, professionals' age and time in current work role were recorded (to be included as demographic control variables) along with questions to measure self-efficacy and social identity.

#### 2.2.1. Self-efficacy

Two items from the Parent Consultation Skills Checklist (PCSC) were used to measure professionals' parenting program self-efficacy (Turner & Sanders, 1996). The items included in this study were "How confident are you in conducting parenting sessions?" and, "Do you feel adequately trained to conduct parenting sessions?" Items were rated on a 7-point Likert scale from 1, *not at all confident* (or *definitely not adequately trained*) to 7, *very confident* (or *definitely adequately trained*) with higher values indicating a higher level of self-efficacy. The two items were summed to give a total score. The combination of these two items has been commonly used as a measure of self-efficacy in implementation research (e.g., Turner et al., 2011). This measure had high internal consistency within this sample,  $\alpha = 0.92$ .

#### 2.2.2. Social identity

The type of social identity measured was that of membership to the professional group who attended training and the associated delivery goals of this group. The group of professionals were called "Stepping Stones Triple P Project Professionals". Professionals completed 18 items measuring social identity across three factors on a 6-point Likert scale ranging from 1 (*strongly disagree*) to 6 (*strongly agree*) (Cameron, 2004). The three factors are associated with the constructs of *Centrality*, defined as the amount of time spent thinking about being a group member: "I often think about the fact that I am a Stepping Stones Project Professional"; *Ingroup affect*, defined as the positivity of feelings associated with group membership: "Generally, I feel good when I think about

myself as a Stepping Stones Project Professional" and, *Ingroup ties*, defined as perceptions of similarity, bond and belongingness with other group members: "In a group of Stepping Stones Project Professionals I really feel that I belong" (Cameron, 2004). This tripartite model has been investigated and found to be a sound multidimensional measurement of the construct (Cameron, 2004). For the purposes of this study aiming to measure social identity as an overall construct, the total score was used and calculated by summing all items. The social identity total score demonstrated good internal consistency,  $\alpha = 0.82$ .

#### 2.2.3. Use of SSTP

The parenting sessions facilitated by professionals during the two-year implementation period were recorded by the MHYPeDD project team (all programs were registered with the project team before commencing and all participants completed questionnaires sent out by project staff before and after completing the programs). As the professionals were delivering a range of SSTP programs of differing lengths, the metric of hours spent delivering parenting sessions was used as a uniform measure of use of SSTP.

### 2.3. Procedure

The study was granted ethical approval from the Behavioural and Social Sciences Ethical Review Committee at the University of Queensland. As part of the MHYPeDD project, professionals received training in at least one SSTP program and engaged in a two-year implementation period. The MHYPeDD project team recorded professionals' delivery of SSTP sessions during this period. To assess the relationship that social identity and self-efficacy had on professionals' use of SSTP, the study employed a correlational design using a brief (10–15 min) telephone survey conducted at the completion of the 2-year implementation period (approximately 2 years after professionals had completed training).

#### 2.3.1. Selection, training and contact with professionals

The wider MHYPeDD project aim was to reduce the emotional and behavioural problems of children with a disability by providing free access to SSTP programs delivered by trained professionals. Participants self-nominated to be considered for program training as part of the professional selection and training phase in the wider project. Professionals all identified that they worked with parents of children with disabilities as part of their current roles. As part of the training nomination process, a participant information sheet was completed including consent to complete surveys regarding their training, implementation, and program use. Professionals' line managers were also required to sign a training nomination document stating that the training was relevant to the professionals' role, and that their representing organisation was supportive of training and program implementation. Free program training and resources were offered in exchange for professionals' commitment to deliver a mutually agreed upon number of free SSTP sessions to parents over a two-year implementation period. Successful applicants signed a memorandum of understanding acknowledging their commitment to facilitate parenting sessions during this period.

Professionals received training in one or more SSTP programs including SSTP seminars (120-minute large-group presentations), SSTP discussion groups (2-hour small group sessions), Primary Care SSTP (3–4 brief individual sessions), Group SSTP (5 group sessions and follow up telephone calls), and Standard SSTP (10 individually delivered sessions). Training for the different programs consisted of three or four-day active skills training workshops facilitated by experienced Triple P trainers. An accreditation process consisted of half-day workshops where participants were required to demonstrate skills during competency assessments and complete a quiz to demonstrate knowledge of the program.

