An Investigation of the Fidelity to a Wraparound Process in New Zealand

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Wraparound was first piloted in New Zealand in 2004, but currently no research has been conducted on the delivery of the process within a New Zealand context. Fidelity research is essential to determine the level of adherence to the wraparound practice model. This study aimed to investigate: (a) the level of fidelity to the wraparound process for combined and individual respondent groups overall and for the 10 principles and 4 phases; (b) whether the whole wraparound process or only specific principles and phases were being delivered as intended; and (c) whether there was a significant difference between the ratings of fidelity between the four respondent groups. The Wraparound Fidelity Index Version 4 is widely used to measure Wraparound fidelity. The Wraparound Fidelity Index, version (WFI-4) is a series of four interviews administered to Wraparound facilitators, caregivers or parents, youth (age 11 or older), and team members. Interviews result in quantitative summaries of Wraparound fidelity, based on the ten principles and four phases of Wraparound. Participants included 16 wraparound teams, which included 10 youth, 16 caregivers, 16 team members, and 6 wraparound facilitators. The results from this study supported that overall the wraparound process, for this one program in New Zealand, has been delivered as it was intended to an above average level of fidelity. These results give a preliminary insight into how the wraparound process in this program is being delivered in New Zealand, what aspects of the wraparound process are being delivered well, and where delivery can be improved.

Keywords: Fidelity, Mental Health, New Zealand, Wraparound, Youth

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In recent years, there has been a growing emphasis on providing evidence-based treatments in the mental health field, particularly in child and adolescent mental health, to ensure accountability of services provided and to obtain better outcomes (American Psychological Association, 2006; Burns et al., 1999; Hoagwood, Burns, Kiser, Ringeisen, & Schoenwald, 2001). One intervention with an evidence base currently deemed as promising and research-based is the wraparound process (Suter & Bruns, 2009; Washington State Institute for Public Policy, 2016). Wraparound is an intensive and individualised care planning process guided by 10 philosophical principles (family voice and choice; individualised; strength-based; natural supports; collaboration; persistence; community based; culturally competent; team-based; and outcome based) and 4 phases (engagement, support and team preparation; initial plan development; implementation; and transition) which coordinates interventions, supports, and services for young people with serious mental health disorders and their families (Bruns, Walker, et al., 2004; Bruns et al., 2010; Burns et al., 1999). Originally pioneered in the United States of America (USA) in the 1980s it has since become increasingly popular and adopted around the world, including in New Zealand, as a community-based intervention to help young people remain and function more effectively in their communities (Bruns, Burchard, et al., 2004; Burns et al., 2000; Shailer et al., 2013). Studies investigating this process have indicated improved youth outcomes including reduced rates of hospitalisations, maintenance of youth within the community, reductions in mental health symptoms, and improved overall functioning (Anderson et al., 2008; Bruns et al., 1995; Kamradt, 2001; Mears et al., 2009; Vernberg et al., 2004; Yoe et al., 1996). While most studies have been conducted in the USA, with a diverse population; on average, study participants were most commonly identified as Caucasian 56.95% (*SD* = 29.99, range 0–88.24) and African American 23.10% (*SD* = 30.00, range 0–75.36) (Suter & Bruns, 2009). However, currently only limited research is available on this process within New Zealand (Shailer, Gammon, & de Terte, 2013).

Despite wraparound's popularity and studies supporting positive outcomes it has yet to be established as an evidence-based treatment (Bruns & Walker, 2010; Bruns et al., 2010; Suter & Bruns, 2008). Wraparound not being recognised as an evidence based treatment has constrained its implementation in New Zealand (Bruns & Walker, 2010; Bruns et al., 2010; Burns et al., 2000; Suter & Bruns, 2008). An important part of confirming wraparound or any intervention as evidence-based is to demonstrate its effectiveness in practice settings (American Psychological Association, 2006). To do this it must first be ensured that interventions have been implemented as they were intended by determining treatment fidelity so that conclusive statements can be made about treatment effects (Borrelli, 2011; Bruns et al., 2008; Dusenbury, Brannigan, Falco, & Hansen, 2003; Murphy & Gutman, 2012). In agreement, Walter and Petr (2008) assert that one of the main barriers to wraparound establishing a stronger evidence base is due to a lack of fidelity research.

The investigation of fidelity is particularly relevant for those interventions, such as wraparound, which are complex in their delivery and also serve complex populations (Leeuw, Goossens, de Vet, & Vlaeyen, 2009; Pullmann, Bruns, & Sather, 2013;

Rast & Bruns, 2003). Measuring fidelity determines how adequately a programme, or in this case the wraparound process, has been delivered in practice compared to its original specification and design (Mowbray et al., 2003; Walter & Petr, 2008). For wraparound, measuring fidelity requires an assessment of the adherence to the basic philosophy, principles, phases and activities of the wraparound process as well as the supports and organisational systems in place (Bruns, 2008b). A number of fidelity tools have been developed to assess the degree of wraparound implementation including interviews, team observation measures, and document reviews (Bruns, 2008c; Bruns et al., 2006; Epstein et al., 2003; J. S. Walker & Sanders, 2011). The most commonly used tool in wraparound fidelity research is the Wraparound Fidelity Index; now in its fourth version (WFI-4; Bruns et al., 2009).

The WFI-4 provides a comprehensive assessment of fidelity by obtaining the perspectives of four different categories of respondents, wraparound facilitators, caregivers, youth (over the age of 11), and team members, through structured interviews. Interviews take approximately 15-40 minutes resulting in quantitative summaries of Wraparound fidelity including: overall fidelity, fidelity of each of the ten Wraparound principles, and fidelity by activities in each of the four phases. (Bruns et al., 2009). The WFI-4 is designed to assess adherence to the principles and activities of Wraparound, which are considered to be the key foundation of proper Wraparound implementation (Bruns et al., 2013). A particular advantage of the WFI-4 is the ability to assess the entire wraparound process, wherever a given wraparound team is at in the process, through a single interview with a member of each respondent group. According to the standards of fidelity proposed by Bruns et al., (2008) for the WFI, the majority of studies using this as their fidelity measure have been found to be delivering the wraparound process as it was intended to an adequate or above average level of fidelity as determined by a score of 75% or higher (Bruns, 2010; Effland, Walton, & McIntyre, 2011; Moore & Walton, 2013; Painter, 2012; Walker, Pullmann, Moser, & Burns, 2012).

