



Regular Article

Validating the barriers and enablers for teachers accessing professional development of trauma informed pedagogy

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From infancy through to adulthood, childhood trauma can change how an individual perceives themselves and the world around them. This affects how information is processed and how one behaves in response to their environment. Childhood trauma impacts all developmental domains, and without appropriate early interventions, altered cognitive processes and behavioural responses can lead to long-term problems such as challenges with learning, self-regulation, impulse control, and social and emotional development. Many individuals who experience multiple ACEs are likely to engage in risky health and social behaviours, have poorer physical and mental health outcomes, and may also experience an earlier death compared with those who have not experienced ACEs (Centre for Disease Control (CDC), 2010; Felitti et al., 1998).

The biopsychosocial consequences of ACEs and their prevention is a pressing concern in many Western countries, as well as an increasing concern for schools and teachers. When teachers are uninformed about the impacts of trauma on child development, often the needs of children who have experienced or are currently experiencing childhood abuse and neglect will go unrecognised and/or not attended to or responded to (Bomber, 2020). This can result in both student(s) and school staff becoming stressed and feeling unsupported, as well as potentially leading to further trauma experienced by the student(s).

Trauma-informed care in a school setting is an approach that ensures the unique needs of students as trauma survivors are met and mitigates barriers to education and wellbeing disparities experienced by this vulnerable population (Reeves, 2015). This is one response to a growing evidence base related to supporting children who have experienced ACEs (Oral et al., 2016; Substance Abuse & Mental Health Services Administration [SAMHSA], 2014). Trauma-informed care describes a shift in school staff towards cultivating a whole-of-school culture that understands the prevalence of childhood trauma and responds to its impacts, recognises the signs and symptoms of trauma in staff, families, and students, and responds by changing policies, practices, and processes to ameliorate rather than exacerbate the impacts of ACEs and complex harm (Baker, Brown, Overstreet, Wilcox, & New Orleans

Trauma- Informed Schools Learning Collaborative, 2021).

Brown et al. (2022) discuss the barriers to teachers providing a therapeutic response to children in their classrooms displaying trauma-based behaviours. This includes teachers in some communities, in particular remote and isolated locations being first responders as they are frontline workers akin to ambulance and police officers and the impact on children and teachers when they don't have the skills, knowledge and experience to manage disclosures and pain-based behaviours. Teachers require support and ongoing training from their employers to prevent further trauma being an unintended consequence and for teachers to not experience fatigue and burnout.

Substance Abuse and Mental Health Services Administration (2014) describes principles of trauma-informed care: safety; trustworthiness, peer support, collaboration; empowerment, choice and cultural, historical and gender issues. Along with these principles, Substance Abuse and Mental Health Services Administration (2014) has identified ten implementation domains that target actions both internally (i.e., in the school) and externally (i.e., when interacting with external stakeholders). One of these domains is training and workforce development. Ultimately, to achieve the goal of becoming a trauma-informed school, all school staff need to embody the principles during their moment-by-moment, day-by-day interactions in the school (Brown et al., 2012).

One of the goals of trauma-informed care implementation is to build the knowledge base and shift the attitudes of teachers and other school staff, as changing attitudes is a key indicator of changing behaviour (Ajzen & Fishbein, 1977; Baker et al., 2021). There are many barriers to teaching staff changing their attitudes and responses to engaging with professional development, training, and learning about practice alternatives to support students with experiences of maltreatment and trauma.

There exists significant literature that recognises the importance of a positive teacher-student relationship and the importance of the teacher as a key attachment figure in a student's life (Bomber, 2020; de Thierry, 2017). According to the Department of Education (2014), schools are a

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main potential source of emotional wellbeing and resilience for students who have experienced trauma. Whilst several barriers to accessing trauma-informed professional development exist for teachers at school, there are many opportunities for enablers to their engagement. Such enablers can help support teaching staff to engage with relevant professional development to enhance their knowledge and skills in the trauma space. Consequently, they can help change attitudes, which will enhance the likelihood of trauma-informed pedagogy being used in the classroom.

1. Rationale and objective of the research project

The rationale of this research project was to further the understandings of school leadership to support school and sector-based changes to enable mainstream classroom teachers to further their knowledge and skills. This extends to teachers being enabled to learn without adding to existing workplace demands through the mitigation of barriers, to enrich outcomes for students.

2. Method

2.1. Procedure and participants

An exploratory sequential mixed-methods (ESMM) research project was carried through. It consisted of three studies and was conducted by Collier et al. (2022). This current study is study three in the overall project and was conducted by Collier et al. (2022) based on the primary research question of, *what are the barriers and the enablers for teachers accessing professional development in trauma informed pedagogy?* The use of a qualitative approach followed by a quantitative approach was chosen to better address the research problem as the data obtained was able to be used to explain in greater detail the qualitative results. The recent qualitative study determined five core themes, all of which represent the effects on teachers who engage in learning opportunities related to trauma-informed practice. The emerging themes are as follows: child-centred approach, timely professional development, teachers' emotional responses, principles of trauma-informed care, and the mode of learning specialised skills. These core themes highlighted barriers for teachers engaging in professional development in trauma-informed practice and exist at the broader departmental and school level, not only at the level of the individual teacher. Teachers discussed the perceived constraints as universal across the education sector, where overwhelmed teachers were found to be navigating their way through increasing curriculum demands, high workloads, large class sizes and a multitude of extra-curricular tasks and duties. The narratives in the interviews point to a magnitude of challenging student behaviours and often the teacher is unaware that trauma is the cause (Collier et al., 2022). They are then left in their attempts to manage a student's behaviour on their own without causing further harm to the child (Collier et al., 2022).