During the 2-year implementation period, professionals had contact with members of the MHYPeDD project team on a regular basis. Professionals were contacted by email and/or telephone for a variety of

reasons including to offer support, to clarify project requirements and to check-in regarding their delivery targets. Contact with professionals was also made in the context of questionnaire data. The project team sent a summary report of questionnaire data to professionals for each parent who participated in a SSTP program. Monthly e-newsletters that tracked delivery rates across the project and acknowledged practitioners who were ‘high deliverers’ were emailed to professionals. At the conclusion of the project a post-program event was held where attendees included local politicians and CEOs of participating organisations. An award was given to the professional with the highest delivery rate at this post-program event.

### 2.4. Analyses

The associations among study variables were assessed using Pearson’s *r* correlation coefficients. Two hierarchical regression analyses were used to assess the relationships between study variables. The Baron and Kenny (1986) procedure was then followed to evaluate whether there was a mediated relationship between variables of social identity, self-efficacy and use of SSTP. The Sobel test was used to determine the significance between direct and indirect effects (Sobel, 1982).

## 3. Results

### 3.1. Data checking and missing data

Prior to conducting analyses, the relevant assumptions of linear relationships, multivariate normality, multicollinearity, auto-correlation, and homoscedasticity were tested, with no significant deviations found. As the data was collected via telephone survey, there was only one piece of missing data which was when a participant declined to report their age. Therefore, all data were retained in the analyses.

### 3.2. Descriptive data

The means and standard deviations are displayed in Table 1 for the variables of age, time in role, self-efficacy, social identity, and use of SSTP. During the 2-year implementation period, 30 professionals (47.6%) did not deliver any sessions of SSTP, 33.3% delivered between 1 and 20 h of SSTP, and 19% delivered between 20 and 62 h of SSTP. High levels of self-efficacy were reported on average, and professionals’ scores on the social identity measure suggested that they had developed a social identity as an SSTP professional.

### 3.3. Correlational analyses

Pearson’s *r* correlations among the variables of interest were calculated (Table 2). Use of SSTP was positively correlated with the variables of social identity and self-efficacy. Use of SSTP was not significantly associated with age or time in role.

### 3.4. Regression analysis predicting use of SSTP

A two-step hierarchical multiple regression was then conducted with use of SSTP as the dependent variable. The demographic variables of age, and time in role were entered at stage one as control variables. The

**Table 1**  
Descriptive Statistics.

	Mean	SD		
Age	43.21	10.57	25	66
Time in role	6.02	6.19	1	27
Self-efficacy	11.13	2.57	2	14
Social Identity	63.05	12.19	41	89
Use of SSTP (in hours)	13.22	20.13	0	83

**Table 2**  
Pearson’s *r* Correlations for Key Variables.

	1.	2.	3.	4.	5.
1. Time in role	–				
2. Age	0.36**	–			
3. Social identity	0.12	-0.14	–		
4. Self-efficacy	0.10	-0.17	0.34**	–	
5. Use of SSTP	-0.20	-0.08	0.31*	0.40**	–

\**p* <.05, \*\**p* <.01, \*\*\**p* <.001.

variables of social identity and self-efficacy were entered at stage two. Results can be seen in Table 3.

The hierarchical multiple regression revealed that at stage one, age and time in role did not contribute significantly to the regression model,  $F(2,61) = 1.20$  *ns*, accounting for 3.9% of the variation in use of SSTP. Adding self-efficacy and social identity into the model explained an additional 23.6% of the variation in use of SSTP with this change in  $R^2$  also being significant,  $F(4, 61) = 5.40, p <.001$ . With all variables in the model, time in role and self-efficacy emerged as significant predictors, such that shorter times in role, and higher levels of self-efficacy, both predicted higher levels of SSTP use. Together the four variables accounted for 27.5% of the variance in use of SSTP. Contrary to expectations, social identity was not a significant predictor of use of SSTP, although this variable showed a distinct trend towards significance ( $p = .07$ ).