By evaluating wraparound fidelity, researchers, and service providers are able to make comparisons across wraparound programmes, assess programme drift and provide quality assurance. Information on the adherence to the wraparound process is also required to effectively and reliably measure the outcomes achieved and allow valid conclusions to be made on its effectiveness (Mowbray et al., 2003; Ogles et al., 2005; Rast & Bruns, 2003; Toffalo, 2000). In particular, to determine whether unsuccessful outcomes are due to a failure of the wraparound process itself or a failure to implement the wraparound process as it was intended (Bruns, 2008b; Mowbray et al., 2003; Perepletchikova, Treat, & Kazdin, 2007).

The importance of treatment fidelity is also relevant to client outcomes (Bruns, Suter, Force, & Burchard, 2005; Cox, Baker, & Wong, 2009). A number of studies into the fidelity of wraparound have found a relationship between higher model fidelity and positive client outcomes such as greater improvements in youth's functioning, wellbeing and problem behaviour including internalising and externalising behaviour (Bruns et al., 2005; Cox et al., 2009; Effland et al., 2011; Graves, 2005; Graves & Shelton, 2007). Bruns et al. (2005) found that wraparound fidelity was able to predict change in both child behavioural strengths and caregiver's perception of child progress. A bidirectional relationship between wraparound fidelity and client outcomes has also been suggested (Barfield, Chamberlain, & Corrigan, 2005). Barfield et al. (2005) found that youth who received high fidelity wraparound exhibited significantly better outcomes whilst those who received low fidelity wraparound had poorer outcomes with overall Child Behaviour Checklist scores that deteriorated across involvement in the wraparound process. Findings like these clearly highlight the significance of fidelity research in wraparound implementation and the need to include fidelity measurements in outcome studies to accurately determine effectiveness (Bruns, 2008b).

In 2004, wraparound was implemented as a pilot programme in one District Health Board in New Zealand and has served approximately 200 clients. It was introduced to a further District Health Board in 2013. However, it has yet to be determined how the wraparound process is being delivered in New Zealand. Fidelity investigations have been indicated to be of particular importance when a model has been first implemented in a new country and different cultural context to ensure adequate implementation (Randall, Wakefield, & Richards, 2012). Therefore, fidelity research confirming that the wraparound process adheres to the practice model is essential. Conducting such research is also a first step along the continuum of establishing an evidence base for wraparound in New Zealand (Bruns, 2008b; Ogles et al., 2005; Randall et al., 2012; Walter & Petr, 2008).

The current study investigated the fidelity of the wraparound process in New Zealand using the WFI-4. It was aimed to investigate: (a) the level of fidelity to the wraparound process for combined and individual respondent groups overall and for the ten principles and four phases as measured by the WFI-4; (b) whether the whole wraparound process or only specific principles and phases were being delivered as intended; and (c) whether there was a difference between ratings of fidelity between the different respondent groups interviewed with the WFI-4. It was hypothesised that: (a) the overall fidelity to the wraparound process in New Zealand, based on both combined and individual respondent groups, would be of at least an adequate level (75% or over; Bruns et al., 2008); (b) all elements, namely the four phases and ten principles, would be delivered to at least an adequate level of fidelity (75% or over); and (c) wraparound facilitator fidelity scores would be significantly higher when compared to other respondent groups of caregivers, youth, and team members. The last hypothesis was generated as when validating the WFI-4, wraparound facilitators were found to rate the fidelity to the wraparound process higher than caregivers, youth, and team members (Bruns, 2010). Therefore, it was believed that the same pattern could be predicted for the current investigation.

Methods

Research Design

A quantitative descriptive theory based evaluation of the wraparound process using a between-subjects, cross-sectional survey design was employed for this study.

Participants

Participants included 16 wraparound teams, which included 10 youth (6 females; 4 males) diagnosed with serious mental health disorders who ranged in age from 12 to 16 years (*M*=14.80; *SD*=1.62), 16 caregivers (14 females; 2 male), 16 team members (10 females; 6 males) and 6 wraparound facilitators (4 females; 2 males). The demographic data for youth in the 16 wraparound teams who consented to take part in this study is presented in Table 1. As 6 youth did not complete the WFI-4, the demographic data was also broken down by those youth who did and did not participate in the WFI-4 interview. All 16 wraparound teams were delivered the wraparound process from the same site and at the time of data collection had been in the wraparound process from 2.53 to 18.67 months (*M*=9.56, *SD*=4.9). The majority of the families identified as New Zealand European (37.5%, *n* = 6), followed by New Zealand Māori (18.8%, *n* = 3), New Zealand Māori/European (12.2%, *n*=2), Middle Eastern (12.5%, *n*=2), Other European (12.5%, *n*=2) and South African (6.3%, *n*=1). The majority of youth had been in school in the last 30 days (87.5%).