The suggestions made by the interviewees in Collier et al. (2022) of enablers to mainstream classroom teachers engaging in professional development and training of trauma-informed classroom pedagogy are consistent with the research-to-practice gap that is evident in many disciplines, including education (Valentino & Juanico, 2020). Teachers are often made aware of best practice frameworks through one-off or a short series of whole-of-school professional development presentations; however, the transfer of knowledge is often not integrated into their teaching practice in the classroom (Goodyear & Casey, 2013; Perry et al., 1999; Valentino & Juanico, 2020). The findings from Collier et al. (2022)'s study reveals how community-of-practice opportunities, mentoring, coaching and on-the-job support by discipline experts can assist teachers to value opportunities to learn from one another, set their own professional development agenda, and make time to plan, experiment, and reflect on their teaching practices. The strategies proposed as enablers by the interviewees to support teacher engagement in learning are

further supported by Tseng and Kuo (2014). Their research discusses the prosocial commitment to improving practice; strengthening ties with colleagues, which assists in reducing stress; and the vicarious trauma and burnout of teachers, as self-efficacy was found to have a mediating effect on knowledge sharing and pastoral care supports.

The implementation of the ESMM approach is a methodology comprising a rigorous process of data collection and analysis that guarantees validity and trustworthiness (Strauss & Corbin, 1998). An inductive qualitative method was used in Collier et al. (2022) to develop a comprehensive understanding of the barriers and enablers to teachers engaging in professional development that is focused on trauma-informed pedagogical practices. This inductive, or bottom-up, approach ensures the themes are strongly linked to the data itself (Patton, 1990). The five core themes became evident through the thematic analysis of data gathered through interviews with mainstream classroom teachers in Study 1 (Collier et al., 2022). These themes reflected the lived experiences of mainstream classroom teachers, and following the thematic analysis, a deductive approach was implemented where the quantitative measures were used to confirm the relationships, trends and themes identified in the qualitative study. These core themes were incorporated into a dialectic survey framework using a seven-point Likert scale. Each statement contained a polar view of favourable and unfavourable trauma-informed statements, with options for each item to reflect the opposite, or polar view, of that statement.

The strengths of quantitative research include the opportunity to obtain the data required for statistical tests and reveal findings that can be generalised to heterogeneous populations (Wackerbarth et al., 2002). In an attempt to overcome the challenges associated with instrument development for quantitative studies and to ensure against failing to capture the key constructs relative to the research question, survey methodologists suggest the use of preliminary data collection methods to develop relevant and appropriately worded items. Such preliminary methods include observation of (de Vaus, 1986) and interviews with members of the target population (de Vaus, 1986; Sheatsley, 1983). The 40-survey item generation methodology used in the current study involved current in-service mainstream teacher interviews. These key informant interviews explored the issues and elicited themes until data reached saturation, meaning the themes were present in 90 per cent of the interviews conducted. These core themes were developed to dialectically approach the logic of the research problem—that is, by viewing the research problem and its possible solutions as concepts undergoing a dialectical process to delve into each new factor that emerged from the analysis of Collier et al. (2022). Dialectical thinking refers to the ability to view issues, problems and worries from multiple perspectives through a process of analytical reasoning. Each of the five sections of the survey design correlated with one of the five themes determined through Study 1. A draft dialectical scale for the survey was developed and the items corresponded with the themes and sub-themes obtained from the thematic analysis in Study 1.

An initial dialectical thinking survey was developed and sent out to five content experts in the field of childhood trauma. Feedback received prompted the rewording of items to ensure content validity, that each item was clear and polar opposites were reflected in the statements, and that only one concept per item was being evaluated. This included ensuring the relation of the item to the theme/sub-theme, that the terms used would be familiar to the audience, and that the intent of the item was clear for later analysis. Further discussion and analysis occurred with regards to the four categories recommended by Bird and Dominey-Howes (2008) for consideration when developing a pilot study. These categories for questions, design and format, survey length, survey output, and survey aims were adequately met through three consultative sessions with a quantitative data specialist technician who provided feedback on each of these aspects of the survey. The initial survey design was then further developed, and a pilot study was conducted, which involved the completion of surveys (n = 30) by mainstream classroom teachers. The participants of the study included both

Australian and American mainstream classroom teachers.

2.2. Based on all the feedback from the pilot study (study 2), additional changes were made to further enhance the survey design. These changes included

- the addition of further demographic questions;
 - o modifying the Likert-type scale, from 'strongly disagree' through to 'strongly agree'; and
- amending statements to avoid reverse-coding.