### 3.5. Mediation analysis

Mediation is said to occur when a number of conditions are met (Baron & Kenny, 1986). These conditions stipulate that; (1) the independent variable (social identity) significantly predicts the dependent variable (use of SSTP) which was supported  $\beta = 0.31, p = <0.05$ . That, (2), the independent variable (social identity) significantly predicts the proposed mediator (self-efficacy) which was supported  $\beta = 0.34, p = .01$ . (3), the proposed mediator (self-efficacy) significantly predicts the dependant variable (training performance),  $\beta = 0.40, p = .001$ , for the independent variable which was upheld. Finally, that (4) the relationship between the independent variable (social identity) and the dependent variable (use of SSTP) is significantly reduced when the proposed mediator (self-efficacy) is added to the regression model  $\beta = 0.20, p = .119$ . As can be seen in Fig. 1, the standardized regression coefficient between social identity and self-efficacy was statistically significant, as was the standardized regression coefficient between self-efficacy and use of SSTP. The significance of this mediation was determined by performing the Sobel test, which found that the impact of the social identity decreasing from  $\beta = 0.31, p = <0.05$ , when self-efficacy was not in the equation, to  $\beta = 0.20, p = .11$ , when self-efficacy was entered, was reliable, Sobel’s  $z = 1.94, p = .05$ . That is, there was a significant indirect effect of social identity via self-efficacy.

**Table 3**  
Summary of Hierarchical Regression Analysis for Variables Predicting Use of SSTP.

	$\beta$	$sr^2$	<i>t</i>	$R^2$	$\Delta R^2$
Block 1				0.04	
Age	-0.01	-0.01	-0.06		
Time in role	-0.19	-0.18	-1.42		
Block 2				0.28	0.24
Age	0.13	0.12	1.02		
Time in role	-0.31	-0.30	-2.50		
Social identity	0.23	0.21	1.86		
Self-efficacy	0.38	0.35	3.12***		

N = 63, \*\**p* <.01, \*\*\**p* <.001.



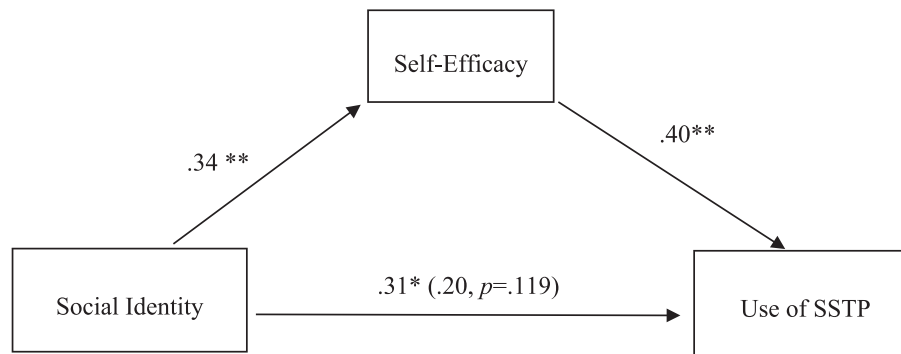


Fig. 1. Standardised Regression Coefficients for the Relationship between Social Identity and Use of SSTP as Mediated by Self-Efficacy (Controlling for Self-Efficacy in Parentheses). \* $p < .05$ , \*\* $p < .01$ .

#### 4. Discussion

The aim of the present study was to evaluate the role of social identity and self-efficacy in the use of program delivery (after controlling for age and time in role) within a 2-year implementation period by trained professionals. In support of hypothesis (1), higher ratings of self-efficacy were positively associated with higher rates of SSTP use. Hypothesis (2), that higher ratings of social identity would be positively associated with higher use of SSTP, was partially supported in the current study, where social identity significantly correlated with use of SSTP in an independent analysis but did not significantly predict use of SSTP when other variables were included in the model. Hypothesis (3), that the predictive capacity of social identity on the use of SSTP would be mediated by self-efficacy, was supported.

Social identity has not been previously examined within the context of implementation research and was found to be a potential variable of interest in this specific example of implementation of a parenting program. Scores on the social identity measure indicated that professionals' endorsed a social identity as a SSTP professional. This is an interesting finding given that in this study the population of professionals were widely dispersed across the state of Queensland and worked in a diverse range of organisational settings, often having limited contact with each other post-training. It appears that professionals' training and accreditation followed by ongoing contact with the project team contributed to the formation of a social identity which in part predicted the use of SSTP. For this group of professionals, this sense of group identity influenced their use of SSTP via the extent to which they felt they had the self-efficacy to deliver the parenting sessions. This social identity formation was maintained despite limited opportunities for ongoing identity renewal for two years after training. It is also possible that they had a shared goal of helping families with a child with a disability and that this enhanced the strength of their social identity as SSTP professionals.