Table 1
Youth Demographic information

	Total Sample (n=16)	Youth who completed WFI-4 (n=10)	Youth who did not complete WFI-4 (n=6)
Age (years)			
Range	12-17	12-16	14-17
Mean (SD)	14.94 (1.44)	14.80 (1.62)	15.17 (1.17)
Time in Wraparound (months)			
Range	2.53-18.67	4.27-16.83	2.53-18.67
Mean (SD)	9.56 (4.9)	8.81 (3.9)	10.83 (6.45)
Gender			
Female	9 (56.25%)	6 (60%)	3 (50%)
Male	7 (43.75%)	4 (40%)	3 (50%)
Ethnicity			
New Zealand European	6 (37.5%)	3 (30%)	3 (50%)
New Zealand Māori	3 (18.75%)	2 (20%)	1 (16.67%)
New Zealand European/Māori	2 (12.5%)	1 (10%)	1 (16.67%)
Middle Eastern	2 (12.5%)	2 (20%)	-
South African	1 (6.25%)	1 (10%)	-
Other ethnicity	2 (12.5%)	1 (10%)	1 (16.67%)
Number of Mental Health Diagnoses*			
One mental health disorder	5 (31.25%)	3 (30%)	2 (33.33%)
Two mental health disorders	8 (50%)	6 (60%)	2 (33.33%)
Three or more mental health disorders	3 (18.75%)	1 (10%)	2 (33.33%)
Living Situation			
Single parent household	6 (37.5%)	4 (40%)	2 (33.33%)
Dual parent household			
Both biological parents	3 (18.75%)	2 (20%)	1 (16.67%)
Biological mother and stepfather	2 (12.5%)	2 (20%)	
Non-biological caregivers	1 (6.25%)	1 (10%)	
Dual parent household			
Both biological parents	3 (18.75%)	2 (20%)	1 (16.67%)
Biological mother and stepfather	2 (12.5%)	2 (20%)	
Non-biological caregivers	1 (6.25%)	1 (10%)	
Out of home placement	4 (25%)	1 (10%)	3 (50%)
Custody			
Family Whānau Agreements	12 (75%)	9 (90%)	3 (50%)
Full custody	4 (25%)	1 (10%)	3 (50%)

The wraparound process for the 16 teams was coordinated by one of six facilitators employed by the District Health Board. The wraparound facilitators had varying numbers of cases that participated in the study. One facilitator had five teams (31.25%), two facilitators had three (18.75%), another two facilitators had two (12.5%), and one facilitator had only a single wraparound team participate (6.25%).

Wraparound teams ranged from 6 to 13 members, with an average of 9.81 (SD = 1.94) team members. Direct family (e.g., birth mothers and fathers, adoptive parents, siblings and youth themselves) made up 35% of the total team composition. Natural supports (e.g. extended family, school and other support people identified by the family) made up 21% of team composition while formal supports (e.g. mental health workers, social workers, mentors) made up the majority at 44%.

The majority of caregivers who consented to be part of the research were the biological parents of the youth (81.25%, *n*=13). Other caregivers consisted of an adoptive parent (6.25%, *n*=1), an aunt who had full custody (6.25%, n=1) and a house parent from an out of home placement (6.25%, *n*=1). Team members included teachers or other school staff such as deans and school counsellors (31.5%, *n*=5), the young person's child and adolescent mental health worker (25%, *n*=4), the young person's social worker (18.8%, *n*=3), mentors (12.5%, *n*=2), a residential group home staff member (3.3%, *n*=1), and a counsellor (6.3%, *n*=1).

Sampling

Participants for the current study were recruited from the same District Health Board delivering the wraparound process in a metropolitan city in New Zealand. They were a self-selected sample derived from all participants who met the study criteria and who agreed to participate in the research. In order to be eligible to gain access to the wraparound service the youth must be diagnosed with a serious mental health disorder and have ongoing and active involvement with a community mental health service and a child welfare and/or youth justice service (The Intensive Clinical Support Service, 2006).

All clients over the age of 11 and enrolled in the wraparound process for at least 30 days (one month) between September 2012 and May 2013 were approached to participate in the study. Clients who did not meet these criteria were excluded from the study as specified by the WFI-4 administration manual (Bruns et al., 2009). A total of 31 clients were served by the wraparound process between September 2012 and May 2013. Twenty-six out of the 31 clients met eligibility criteria for this study and were approached along with their families by their wraparound facilitators to participate in the study. Of the 26

eligible clients who were approached, 16 consented to participate; this equated to approximately 61% of the total available sample.

Measure

Wraparound Fidelity Index – 4 (WFI-4)

The fidelity of the wraparound process was measured using the WFI-4. The WFI-4 is a structured interview which is administered either face-to-face or over the telephone to four types of respondents: parents or caregivers; youth (11 and over); wraparound facilitators; and team members. Examples of the types of questions included in the WFI-4 are: "did the family members select the people who would be on their wraparound team?"; "did the family and its team create a written plan of care that describes how the team will meet the child's and family's needs?"; and "are the supports and services in the wraparound plan connected to the strengths and abilities of the child and family" (Bruns et al., 2009).

The caregiver, facilitator, and team member WFI-4 forms consist of 40 items, whilst the youth interview form consists of 32 items. All items are scored as either No (0), Sometimes/Somewhat (1) or Yes (2). Higher scores indicate greater wraparound fidelity. The WFI-4 interviews are organised on the activities of the four phases of wraparound: engagement (6 items); planning (11 items); implementation (15 items) and transition (8 items). It is designed to evaluate the extent to which the activities of the four phases along with the ten principles (4 items per principle) of wraparound have been adhered to in the implementation of the wraparound process based on respondents' perception of experience. Total measure scores are obtained through an item average score. Interviewers are trained in how to administer and score the WFI-4 including inter-rater reliability criteria (Bruns et al., 2009; Pullmann et al., 2013).

The WFI-4 has indicated good psychometric properties (Bruns, 2010; Bruns et al., 2005; Pullmann et al., 2013). The total score demonstrates adequate (α=.83) to high (α=.92) levels of internal consistency for all respondent types (Bruns, 2010). However, alpha coefficients for phase subscales were not as high ranging from .51 to .82 and even lower again for the ten principles subscales ranging from .30 to .60, indicating caution when examining any between-group differences in WFI-4 subscale scores (Bruns, 2010). Construct validity has been supported using a Rasch partial credit model which indicates that the items on the WFI-4 capture a uni-dimensional construct (Pullmann et al., 2013). Good concurrent validity has been evidenced when correlated with the Team Observation Measure (r=.86; Bruns, 2010; Pullmann et al., 2013). There have also been consistent findings regarding the scores of the WFI-4 discriminating between wraparound and other types of service delivery conditions (Bruns, 2010; Bruns et al., 2009).

As the WFI-4 was developed based on demographics from the USA, it was necessary to adapt the demographic part of the WFI-4 index to fit a New Zealand context and demographic.