3. Current study results

3.1. Quantitative analysis of the core themes

An evaluation of the core themes from Study 1 was achieved using an online survey that was disseminated to 320 mainstream classroom participants. Of the 320 participants, only 174 participant responses were complete, with 146 participants only partially completing the survey. The gender of the participants was equally dispersed, with 87 female teachers (50 per cent) and 85 males (48.9 per cent). Of the 174 participants, 90 (51.7 per cent) were working in a regionally based school, 26 (14.9 per cent) participants were working in a school located in a remote area and 58 participants (33.3 per cent) were working in a metropolitan school. The age range of participants was distributed across age groups, with teachers ranging from their early 20s to over age 50 and the modal group of teacher participants falling within the 31–40 age range (33.9 per cent). This indicates a reasonable reasonably diverse cohort in terms of gender, age, and school-based locality. The dispersion of participants that were geographically located in Australia totalled 89 and 85 participants were located in America.

Interestingly, the number of years participants had been working in a mainstream primary school classroom was highest for those with less than five years' teaching experience, with 60 participants (34.5 per cent) in the 0–5 years range. This was closely followed by teachers with 6–10 years' mainstream classroom experience, at a frequency of 51 participants (29.3 per cent). Teacher participants that indicated they had engaged previously with education or training in childhood trauma was the highest, with 100 (57.5 per cent) participants stating they had, while 42 (24.1 per cent) stated they had not engaged in any education or training related to childhood trauma.

3.2. Reliability of survey items

An assessment of the reliability (eg., internal consistency) of the 14 items constituting the survey was conducted using the Statistical Product and Service Solutions (SPSS, 26th Version), a widely used program for statistical analysis in the social sciences. The assessment of the reliability was achieved using Cronbach's alpha as the measure. The resulting alpha coefficient ranges between 0 and 1 in its provision of an overall assessment of the survey's reliability—that is, the sets of items that are within each of the five themes (subscales) on the survey should produce results that are consistent with the overall survey. In this study, Cronbach's $\alpha = 0.933$, which indicates that the reliability is strong and items in the survey should positively contribute to the tool's overall reliability. When checking if any item should be excluded, the improvement of alpha was negligible. Consequently, no items were deleted from the questionnaire. Seven items in the variable, child-focused intervention, were reverse-scored due to them being reverse-phrased in the survey tool. This occurred prior to running the reliability analysis in SPSS 26th Version.

Cronbach's alpha was calculated for each of the five subscales. The internal consistency of the emotional response subscale was found to be 0.795, which falls within the acceptable range (Kline, 1999). Additionally, the child-focused intervention (0.850), mode-of-learning (0.897), and trauma-informed care across the school (0.844) subscales

all fell within this acceptable range. In other words, it was determined that the removal of any items would not substantially improve the reliability, therefore, all items were retained. The timely communication to teachers subscale revealed a Cronbach's alpha of .601, and it was determined the removal of item 4 (*Teachers are rarely advised when a student's circumstances change*) would increase this figure from 0.600 to 0.749, a substantial increase. It was acknowledged the removal of this item would improve the timely communication to teacher's subscale; however, given the overall assessment of the survey's reliability (0.933) which indicates the reliability is strong and that items in this study should positively contribute to the tool's overall reliability (Kline, 1999). The concept underpinning the question represented a significant discussion point in the qualitative study, the decision to keep this item was made. Consideration was also given to the low number of items in this subscale in comparison with the other four subscales, all of which were found to fall within the acceptable and good range (Kline, 1999). This is supported by Trevethan (2009), who states that "low alpha levels often occur with small item numbers, even when those items are highly associated with each other" (p. 465). With reference to relevant literature, the standard cut off value for alpha is generally 0.90 (Kline, 1999) and that improvement in this context would be to strive for lower values, the alpha value in this instance is acceptable, a more targeted value would be lower than the 0.933 achieved.

The evaluation also provided preliminary evidence of construct validity and face validity, which are understood to be based on generalisations (Field, 2018). With a high alpha measure on each item in the survey, however, it appears the survey accurately measured the concept of each of the five themes proposed in Study 1.

3.3. Descriptive analysis of the data

Data aggregation processes were undertaken, and analysis of the data from the 174 participants included measures of dispersion, the means and frequencies for each theme, and correlation of the variables.

The mean for each survey item represents the average score for each item. As this survey response type is a seven-point Likert scale, it is reasonable to predict that scores above five represent an endorsement of the view relative to the item. Whilst mean scores can be influenced by extreme scores, the standard deviation was measured to determine the shape of the score's distribution. According to Field (2018), if the mean represents the data well, then most scores will cluster close to the mean and the resulting standard deviation will be small compared with the mean. This is possibly reflective of a high frequency of participant scores being close to the mean. All mean scores for each item were found to be above five, apart from seven of nine items related to the child-focused response theme, and in each of the other four themes, the mean was above five. The mean could be affected by negatively skewed distributions for the timely communication to teachers, mode of learning for teachers, emotional response of teachers and trauma-informed care approach themes across the school distributions. This may be due to a positively biased sample based on the participants who volunteered for the study. Specifically, it is acknowledged that participants who are engaged and interested in the trauma-informed practice of classroom teachers and the challenges teachers face in engaging with professional development focused on childhood trauma may have been likely volunteers for participation in this study. This is admittedly a limitation of this research project, and whilst the quantitative aspect of this project was included to determine the validity and reliability of the information gained in the qualitative study, a broader range of participants in future studies may yield a less biased response.