The potential utility of social identity in increasing the implementation of programs following training warrants further investigation. If, as suggested in the current study, a training setting can provide the initial platform where an individual can develop an identity as a member of a group of professionals with shared goals then this group identity may be a motivation to deliver the program in their workplace (Ellemers et al., 1998; Haslam et al., 2020 Tyler, 1999; Tyler & Blader, 2000). As expected, self-efficacy to deliver the program was found to be a significant individual predictor, as well as a mediator in the prediction of program use. Decisions to deliver the sessions, and the amount of effort expended in implementing sessions can be influenced by the extent to which individuals believe they are able to implement the program successfully (Sanders & Mazzuchelli, 2013). Consistent with previous Triple P implementation research, self-efficacy was found to be a significant predictor and mediator, in the sustained use of SSTP (Charest & Gagne, 2019; Turner et al., 2011). In this study, the role of social identity in the prediction of SSTP use was mediated by self-

efficacy. These findings make sense because although an individual may identify with and have the intention to progress the goals of their defined social group to deliver SSTP, the extent to which these goals will be performed will depend upon the extent to which they feel they have the capacity to do so effectively. This study provides support to the theory that self-efficacy may be a key mechanism explaining the relationship between social identity and program delivery (Guan & So, 2016).

There are a number of threats to the internal validity of this study. First, the data was only collected from just over 50% of the sample of professionals (63 out of 120 professionals were able to be contacted and agreed to participate), so the results may not be representative of the population of professionals. However, the rates of delivery were reflective of the larger pool of trained professionals in this project. Second, the use of correlational data limits conclusions that can be drawn about the nature of the relationships. Further research could investigate the development and changes in social identity, self-efficacy and program use over multiple time points to further investigate the direction of the relationship between the variables. Third, it should be noted that whilst data collection via telephone survey was a strength in relation to missing data (with only one item missing related to disclosure of age), the method may have influenced participants to respond in a socially desirable way. However, a social desirability bias across items should not change the pattern of results found. Nevertheless, further studies using alternate data collection methods to replicate and validate these findings is desirable.

The external validity of this study is strengthened by the use of actual delivery rates in analyses, which could not be influenced by social desirability. Implementation research often relies on retrospective self-reported estimates of delivery rates, which may lack accuracy and are also subject to bias in reporting (e.g., Turner et al., 2011, Shapiro et al., 2012). A further strength is the use of a two-year implementation period which increases the external validity of the results.

The population of professionals trained in this study was different from other groups of trained professionals given that they received free training as part of a research project. Only around 50% of professionals delivered sessions and low rates of delivery during the two years following training were observed. This delivery rate is lower than typical delivery rates, with reported program utilisation rates by Triple P practitioners ranging from 63 to 97% (McWilliam et al., 2016). The professionals in this study may be less motivated to deliver than practitioners who have incurred a monetary cost (borne by the individual or organisation by which they are employed) as well as a time investment for being trained. Several of the professionals were in management positions and may have had less opportunity to deliver sessions as part of their role. Although the screening process for selecting professionals included obtaining written commitments from professionals and their line managers to deliver the program, some professionals may have used the training as a free professional development activity with limited

intentions to deliver following training. Further investigations into the barriers to delivery in this context is warranted given the large time and cost investment of such funded projects. If we were better able to predict which professionals would deliver the programs, this could also be included in selection processes. Ultimately, with higher rates of delivery, more families in need of support could have been reached.

As this study only investigated delivery rates as the outcome, further research could look beyond the direct delivery of programs to explore impacts of training on other potential outcomes. The training of professionals in SSTP may lead to other outcomes, such as providing support to others to deliver programs or in taking on advocacy roles where the program is recommended to other professionals or parents (Damschroder et al., 2009). Program advocacy could indirectly lead to greater uptake of programs in the community. Additionally, beyond looking at the direct effect of program delivery, training in SSTP may have led to the adoption or integration of certain principles, concepts, and strategies within the broader work of the professionals. Future research may benefit from measuring a broader range of outcomes following training, in addition to the metric of program delivery.