Procedure

Consent. Ethical approval for this study was obtained from the New Zealand Ministry of Health's, Northern Y Regional Health and Disabilities Ethics. Informed written consent was obtained from wraparound facilitators, team members, youth, and their legally responsible caregiver who participated in the study. All participants were informed both verbally and in writing that participation was voluntary and would in no way affect the service they would be given or their employment status. Before written consent was obtained information sheets were provided outlining the nature of the research project, their rights as participants, and what would be involved in the study including any benefits or risks.

All participants confirmed participation once the information sheet had been read and formal agreement was recorded through signature of the informed consent and assent sheets All wraparound facilitators employed by the District Health Board delivering the wraparound process consented to take part in the research project. Although only 10 youth decided to participate in the interview part of the study, consent from all 16 families was given to access data on their mental health files. Once consent was obtained from caregivers and youth, team members were selected. To ensure a representative sample as possible team members' roles were grouped into eight separate categories (i.e., social worker, child and adolescent mental health worker, school representative, family member, community member, mentor, house parent, and other service clinician) and randomly selected. Some team members were unable to be contacted as they were on annual leave during study recruitment or indicated that they would be on leave during the interview period. All team members selected and contacted agreed to participate.

Interviews

All interviews were conducted by the principal researcher who had no affiliation with the District Health Board or the program being evaluated. Interviews with the four categories of participants in a wraparound team were completed within no more than 30 days (one month) of each other. Interviews were conducted in person at a variety of locations and were completed where the participant felt most comfortable. All wraparound facilitator interviews were conducted in a room at the District Health Board where they worked.

Caregiver and youth interviews were mostly conducted at their homes while team members were predominantly interviewed at their place of work. If caregivers, youth, or team members did not want or were unable to be interviewed at their homes or places of work then the interviews were conducted in a room at the District Health Board. Each participant was interviewed individually except for some youth where the primary caregiver was present as the interview was carried out in the family home. Wraparound facilitators were interviewed first in most cases, so that any relevant information about risk or mental state could be communicated before the principal researcher went into the family's home. No specific order of interviewing was followed for caregivers, youth, and team members; rather it was based on participants' availability.

Confidentiality statements were provided so all participants were aware of the nature and limits of confidentiality including the extent to which any case sensitive or concerning information would be disclosed. Participants were

advised the interview would be recorded. Participants confirmed their consent and were given the opportunity to ask any questions before interviews proceeded.

For all participants the interview consisted of the WFI-4 interview followed by a series of qualitative questions developed specifically for this research project. This paper only focuses on the results of the WFI-4 interview. At the end of each interview participants were asked if they had anything else to add and were debriefed. Caregivers and youth were given a donation/koha of shopping vouchers to thank them for their participation in the study at the end of their interviews.

If indicated on the consent form participants would be mailed a summary of the results once the research had been completed. This process was followed for all participant groups (e.g., facilitators, families and team members.

Results

Representativeness of Sample

To ensure the sample was representative of the larger population served by the wraparound service a chi-squared test was calculated for gender and considered for ethnicity. A Mann-Whitney U was used for age at referral and amount of time in service.

The chi-squared analysis indicated that the sample did not differ by gender $X^2(1, N=203)=1.48$, $p=0.23$. Consideration was also given to compare ethnicity of the two groups, but the data was not sufficient to meet the assumptions of the test. The data obtained in this study is therefore able to be generalised based on gender, but not based on ethnicity.

The amount of time the young people were in the service did not significantly differ between the general wraparound service population (*mdn* = 271 days; mean rank 100.04) and the sample population (*mdn* = 347 days; mean rank 124.88) based on the number of days in service, $U=1130.00$, $p>0.05$(ns), $r=-0.11$. However, age at referral for the larger wraparound service population was significantly lower (*mdn* = 13 years; mean rank 99.51) than the age of the study population (*mdn*=14 years; mean rank 131.09), $U=1030.50$, $p<0.05$, $r=-0.15$. This result was likely due to the age cut off of 11 used for this study to meet the specifications of the WFI-4.

Wraparound Fidelity Calculation

Bruns et al. (2009) recommend that an item average score is calculated and then divided by the total possible item score to get a fidelity percentage when some items either have a response of 'I don't know' or 'not applicable', which was true for this data set. To determine the level of fidelity to the wraparound process, fidelity percentages were calculated based on item average scores for combined and individual respondent groups.

An item average calculation was used for two reasons. First, to ensure the fidelity score would not be artificially deflated and affect the validity of the results based on the missing data. Second, it was used because there were six youth forms which were unable to be collected due to the young person being too unwell or in crisis, having an intellectual disability, or the young person or parent not consenting for them to take part in the research. The missing youth forms meant that the total number of items when all forms were combined was different for those with uncompleted youth forms. An item average score provided a more robust calculation as it allowed the fidelity calculation to be consistent across all respondents even if there was an uncompleted form (e.g., youth form).

The standards of fidelity determined by Bruns et al. (2008) were used to provide a metric for comparison and levels of fidelity. Bruns et al. (2008) advise that wraparound fidelity percentage scores on the WFI of: 85 to 100 indicate high fidelity; 80 to 85 above average fidelity; 75 to 79 average fidelity; 70 to 74 below average fidelity; and scores below 69 indicate a non-wraparound level of fidelity (Bruns et al., 2008).

Wraparound Fidelity

The first question of this study was to evaluate the level of fidelity to the wraparound process in regards to overall delivery of the process based on combined and individual respondent groups. In addition, evaluation of the fidelity ratings of the 10 principles and 4 phases was sought. In this article total mean item averages were provided on the WFI-4 for 16 families and a total of 48 participants.

Total fidelity

The overall fidelity of the wraparound process rated across all respondent groups was 81.83% (SD = 6.53) which falls in the above average range. The wraparound facilitator respondent group rated the overall fidelity the highest at 88.25% (SD=6.99) indicative of high fidelity wraparound, followed by youth (M=81.08; SD=11.45) and team members (M=79.71; SD=9.09) both scoring the wraparound process within the above average fidelity range. The caregiver respondent group rated the overall fidelity of the wraparound process the lowest at 78.74% (SD=8.49), but this score still indicates adequate wraparound fidelity falling in the average range. Figure 1 illustrates these findings. These results supported the hypothesis that the overall fidelity of the wraparound process would be at least of an adequate level (75% or above) for combined respondents and individual respondent groups.