The overall mean and standard deviation for each key theme were assessed and the child-focused theme represents the lowest mean and highest standard deviation; however, it is the only theme for which no outliers were identified, representing a normal distribution. The mean is generalised as being a less accurate representation of the data compared with the data gathered on the other four themes, as the standard

deviation is larger and there is a flatter response distribution (i.e., they are more spread out). As this theme represents a focus on teacher understanding and awareness of the impacts of trauma, attitudes to childhood trauma and teacher preparedness to support children with trauma backgrounds, it is not surprising that the data gathered on this theme was the most dispersed. This is contrary to the data gathered in the qualitative study whereby the overwhelming response to understanding the impacts of trauma and whether the issues and concerns related to trauma represent a teacher or educational issue was negative—that is, the majority of responses reflected the sentiment that the issue of childhood trauma belongs with the social services sector.

In the distributions for all variables (themes), excluding child-focused intervention, a negatively skew was identified. The outliers present are representative of the distribution being pushed into different directions, away from the majority of participants that are mostly positive in their responses, which indicates a possible positive bias in the sample. The outliers are indicative of a few participants who were not as overtly positive with all the items, and this reinforces the decision to keep the outliers as their views are representative of the findings generated in the qualitative study.

3.4. Correlation of variables and development of models

A Spearman's correlation test was conducted to assess the correlations between the variables. A Spearman's correlation test was chosen rather than a Pearson's correlation co-efficient as Pearson's correlation is used with continuous data and Spearman's correlation is used with discrete ordinal data (Winter et al., 2016). The current study used discrete data obtained from a Likert scale, and the skewed data from four of the five themes is not a barrier to working with Spearman's correlation tests.

The results revealed a positive significant correlation between emotional response of teachers and the variables timely communication ($r_s = .550, p < .001$), trauma care ($r_s = 0.589, p < .001$) and mode of learning ($r_s = 0.621, p < .001$). According to Cohen (1992), this is considered a large effect size. Cohen's effect size guidelines are principally based on an essentially qualitative impressions, rather than a systematic, quantitative analysis of data (Cohen, 1992).

However, no significant correlation between child-focused practice and emotional response of classroom teachers was found ($r_s = 0.144, p = .057$), nor with why they may or may not partake in professional development around trauma-informed pedagogy. This is not surprising given the results of the qualitative study, whereby teachers indicated that they felt trauma implications for children were not always a role for teachers or the education sector and needed to be supported by the social services sectors and external organisations. This was further discussed in terms of teachers believing they have a lack of opportunity to know the trauma history of children, they were not always considered a stakeholder, and were often not advised or communicated with regarding the experiences children may have endured that may be impacting their learning.

3.5. Multiple regression analysis

Multiple regression analysis was used to predict the value of the dependent variable using the value of the independent variables in each of the two models.

Upon checking the assumptions prior to performing a multiple regression analysis, it was found that all the assumptions were met.

This included that the sample size was large enough to run a regression; multicollinearity and singularity were met (Daoud, 2017), as the independent variables were not highly correlated; and the residuals were normally distributed around the predicted criterion scores, showing a linear relationship in both models one and two (Daoud, 2017). Additionally, in model one, the residuals needed to be normally distributed around the predicted criterion scores, between emotional

response of teachers (dependent variable) and mode of learning, timely communication, and trauma-informed care (independent variables) across the school setting.

The data representing the emotional response of teachers and child-focused intervention (dependent variables) were found to be homoscedastic—that is, there appeared to be equal scatter of residuals, also known as deviation from the sample mean. In both the models presented above, the residual points are close to 0, meaning there is a good fit with minimal error—it can be assumed, therefore, that the regression coefficients are likely to be reliable.

3.6. Model 1 (refer to Fig. 1)

Multiple hierarchical regression was conducted to predict the emotional response of teachers using demographic variables and timely communication, trauma care and mode of learning. The results revealed that the regression model was not significant at Step 1, $F(5,166) = 2.21, p = .056$, and became significant at Step 2, $F(8,163) = 31.74, p < .001$. Six per cent of the variance in emotional response of teachers was explained at step 1 ($R^2 = 0.062$; Adjusted $R^2 = 0.034$), and this rose to 60.9 per cent at Step 2 ($R^2 = 0.609$; Adjusted $R^2 = 0.59$). The model change statistics revealed that the percentage of variance explained at Step 1 (6.2 per cent) was not significant, $F(5,166) = 2.21, p = .056$, and that an additional 54.7 per cent of the variance was explained by the predictors at Step 2, and $F(3, 163) = 75.98, p < .001$.

In the first step of the analysis, age emerged as a significant predictor of emotional response of teachers ($\beta = .283, t = 2.50, p = .013$) and it showed no significance at Step 2 ($p = .054$). Timely communication and mode of learning emerged as significant predictors at Step 2 ($\beta = 0.333, t = 4.59, p < .001$) and ($\beta = 0.427, t = 4.64, p < .001$; see Appendix 1.1–1.3).