Future research should investigate the role of self-efficacy and social identity in combination with a large range of factors to elicit a clearer picture of the relative importance of multiple factors in predicting program use. Following common practice in implementation research, this study controlled for the effects of practitioner age and time in role, however both factors were not significantly related to program use. Further research could investigate more practitioner-level as well as organisational, process and intervention characteristics and how they may interact with social identity and self-efficacy. More advanced statistical techniques such as structural equation modelling may be employed to shed light on the relative importance and relationship between variables in a comprehensive analysis. The concept of collective efficacy (Bandura, 2000) which refers to a group's shared belief in its capacity to perform the actions necessary to achieve group goals, may also be worth exploring in this context. It would be interesting to examine the relationship between self-efficacy and social identity with collective efficacy and determine if collective efficacy could further promote the utilisation of parenting programs.

Practically speaking, further investigation in the training domain might look at the value of using social identity as a way of enhancing implementation outcomes. If professionals already share beliefs and attitudes congruent to training programs and outcomes, then the strength or salience of the social identity created by attending training, and the goals associated with the training group, could provide a stronger predictor of use of SSTP. Further research should seek to determine whether the training setting does indeed have the potential to generate and maintain a social identity via training attendance and its associated goals. If it can be established that the training setting can facilitate creation of a social identity, longitudinal research might look at the utility of providing social identity activities designed to renew this identity and measure its effects on subsequent use of SSTP. Social identity is a well-established predictor of group behaviour, and this study provides a first look into the role of social identity in the context of implementation research of parenting interventions. Given the expense of training and potential benefits of wider program reach for children and families, the factor of social identity may provide a useful organisational tool to maximise training investments and increase dissemination.

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#### CRediT authorship contribution statement

**Cassandra L. Tellegen:** Visualization, Data curation, Writing –

review & editing, Formal analysis. **Martha Schoch:** Formal analysis, Investigation, Data curation, Visualization, Writing – original draft. **Julie Hodges:** Visualization, Data curation, Investigation, Supervision. **Kim Peters:** Supervision. **Matthew R. Sanders:** Supervision, Funding acquisition, Resources, Project administration. **Bruce Tonge:** Funding acquisition, Project administration. **Stewart Einfeld:** Funding acquisition, Resources, Project administration. **Kate Sofronoff:** Project administration, Supervision. **Kylie M. Gray:** Project administration. **Patricia Howlin:** . **Eric Emerson:** . **Jo Arciuli:** . **Lauren Rice:** . **Sian Horstead:** . **Kristina Clarke:** . **Louise Bezzina:** . **Holly Evans:** . **Ellaina Andersson:** . **Zyra McAuliffe:** . **Kaaran Haas:** . **Eva Louie:** . **Fiona Hoath:** . **Sheena Worrall:** . **Lucile Stace:** . **Natalie Silove:** . **Pauline Kostelas:** . **Jodie Caruana:** . **David Dossetor:** . **Luis Salvador-Carulla:** . **Kevin Henderson:** . **Kathryne Phillis:** . **Cassandra Rotolone:** . **Tania Henry:** . **Babak Panahi:** . **Anagha Aery:** . **Sharon Hinton:** . **Donna-Marie Thompson:** . **Berthine Ommensen:** . **Trevor Mazzucchelli:** . **John Taffe:** . **Nan Hu:** . **Ross Boland:** . **Rachael Knott:** . **Gemma O'Hagan:** . **Oriel Rose:** . **Fionnuala Shortt:** . **Danyelle Cawood:** . **Rebecca Blackmore:** . **Emily Wallman:** . **Caroline Keating:** . **Samantha Teague:** . **Rosalie Viney:** . **Stephen Goodall:** . **Sheena Arora:** .

#### Declaration of Competing Interest

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests: [The Parenting and Family Support Centre is partly funded by royalties stemming from published resources of the Triple P – Positive Parenting Program, which is developed and owned by The University of Queensland (UQ). Royalties are also distributed to the Faculty of Health and Behavioural Sciences at UQ and contributory authors of published Triple P resources. Triple P International (TPI) Pty Ltd is a private company licensed by Uniquet Pty Ltd on behalf of UQ, to publish and disseminate Triple P worldwide. The authors of this report have no share or ownership of TPI. Prof Sanders receives royalties and/or consultancy fees from TPI. TPI had no involvement in the study design, or analysis or interpretation of data, or writing of this report. Dr Tellegen, Ms Schoch, Dr Hodges, Dr Sofronoff are or were employees at UQ. Ms Schoch was a student at UQ.].

#### Data availability

The authors do not have permission to share data.

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