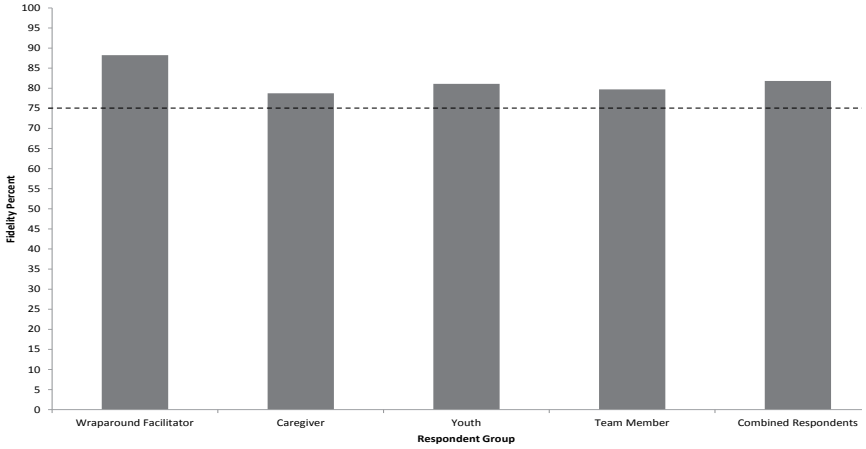

Figure 1: WFI-4 total fidelity perentage overall and by respondent group

Fidelity by phase

The mean fidelity percentage score for combined respondents across the engagement (M=84.31; SD = 6.78) and planning (M= 81.62; SD = 8.97) phases fell within the above average range. The implementation phase had the highest mean fidelity score for combined respondents falling in the high fidelity range (M=85.19; SD=5.74). The transition phase was rated the lowest falling in the below average range (M=73.63; 15.18). The hypothesis that all phases would be delivered to at least an adequate level was not supported.

When broken down by respondent group the transition phase had the lowest mean fidelity score for the wraparound facilitator (M=84.94; SD=14.26), team member (M=72.69; SD=21.24) and caregiver (M=67.75; SD=22.76) respondent groups. Caregivers rated this phase the lowest out of all respondents. Despite the implementation phase receiving the highest mean fidelity score for combined respondents (M=85.19; SD=5.59), when analysed individually, only youth respondents rated this phase the highest (M=89.10; SD=9.75). The engagement phase was rated highest by the wraparound facilitator (M=90.25; SD=11.23), followed by the caregiver (M=86.69, SD=10.10) and team member (M=84.94; SD=13.08) respondent groups. Youth respondents, on the other hand, had the lowest mean fidelity rating for the engagement phase (M=69.30; SD=16.66). Figure 2 illustrates the average fidelity.

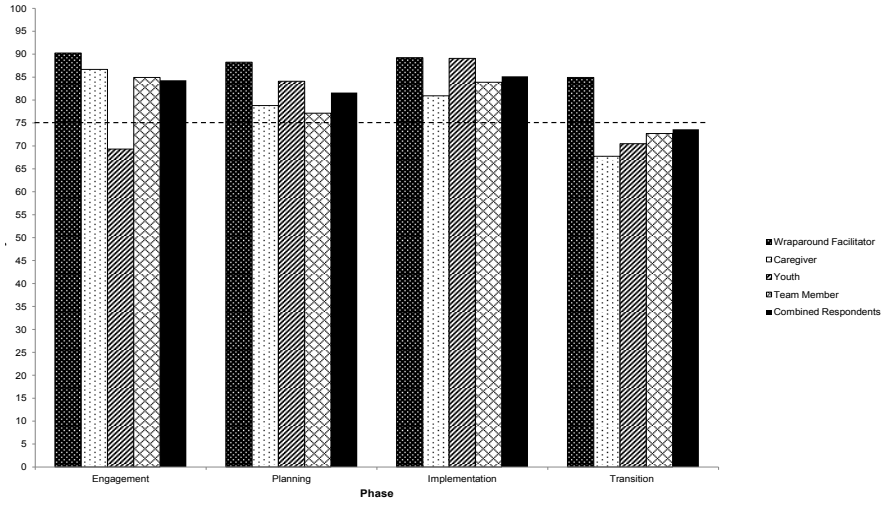

Figure 2: WFI-4 fidelity percentage by phase and respondent group

Comparison between phases for combined respondents

To test whether there was a significant difference between the total mean fidelity ratings of each phase for combined respondents the Kruskal-Wallis test was used. A significant difference was found between the engagement (mean rank=36.25), planning (mean rank=32.16), implementation (mean rank=39.44) and transition (mean rank=22.16) phases, with H(3)=7.89, p=0.05. Pairwise comparisons with adjusted p-values showed that the statistically significant difference was between the implementation and transition phase (p=.05, r=0.46). The implementation phase (mean rank=39.44) was ranked significantly higher than the transition phase (mean rank=22.16). No other significant differences between the four phases were found at the p<0.05 significance level.

Fidelity by principle

The hypothesis that all wraparound principles for combined respondents would be rated at an adequate level of fidelity was not supported as two principles fell in the below average range of fidelity or lower (i.e., community-based services and natural supports). When combined respondent fidelity scores were analysed by principle, eight out of the ten principles were rated at an average level of fidelity or higher. Figure 3 illustrates these findings.