The impact of the independent variables, timely communication, mode of learning and trauma-informed care across a school, on the dependent variable, emotional response of teachers is consistent with the qualitative study results, where participants spoke of experiencing significant motivation and commitment to engaging in professional development related to trauma-informed pedagogy when they became aware of the circumstances of a child in their classroom who was currently or had historically experienced trauma. It was apparent in the qualitative study that empathetic and compassionate responses were elicited when the teacher became aware of the adversity a child was facing and why it was preventing the child from being able to learn. This supports the linear relationship between timely communication with teachers and their emotional response. This sentiment was not shared by all participants who were interviewed, with many feeling they could not absorb any further work or responsibility and acknowledged they were experiencing burnout from their role.

Timely communication was discussed at length throughout the interviews as teachers felt that being kept abreast of changes in a child's life, such as removal into care placements, injuries and hospitalisations, basic needs not being met, and family breakdowns and separations,

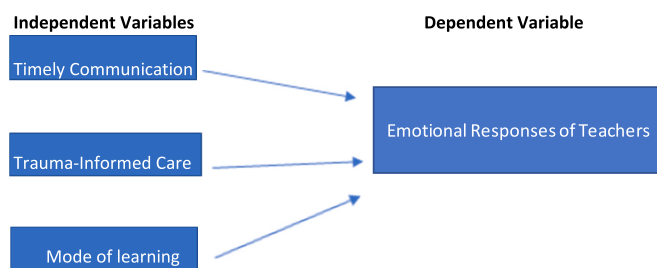


Fig. 1. Potential Relationship between Independent Variables; Timely Communication, Trauma Informed Care and Mode of learning and the Dependent Variable, Emotional response of teachers (Model 1).

facilitated their willingness to acquire more knowledge and support to improve the student’s wellbeing and academic outcomes. This is consistent with the linear relationship found between mode of learning and emotional response from teachers.

Teachers spoke readily in the interviews of exhaustion levels when trying to implement wellbeing programs or social and emotional programs to students without the support of colleagues and leadership teams. The concept of trauma-informed care was seen as a whole-of-school response whereby the trauma-informed approach is embedded throughout the school culture and infiltrates from the top down. The narrative from the qualitative study included teachers stating a greater willingness to engage in a cultural shift at their school when it is supported as a whole-of-school movement. Examples such as the Trauma-Informed Positive Behaviour Support (TIPBS) approach throughout the school is indicative of what the participants believed is required. This speaks to the linear relationship between the emotional response of teachers and the trauma care themes, as when the changes are well supported and do not become another administrative “extra”, then teachers are more likely to be motivated to embrace the change.

3.7. Model 2 (refer to Fig. 2)

Multiple hierarchical regression was conducted to predict child focus using the demographic variables, as well as timely communication and mode of learning. The results revealed that the regression model was not significant at Step 1, $F(5,166) = 0.79, p = .559$, and became significant at Step 2, $F(7,164) = 6.43, p < .001$. Two per cent of the variance in child focus was explained at Step 1 ($R^2 = 0.023$; Adjusted $R^2 = 0.006$), and this rose to 21.5 per cent at Step 2 ($R^2 = 0.215$; Adjusted $R^2 = 0.182$). The model change statistics showed that the percentage of variance explained at Step 1 (2.3 per cent) was not significant, $F(5,166) = 0.79, p = .559$, and that an additional 19.2 per cent of the variance was explained by the predictors at Step 2, $F(2, 164) = 20.08, p < .001$ (see Appendix, Models 2.1–2.3).

In the first step of the analysis, the demographic variables were not significant predictors of child focus ($p > .05$). Further, timely communication emerged as a significant predictor at Step 2 ($\beta = 0.338, t = 3.35, p = .001$).

The child-focused practice theme (dependent variable) was linearly related to the independent variables timely communication and mode of learning. In the qualitative study, teachers described becoming more focused on child-specific outcomes when they became aware the student was facing or had previously faced adversity. Compassion, empathy, and a strong protective regard were highlighted by a number of participants as developing when they came to understand the reason for a child’s lack of capacity to self-regulate and their display of complex and challenging behaviours. Participants discussed the need to have “on the job, in real-time” mentoring and coaching that was tailored to the needs of the

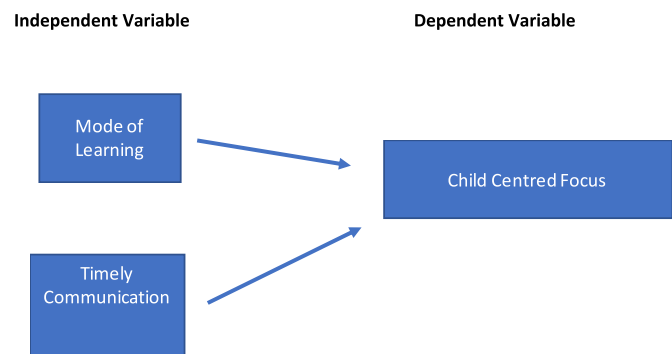


Fig. 2. Potential relationship between dependent variable, child-focused intervention, and independent variables, mode of learning and timely communication (model 2).

traumatised child in their classroom. The participants believed that a university education is not always what they need at the time of managing a student’s complex needs and are therefore more willing to engage in learning opportunities such as those offered by communities of practice, clinical supervisions, feedback loops, in-class demonstrations and modelling opportunities. The linear relationship between child-focused practice and mode of learning was highlighted in both the qualitative and quantitative studies.