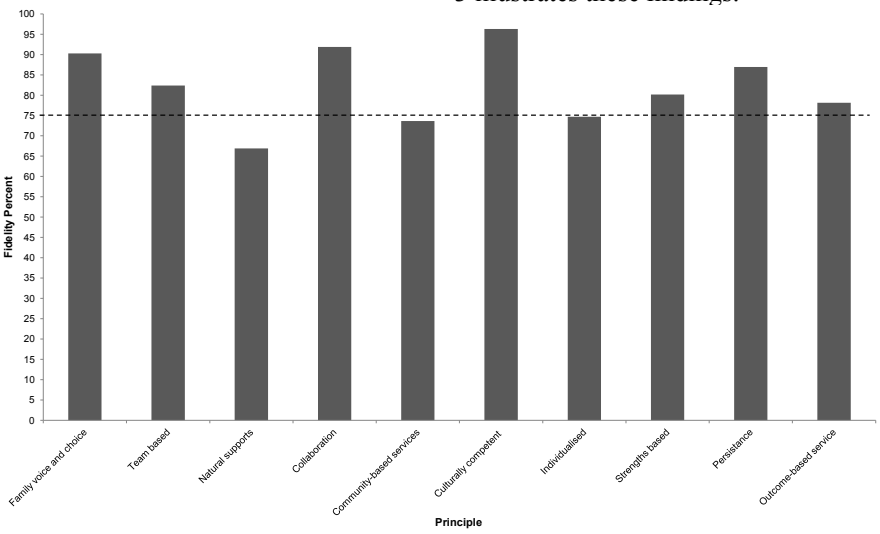

Figure 3: WFI-4 fidelity percentage by principle for combined respondents

Those principles which had high fidelity ratings included: culturally competent (M=96.29, SD=3.59), collaboration (M=91.88, SD=6.53), family voice and choice (M=90.28, SD=9.89), and persistence (M=86.95, 9.22). The principles of team-based (M=82.36, 7.23) and strength-based (M=80.15; SD=12.85) were rated at an above average level of fidelity, while the principles of outcome-based (M=78.12, SD=15.86) and individualised (M=74.69, SD=10.40) were rated at an average level of fidelity. The principles rated the lowest were community-based services (M=73.63, SD=13.42) falling in the below average level of fidelity and natural supports (M=66.90, SD=15.16) falling into the non-wraparound level of fidelity. That is, the delivery of natural

supports was perceived by combined respondents as not having met the criteria for wraparound.

Comparison between principles for combined respondents

The Kruskal-Wallis test was also used to determine whether there was a significant difference between the mean fidelity ratings of the ten principles. A significant difference was found between the ten principles, $H(9)=69.44$, $p=0.00$. Mean ranks and significant differences are listed in Table 2.

Table 2

Kruskal-Wallis mean ranks for ten principles

Principle	N	Mean Rank
Culturally competent*	16	135.44
Collaboration**	16	114.28
Family voice and choice***	16	109.22
Persistence****	16	95.06
Team-based	16	74.97
Strengths-based	16	72.38
Outcome-based	16	68.5
Community-based services	16	49.41
Individualised	16	48.44
Natural supports	16	37.31

*Culturally competent was ranked significantly higher than the principles of natural supports ($p=0.00$, $r=1.09$), individualised ($p=0.00$, $r=0.94$), community-based services ($p=0.00$, $r=0.93$), outcome-based ($p=0.00$, $r=0.72$), strengths-based ($p=0.01$, $r=0.68$), and team-based ($p=0.01$, $r=0.65$).
**The principle of collaboration was ranked significantly higher than the principles of natural supports ($p=0.00$, $r=0.83$), individualised ($p=0.00$, $r=0.71$) and community-based services ($p=0.00$, $r=0.70$).
***Family voice and choice was ranked significantly higher than the principles of natural supports ($p=0.00$, $r=0.78$), individualised ($p=0.01$, $r=0.66$) and community-based services ($p=0.01$, $r=0.65$).
****The principle of persistence was ranked significantly higher than the principle of natural supports ($p=0.19$, $r=0.62$).

Differences in fidelity ratings between respondent groups

A one-way ANOVA was used to test whether there was a significant difference between the ratings of fidelity between the four respondent groups. A significant difference was found $F(3, 54)=3.77$, $p=0.02$, $w^2=0.13$. Hochberg post-hoc comparisons indicated that the wraparound facilitator respondent group rated the fidelity of the wraparound process significantly higher than the caregiver ($p=0.02$, $r=0.88$) and team member ($p=0.02$, $r=0.75$) respondent groups. Comparison between the wraparound facilitator and youth respondent group was not statistically significant ($p=0.26$, $r=0.70$). No statistically significant differences were found between the fidelity ratings of the respondent groups whom received the wraparound process, namely, caregivers, team members, and youth. As there was no significant difference between the wraparound facilitator and youth fidelity ratings, the hypothesis that the wraparound facilitator respondent group would rate the fidelity to the wraparound process significantly higher than the other respondent groups was only partially supported.

Due to six youth not completing the WFI-4 an exploratory one-way ANOVA was conducted, with the data removed for those cases which did not have youth forms, to determine whether the significant difference between ratings of fidelity remained without these six cases. When cases were removed for those which did not have youth data no significant difference remained between the mean fidelity score of the four respondent groups $F(3, 36) = 2.60$, $p>0.05$, $w^2=0.11$.

Discussion

Fidelity research is an essential component in confirming that models in practice are being delivered as they were intended. This study aimed to investigate the overall fidelity and implementation of the wraparound process in New Zealand based on combined respondents as well as the fidelity of the essential elements which make up wraparound, namely its ten principles and four phases. As perception often differs across individuals and groups the study also sought to examine whether the four different respondent groups interviewed with the WFI-4 differed in their perceptions of the fidelity to the wraparound process (Bruns, 2010).

The results confirmed, that overall, the wraparound process in New Zealand is being implemented as it was intended. In support of hypothesis one, individual and combined respondents rated the fidelity to the wraparound process to at least an average level or higher on the WFI-4. High fidelity elements included the implementation phase, and the principles of cultural competence, collaboration, family voice and choice, and persistence. Low fidelity elements of the process were identified as the transition phase, as well as the principles of natural supports and community-based services. The low fidelity scores in these areas did not support hypothesis two that all elements of the wraparound process would be delivered to at least an adequate level of fidelity. Finally, wraparound facilitators were found to rate the fidelity to the wraparound process significantly higher than team members and caregivers. However, no significant difference was found between the fidelity ratings of wraparound facilitators and youth. This finding only partially supported hypothesis three; that wraparound facilitators would rate the fidelity to the process significantly higher than other respondent groups.

Combined Respondents: Fidelity, Phases, and Principles

The overall fidelity score for combined respondents reached an above average level of fidelity based on the criteria established by Bruns et al. (2008). This fidelity rating is relatively consistent with studies of wraparound fidelity using the WFI-4 (Bruns, 2010; Effland et al., 2011; Moore & Walton, 2013; Painter, 2012; Walker et al., 2012). The high and low fidelity ratings of the four phases and ten principles were also in line with previous findings (Bruns, 2010; Cox et al., 2009; M. A. Moore & Walton, 2013). Research into the fidelity of wraparound consistently indicates low fidelity scores in the areas of transition,

natural supports, and community-based services and high scores in areas such as implementation, cultural competence, persistence, and family voice and choice (Bruns, 2010; Cox et al., 2009; Moore & Walton, 2013). These findings indicate a degree of consistency in both the prescribed elements and the overall delivery of wraparound in New Zealand compared to established wraparound processes in the USA (Bruns, 2010; Cox et al., 2009; Effland et al., 2011; Moore & Walton, 2013; Painter, 2012; J. S. Walker et al., 2012).

Of those studies which provide fidelity data for the phases of wraparound the transition phase appears most difficult to establish adherence to. In the validation study of the WFI-4, similar trends to the current study across phases were found, with the implementation phase having the highest fidelity rating and the transition phase the lowest (Bruns, 2010). M. A. Moore and Walton (2013) corroborated this finding of low fidelity to the transition phase in their study. Natural supports and community-based services have also been commented in the wraparound literature to be the most difficult to establish and connect with (Cox et al., 2009; Moore & Walton, 2013). In particular, the principle of natural supports has often been reported as the lowest scoring principle (Cox et al., 2009; Moore & Walton, 2013). Due to the low fidelity ratings of community-based services and natural supports, both of which are the long term support system for families and young people, it is therefore not surprising that the transition phase was also rated at below average fidelity.

A large part of the transition phase is around preparing families and young people to leave the formal wraparound process which involves transitioning the family to informal and natural supports within their community (Walker et al., 2004). Natural supports and community-based services provide families and young people with ongoing support to create a sense of safety and security after the wraparound process has ended (Bruns, Walker, et al., 2004). The transition phase is always hard for families as an intensive service is stepping out and there can be uncertainty and concerns regarding the future. However, if natural supports and community-based services are not established and integrated into the family's life this can make transition even more difficult and is likely, as was the case in the current study, to lead to lower perceived adherence to this phase.

A potential reason for low fidelity to the principle of community-based services in the current study is the limited range of community-based services available in the area that wraparound is being delivered in New Zealand. The service delivering the process has indicated that in their operational and catchment area there are less community-based services available to them than in other areas. The limited range of community-based services has been an ongoing barrier and struggle for wraparound in New Zealand to establish a community network to support families and young people with high and complex mental health needs. The service providing the wraparound process is continuing to develop and form relationships with community agencies in the area and recognise this is an area for improvement.

In New Zealand, developing and including natural supports in the wraparound process has also been identified as a key challenge (Shailer et al., 2013). Many of the families who come into the wraparound process are isolated from their extended family and their communities meaning they have a limited natural support system. While one of the aims of the process is to enhance natural supports for families, this also requires the commitment of the family, youth, and team to identify, reach out, engage with, and bring on board natural supports from the family's extended family or community (Bruns & Walker, 2008). Unfortunately, families with natural supports may feel too ashamed about their situation to include them in the process (Dalder, 2006). Therefore, families' and young people's reluctance to share what could be viewed as personal family issues may have impacted or constrained the ability to include or increase natural supports in the wraparound process leading to the low fidelity to this principle (Dalder, 2006).

One strategy used by the wraparound process in the USA to increase the involvement of families' natural supports is the incorporation of 'family support partners' or 'peer counsellors' who are employed to support families (Miles, 2008a). These are individuals that have been through the wraparound process or mental health system and bring that perspective to the family and team (Miles, 2008a; Penn & Osher, 2008). By discussing their own experiences they can often help to normalise the need for, and inclusion of, natural supports for families who may be reluctant or concerned (Meyers & Miles, 2003). This peer support system is not yet available in New Zealand, but it is currently in the process of being advocated for, as it could potentially provide a bridge to helping families reach out to natural supports. However, due to the driving principle of family voice and choice in regards to their wraparound team, if families do not want extended family or other community members involved in their wraparound process this choice must be respected (Penn & Osher, 2008).

Individual Respondent Groups

Individual respondent groups of wraparound facilitators, caregivers, youth, and team members all confirmed the fidelity of the wraparound process. As was shown in this study, wraparound facilitators have consistently been evidenced to rate the fidelity to the wraparound process as high (Bruns, 2010; Painter, 2012). Previous research has also supported the finding that wraparound facilitators rate the fidelity significantly higher than other respondent groups (Bruns, 2010). The high fidelity ratings by wraparound facilitators is theorised to be at least partially due to the fact that they were rating their own delivery of service which may have led to an inflation of fidelity scores (Painter, 2012).

Inconsistent with previous findings, all respondent groups who received the wraparound process in New Zealand, namely caregivers, youth, and team members, perceived the delivery of the process relatively consistently. In research investigating wraparound fidelity, caregivers and team members have been found to report higher levels of fidelity than youth (Bruns, 2010; J. S. Walker et al., 2012). In the current study, no significant differences were found between the ratings of perceived fidelity between caregivers, youth, and team members.

In the sample, six youth did not

complete the WFI-4 as consent was not provided by the youth and/or caregiver. This was primarily because the young person declined to participate, was in crisis or was deemed by the caregiver to be too unwell or did not have the intellectual capacity to participate. An interesting finding was that when the wraparound facilitator, caregiver, and team member fidelity data for these six cases were removed a consistent perception of fidelity to the wraparound process was indicated across all four respondent groups. This insignificant finding could be due to the loss of statistical power to detect significant differences between respondent groups based on a reduced sample size (Field, 2013). Alternatively, a preferred explanation is that this finding suggests the variation in scores between wraparound facilitators, caregivers, and team members may have been due to the differences in fidelity ratings for these six youth. Consistent with this theory, studies investigating youth non-participation have suggested that youth who do not consent or participate in mental health research may represent a particular subset of clients (de Winter et al., 2005; Groves, Cialdini, & Couper, 1992; Noll, Zeller, Vannatta, Bukowski, & Davies, 1997). These youth may exhibit higher levels of psychopathology, lower cognitive ability, and maladjustment (de Winter et al., 2005; Noll et al., 1997). This could have impacted on respondents' perceived fidelity to the process and potentially led to artificially high fidelity scores for the youth respondent group without these six cases, and lowered fidelity scores for caregivers and team members with the inclusion of these six cases.