4. Discussion

The descriptive analysis of the data set revealed negatively skewed distributions for all variables except child-focused practice. It is worth mentioning here that the responses from the participants who answered on the lower end of the Likert scale are important to include as this does reflect the views of some classroom teachers in relation to the five primary themes. As the mean considers all scores in the data, it is important to note that most participants answered on the higher end of the Likert scale (greater than 4.5), indicating that most participants answered the questions in a positive manner. This is indicative of the key themes from the qualitative study being accurate and reflective of how mainstream teachers perceive the barriers and enablers of engaging in professional development aimed at trauma-informed pedagogy. This is consistent with the literature and the outcomes from Study 1. Specifically, it highlighted that many of the barriers are current and bigger than the individual teacher and can be addressed with structural changes across the school and educational sector through departmental changes and the adoption of a new practice framework.

In Study 1, participants identified that isolated interventions and programs are challenging to sustain due to a lack of buy-in by staff, parents, and children. When a shared understanding of the impacts of trauma on children is not apparent, tensions can rise, and staff are often not collectively empowered to support change processes. This could occur when a school introduces a program that targets the mental health of children with trauma experiences, without having a considered, consolidated whole-of-school and community trauma-informed care approach that embraces staff, parents, and students. A trauma-informed service delivery approach across a multi-tiered framework that includes individual support to teachers along with a well-structured learning and coaching approach is more likely to generate far-reaching success for students, families, and school staff.

The outliers in each of the histograms for timely communication to teachers, mode of learning, trauma-informed care across a school and emotional responses of teachers were left in the data despite this causing a negatively skewed distribution. This was decided since these responses reflect a cohort within the teaching population. This was also evident in some of the responses in the qualitative study (Study 1). The standard deviations were relatively low (ranging between 0.79 and 1.12), indicating the average responses for each of the variables (themes) were greater than 4.6 on the seven-point Likert scale. This suggests that the results in the quantitative study (Study 3) were largely reflective of the views relating to barriers and enablers seen in Study 1.

Given the negatively skewed distributions outlined above, Spearman’s correlation tests were conducted to assess the relationships between the variables. The positive significant correlation between emotional response of a teacher and timely communication about a child and their circumstances, trauma-informed care across a school and mode of learning about trauma-informed pedagogy indicates that as the value of timely communication, trauma-informed care, or suitability of the mode of learning for the teacher increased, the teacher’s emotional response also increased. Trauma-informed practice cannot effectively occur in isolation by one or a small group of teachers; rather, the data supports those teachers that are more likely to engage in trauma-informed professional development when there is a whole-of-school approach. The preferred mode of learning by teachers as illustrated in Study 1 included approaches whereby coaching, mentoring and in-

classroom support was offered that involved scaffolded learning, feedback loops and modelling by expert professionals (with a background in teaching) in allied health and child-trauma teams. The mode of delivery of professional development, timely communication with the classroom teacher relating to the changing circumstances of the child, and the whole-of-school adoption of a trauma-informed approach directly and positively impact the emotional response of a classroom teacher and, consequently, their willingness to engage in professional development for trauma-informed pedagogical practice. This provides some evidence to indicate that there are potential relationships between the independent and dependent variables that are indicated diagrammatically (see Fig. 1). Further confirmatory analysis is required to test this.

A second Spearman's correlation test was conducted to explore the correlations between child-focused intervention (dependent variable) and mode of learning and timely communication (independent variables), as these also revealed negatively skewed distributions. Unsurprisingly, a positive significant correlation between child-focused intervention, and timely communication and mode of learning was revealed. A key theme from the thematic analysis of the data gathered in Study 1 was that when a teacher is made aware of the changing circumstances of a child, this is likely to result in a compassionate and empathetic response that is focused on the child's social and emotional needs. It is additionally likely to facilitate the teacher seeking the support they need to better accommodate a child's needs, resulting in a child-versus curriculum-centred approach in the classroom.

Second, the positive correlation between mode of learning and child-centred practice may be indicative of the classroom teacher being supported to focus on the learning that best meets a child's needs. Study 1 supports this interpretation, as the qualitative data highlighted that teachers currently feel overwhelmed in their roles and with the prospect of attendance at whole-of-school training without their workload being reduced. It was also noted that learnings need to be specific, directed and targeted to support change in pedagogical practice in order to enhance outcomes for a child experiencing developmental trauma in their classroom. Strategies and methods to achieve this were suggested in Study 1 and supported in Study 3. These included community-of-practice opportunities that focused on a particular student and their circumstances, in-class support provided by allied health professionals who are place-based in a school, and regular feedback and mentoring support focused on a student's needs. The potential relationship between these variables is shown in Fig. 2 (below).