Limitations and Future Research

A number of limitations to this study should be noted. At the time this study was conducted only one service was delivering the wraparound process in New Zealand. This meant the current study involved only one self-selected service implementing the wraparound process which was well established. This may impact on the ability to generalise the current findings to other wraparound processes, in particular, to new wraparound processes which may be set up in New Zealand in the future. As wraparound processes which are considered to be in the later stages of development, have been found to have higher levels of fidelity, than those in earlier stages of development (Effland et al., 2011). Future research could potentially investigate the fidelity between well established and newly formed wraparound processes in New Zealand. This research could help to identify mechanisms which could be put in place to quickly facilitate the delivery of high fidelity wraparound.

The clearest limitation in this study is the small sample size which may have impacted on the ability to detect significant effects in the analysis due to insufficient statistical power. In addition, since the sample was from the same service many of the families involved in this study also had the same wraparound facilitator, which increased the likelihood of confounded results and restricted the variance in fidelity scores (Bruns et al., 2005). Equally, as wraparound facilitators were serving more than one family involved in the study they completed the WFI-4 for each family they served, which could have led to additional inflation of the wraparound facilitators ratings of fidelity.

Participants in this study were a self-selected sample of those families who were willing and consented to be part of this research. As families self-selected to be part of this research they may not have been a representative sample of all families involved in the wraparound process and could have been more likely to be experiencing success through the process (Bruns et al., 2005; Olsen, 2008). The representativeness of the sample is particularly worthy to note regarding ethnicity. In the current study the sample was predominantly New Zealand European and could not be generalised based on ethnicity. Therefore, although high fidelity to the principle of cultural competence indicates great promise for this process in a New Zealand context, this result should be interpreted with caution as the current findings are unable to be generalised to those of different ethnicities. Future research studies in New Zealand should investigate this process and its fidelity with those of different ethnicities and cultures, in particular, for New Zealand Māori. This may also need to include an adaption of some questions in the WFI-4 to be more relevant to New Zealand cultural values and beliefs, such as the integration or reflection of the principles from the Treaty of Waitangi, which are an integral part of New Zealand culture and in the delivery of culturally responsive interventions for Māori (Durie, 1989, 2011; Herbert, 2002).

Finally, it could be considered a limitation of this study that client outcomes were not evaluated. However, in the current study it was only aimed to establish whether and how well the wraparound process was being implemented in New Zealand. An advantage of solely focusing on fidelity was that multiple perspectives could be obtained on wraparound delivery. This allowed for a comprehensive understanding of the adherence to the wraparound process. Nevertheless, future research needs to be conducted regarding the outcomes of this process and its effectiveness as well as the relationship between outcomes and fidelity within this setting.

One difficulty in comparing fidelity ratings across studies which have used the WFI-4 is that different studies use different respondent forms to evaluate fidelity. Effland et al. (2011) used fidelity ratings only from the wraparound facilitator form while Walker et al. (2012) assessed the fidelity of the wraparound process using the caregiver and youth forms. Alternatively, Painter (2012) and Moore and Walton (2013) determined fidelity through the use of the caregiver, youth, and wraparound facilitator forms. The total fidelity score on the WFI-4 of a given wraparound process is determined by combining all respondent groups interviewed. However, each study has only used certain respondent groups to obtain their fidelity score. This makes it difficult to directly and accurately compare the fidelity of the wraparound process across studies; especially considering that most published studies only report the total fidelity score for combined respondents (Effland et al., 2011; M. A. Moore & Walton, 2013; Painter, 2012; Walker et al., 2012). Future research could potentially consider standardising the use of all forms to allow for accurate comparisons between the implementation of wraparound in different areas.

Implications and Conclusions

The findings from this study aid in understanding how Wraparound is being delivered within a New Zealand context from both a consumer and delivery perspective. It provides an initial model of adherence for the wraparound process which may act as a baseline for future studies. It is also the first step in beginning to establish an evidence base for the use of the wraparound process in New Zealand.

While, the results indicated that the wraparound process is being delivered as it was intended and adhering closely to its practice model, there were areas of relative strength and areas for improvement. The principles which were rated with high fidelity were those which the wraparound facilitator or service had some direct impact or control over such as providing a culturally competent service, working collaboratively, persisting with service delivery, and giving young people and families a voice and choice. Low fidelity aspects of the model included the transition phase, natural supports, and community-based services which appear to be consistent with other wraparound sites in the USA (Bruns, 2010; Cox et al., 2009; Moore & Walton, 2013). Although consistent with the wraparound fidelity literature these findings support the need for greater community and natural supports involvement in New Zealand. This may include continued relationships being formed with community agencies and the introduction of formal or informal peer support consistent with 'family support partners' used in the USA (Miles, 2008a). Such peer support may be a valuable inclusion to the wraparound process in New Zealand to increase fidelity to the principle of natural supports as these individuals have faced similar issues and are familiar with the wraparound process (Miles, 2008a; Penn & Osher, 2008). They would bring first-hand experience of the usefulness of natural supports within the community and understand the personal challenge of reaching out to friends and families. Providing peer support may help to increase family's willingness to access and include natural supports in their wraparound process and lives (Meyers & Miles, 2003; Penn & Osher, 2008).

The findings of the current study clearly indicate the need for more research on the wraparound process within a New Zealand context. Continued research should be conducted on the fidelity of the process which employs a larger, more culturally diverse sample, and includes outcomes in their investigation. Future studies should also include data from more than one wraparound site (whether from New Zealand or overseas) so that relationships between populations served, processes, fidelity, and outcomes can be explored.

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