The results of the multiple regression analysis suggest these relationships exist. In Model 1 (Fig. 1), the emotional response of teachers is highly predictive when the variables timely communication of information regarding a student's changing circumstances is apparent, and when mode of learning about trauma-informed practice occurs through learning modes that are relevant to the teacher. This linear relationship is consistent with the outcomes from Study 1 and with findings in the extant literature. Teachers largely feel overwhelmed with their workload, which consists of burgeoning administrative tasks and managing students' behavioural responses. When a teacher is made aware of the circumstances that a child in their classroom may be enduring adversity, compassion, empathy, and an intention to support the child occurs. This is then a motivating factor for teachers to learn how to differentiate the child's learning tasks and how to respond in a differentiated manner to support the child and not contribute to their further harm. Interestingly, the demographic of age was not significant at Step 2 of the regression model. This may be due to teachers largely being focused on helping, teaching, and supporting children to achieve the best outcomes, regardless of their age.

To predict the dependent variable, child-focused intervention, Model 2 was assessed using multiple hierarchical regression analysis that included demographics and the independent variables timely communication and mode of learning. Timely communication about the child and their circumstances was a significant predictor of a teacher engaging in child-focused interventions. This result speaks to teachers' intentions

to provide wrap-around support to a child who is experiencing adversity once the teacher becomes aware of the child's circumstances. Teachers engaged in this research project clearly stated in Study 1 and which is now supported in Study 3, that an enabler to engaging in professional development of trauma-informed practice is when the teacher becomes aware there is a need for the information in their classroom practice.

4.1. Limitations and future directions

The current study has several limitations. The number of participants was initially 320. Due to only partial completion of some of the surveys, however, the number of participants included in the study decreased to 174. Future investigations may consider greater numbers of participants to conduct confirmatory analyses towards further exploring the relationship between variables. This could assist with accurate predictions of barriers and enablers when considering frameworks of practice to support teachers to engage in trauma-informed professional development.

Another limitation was teacher engagement in the study. The uptake of teachers in the survey was initially limited and a recruitment company for research studies was required to assist with gathering participants. Consequently, the population was broader and spanned different continents, including North America and Australia. This may have skewed results as it was a mixed cohort of mainstream primary school teachers.

4.2. Implications and contributions

This study identified some of the barriers and enablers of mainstream primary school classroom teachers to engagement in professional development related to trauma-informed classroom pedagogy. The findings highlight the need for teachers to be considered as significant stakeholders in a student's life experience. It is apparent that a teacher experiences motivation and energy to engage in learning about alternative classroom practices when they are made aware of and are included in the support processes conducted for a child. This further highlights the void that exists when external stakeholders do not consider classroom teachers when a student's circumstances change. It is apparent through the findings in this study and through those in the extant literature that teachers are in an optimal position to support students who are experiencing childhood abuse and neglect. For this to occur, however, they must be made aware that a child is experiencing adversity.

In both Study 1 and 3 of this research project, teachers discussed the mode of learning about trauma-informed pedagogy as an instrumental consideration to level of engagement. The suggestions that were offered provide a strong basis for a changing framework to support new ways for teachers to be offered professional development as schools move to trauma-informed care contexts. One contribution of this study is the development of an alternative framework of practice that supports teachers' engagement in learning, professional growth, and working with traumatised children, all of which could be integrated into a multi-tiered school culture. The strong correlations between the child-focused intervention and emotional responses of teachers themes are heavily influenced by timely communication about a child's changing needs, mode of learning and degree of whole-of-school adoption of trauma-informed practice. The outcomes of this research project could help to facilitate further data collection and synthesis across research and practice endeavors in future studies. This could therefore enable the evidence base to be strengthened, support from policymakers to refine strategic priorities, and data-driven decisions to support the retention of teachers and better outcomes for children who have experienced, or are currently experiencing, trauma.

CRedit authorship contribution statement

Simone Collier: Conceptualization, Methodology, Investigation, Data curation, Writing – original draft. **Karen Trimmer:** Methodology, Principal supervisor. **India Bryce:** Writing – review & editing, Supervision. **Govind Krishnamoorthy:** Writing – review & editing, Supervision.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

References

- Ajzen, I., & Fishbein, M. (1977). Attitude-behavior relations: A theoretical analysis and review of empirical research. *Psychological Bulletin*, 84(5), Article 888918. <https://doi.org/10.1037/0033-2909.84.5.888>
- Baker, C. N., Brown, S. M., Overstreet, S., Wilcox, P. D., & New Orleans Trauma-Informed Schools Learning Collaborative. (2021). Validation of the attitudes related to trauma-informed care scale (ARTIC). *Psychological Trauma: Theory, Research, Practice, and Policy*, 13(5), 505–513. <https://doi.org/10.1037/tra0000989>
- Bird, D., & Dominey-Howes, D. (2008). Testing the use of a 'questionnaire survey instrument' to investigate public perceptions of tsunami hazard and risk in Sydney, Australia. *Natural Hazards*, 45, 99–122.
- Bomber, L. M. (2020). *Know me to teach me: Differentiated discipline for those recovering from adverse childhood experiences*. Worth Publishing Ltd.
- Brown, S. M., Baker, C. N., & Wilcox, P. (2012). Risking connection trauma training: A pathway toward trauma-informed care in child congregate care settings. *Psychological Trauma: Theory, Research, Practice, and Policy*, 4(5), 507–515. <https://doi.org/10.1037/a0025269>
- Brown, M., Howard, J., & Walsh, K. (2022). Building trauma-informed teachers: A constructivist grounded theory study of remote primary school teachers' experiences with children living with the effects of complex childhood trauma. *Frontiers in Education*, 7(8). <https://doi.org/10.3389/educ.2022.870537>
- Cohen, J. (1992). A power primer. *Psychological Bulletin*, 112(1), 155–159. <https://doi.org/10.1037/0033-2909.112.1.155>
- Collier, S., Trimmer, K., Bryce, I., & Krishnamoorthy, G. (2022). Roadblocks and Enablers for Teacher Engagement in Professional Development Opportunities Aimed at Supporting Trauma-informed Classroom Pedagogical Practice. *Journal of Graduate Education Research*, 3, Article 10. <https://scholarworks.harding.edu/jger>.
- Daoud, J. (2017). Multicollinearity and regression analysis. *Journal of Physics: Conference Series*, 949(1).
- Department of Education and Early Childhood Development. (2010a). *Annual report. The communications division for strategy and coordination division*. Melbourne: Department of Education and Early Childhood Development.
- Felitti, V., Anda, R., Nordenberg, D., Williamson, D., Spitz, A., Edwards, V., Koss, M., & Marks, J. (1998). Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults: The Adverse Childhood Experiences (ACES) study. *American Journal of Preventative Medicine*, 14(4), 245–258.
- Field, A. (2018). *Discovering statistics using IBM SPSS statistics* (5th ed.). Sage Publications.
- Goodyear, V. A., & Casey, A. (2013). Innovation with change: Developing a community of practice to help teachers move beyond the 'honeymoon' of pedagogical renovation. *Physical Education and Sport Pedagogy*, 20(2), 186–203. <https://doi.org/10.1080/17408989.2013.817012>
- Kline, T. (1999). The team player inventory: Reliability and validity of a measure of predisposition toward organizational team-working environments. *The Journal for Specialists in Group Work*, 24(1), 102–112. <https://doi.org/10.1080/01933929908411422>
- Oral, R., Ramirez, M., & Coohy, C. (2016). Adverse childhood experiences and trauma informed care: The future of health care. *Paediatric Research*, 79, 227–233. <https://doi.org/10.1038/pr.2015.197>
- Patton, M. Q. (1990). *Qualitative evaluation and research methods* (2nd ed.). Sage.
- Perry, N. E., Walton, C., & Calder, K. (1999). Teachers developing assessments of early literacy: A community of practice project. *Teacher Education and Special Education*, 22(4), 218–233. <https://doi.org/10.1177/088840649902200404>
- Reeves, E. (2015). A synthesis of the literature on trauma-informed care. *Issues in Mental Health Nursing*, 36(9), 698–709. <https://doi.org/10.3109/01612840.2015.1025319>
- Sheatsley, P. B. (1983). Questionnaire construction and item writing. In P. Rossi, J. Wright, & A. Anderson (Eds.), *Handbook of survey research* (pp. 195–230). Academic Press.
- Strauss, A., & Corbin, J. (1998). *Basics of qualitative research: Grounded theory procedures and techniques*. Sage.
- Substance Abuse and Mental Health Services Administration. (2014). SAMHSA's concept of trauma and guidance for a trauma-informed approach. Rockville, Treevetan, R. (2009). Self-assessment of foot health, requirements, issues practicalities and challenges. *Journal of the American Podiatric Medical Association*, 5(99), 460–471. <https://doi.org/10.7547/0990460>
- de Thierry, B. (2017). *The simple guide to child trauma. What it is and how to help*. Jessica Kingsley.
- Tseng, F., & Kuo, F. (2014). A study of social participation and knowledge sharing in the teachers' online professional community of practice. *Computers & Education*, 72, 37–47. <https://doi.org/10.1016/j.compedu.2013.10.005>
- Valentino, A. L., & Juanico, J. F. (2020). Overcoming barriers to applied research: A guide for practitioners. *Behaviour Analysis Practice*, 13, 894–904. <https://doi.org/10.1007/s40617-020-00479-y>
- de Vaus, D. A. (1986). *Surveys in social research*. George Allen and Unwin.
- Wackerbarth, S. B., Streams, M. E., & Smith, M. K. (2002). Capturing the Insights of family caregivers: Survey item generation with a coupled interview/focus group process. *Qualitative Health Research*, 12(8), 1141–1154. <https://doi.org/10.1177/104973202236582>
- Winter, J., Gosling, S., & Potter, J. (2016). Comparing the Pearson and spearman correlation coefficients across distributions and sample sizes: A tutorial using simulations and empirical data. *Psychological Methods*, 21(3), 273.