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THE WRAPAROUND PUZZLE: CONFIRMATORY FACTOR ANALYSIS OF THE  
WRAPAROUND FIDELITY INDEX

A Dissertation Presented

by

Jesse C. Suter

to

The Faculty of the Graduate College

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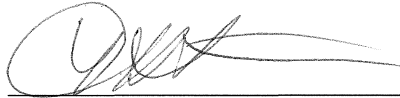
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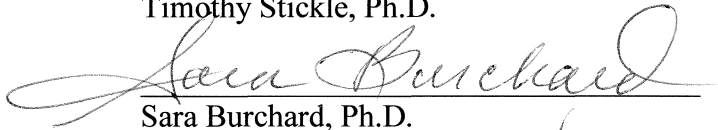
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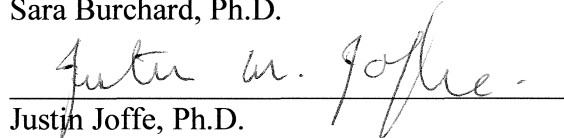


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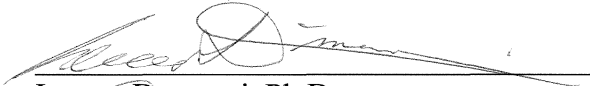
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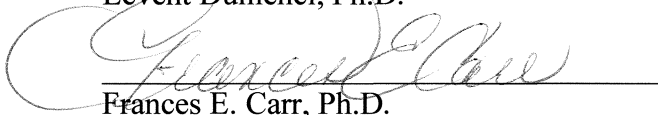


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## Abstract

With its widespread use across the country and increasing evidence of its effectiveness, the wraparound process has been accepted widely as a feasible alternative to restrictive residential treatments for children with severe emotional and behavioral disorders. Yet wraparound has been implemented and conceptualized in such a variety of ways that many have begun to question whether it truly is a single definable approach. Recently, a conceptual model for wraparound was offered that included ten essential elements as the key ingredients for this approach. Subsequently, the Wraparound Fidelity Index (WFI) was designed to measure the degree to which an intervention adheres to these ten elements. The purpose of the current study was to use data collected via the WFI to provide the first empirical test of wraparound's conceptual model. Programs providing wraparound to children with severe emotional and behavioral disorders and their families used the WFI to collect data from caregivers (n = 481), youths (n = 355; 11 to 19 years), and resource facilitators (n = 610). Confirmatory factor analysis (CFA) was used to test the fit of a series of structural models consistent with the proposed element model of wraparound. First, CFA models were examined separately for each of the elements. Second, CFA models that represent the full wraparound model were tested, separately for each of the three informants. And third, a multitrait-multimethod (MTMM) analysis was conducted using a final CFA model including all elements (traits) and the three informants (methods). Findings supported the majority of elements and WFI items when tested separately at the first step. However, at the second step, only the youth model provided adequate fit to the data. Significant modification was necessary to yield admissible solutions for the caregiver and resource facilitator models. Finally, an inadmissible solution resulted when the three informants and revised model were tested in step three. Implications of the findings for the wraparound process, the WFI, and future research are discussed.

## Dedication

This dissertation is dedicated to John Burchard  
my mentor, advocate, and friend.

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First, I thank my committee for their support and guidance throughout my dissertation. Thanks to Timothy Stickle for taking over the advising reigns of my dissertation midrace, and providing excellent guidance and problem solving. Levent Dumenci was invaluable for lending his expertise on latent variable modeling, and reminding me that best rule of thumb is to have no rule of thumb at all. Justin Joffe, Ruth Hamilton, and Sara Burchard have provided me with ongoing support and encouragement throughout this project and my graduate career. Their ideas have helped shape me both professionally and personally. Finally, my mentor John Burchard introduced me to wraparound and research based in social action. I cannot thank him enough for his mentoring, believing in me, and friendship.

Second, I thank my colleagues from the Wraparound Evaluation and Research Team, Eric Bruns and Kristen Leverentz-Brady. It is an honor to work with them and continue to expand the role of our little group in improving the lives of children and families.

Third, I thank the collaborating agencies, service providers, children, and families who participated in this study. Their participation, feedback, and commitment helped develop and shape the Wraparound Fidelity Index in addition to making this study possible.

And fourth, I thank my family for their love and support that helped me see this project through to the end. Neverending thanks and love to Michelle, Disco, Marshal, Saint, and Monte for keeping me sane and reminding me that there is more to life than research.

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## Introduction and Literature Review

Reports by the World Health Organization (Murthy et al., 2001), the National Institute of Mental Health (National Advisory Mental Health Council, 2001), and the Surgeon General (US Department of Health and Human Services, 1999, 2000) have warned that the negative effects of emotional and behavioral problems on children<sup>1</sup> constitute an international public health crisis. Estimates indicate that 9% to 13% of children experience emotional and behavioral disorders severe enough to significantly limit their functioning (Friedman, Katz-Leavy, Manderscheid, & Sondheimer, 1996; Friedman, Katz-Leavy, Manderscheid, & Sondheimer, 1999). By the year 2020, such child disorders are expected to rise by over 50% internationally and become one of the five most common causes of childhood morbidity, disability, and mortality (Murthy et al., 2001). The concern for meeting the mental health needs of children with severe emotional and behavioral disorders in the U.S. is underscored further by the fact that adolescents (12 to 18 years) represent the fastest growing age group in this country (Friedman, 2001).

Although the symptoms of psychiatric disorders are debilitating alone, these children also experience disproportionately high rates of trauma (Fairbank, Booth, & Curry, 2002), poverty (Costello, Gordon, Keeler, & Angold, 2001), coercive family relationships (Patterson, 1982), comorbid conditions (Bird, Gould, & Staghezza, 1993), substance use (Kandel et al., 1997), and poor academic achievement (Greenbaum et al., 1996). Though far from being exhaustive, these and other stressors can overwhelm a

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<sup>1</sup> The term *children* was used throughout this document to refer to children and adolescents 0 to 18 years of age. The term *youth* was used to describe children 11 years and older, typically the study participants.

struggling child's ability to cope effectively (Sandler, Wolchik, MacKinnon, Ayers, & Roosa, 1997). The need for effective mental health services for children has arguably never been greater, yet that need remains largely unmet (Kataoka, Zhang, & Wells, 2002). Estimates of children with severe emotional and behavioral problems who are not receiving any mental health services range from 72% (for non-minority children) to 82% (for Latino and African American children). It is clear that, many children have serious mental health needs that often go unmet.

In light of such challenges faced by children, one might reasonably question whether most interventions for children with emotional and behavioral problems are effective. A growing group of researchers, practitioners, and consumers have called for a “revolutionary change” (Burns & Hoagwood, 2002, p. ix) to the delivery of mental health interventions to better meet the needs of these children. Traditionally, the most intensive mental health services for children were offered in offices or residential institutions (Duchonowski, Kutash, & Friedman, 2002), and thus separate from the places children live and learn. The community mental health approach has long challenged the belief that individuals with severe emotional and behavioral problems must be removed from their homes and local communities to receive the most effective treatments (Lourie, 2003). For child and family services, the community model is exemplified in the system of care movement (Stroul, 2003; Stroul & Friedman, 1986). Advocates for the systems of care model have been extremely effective at creating systemic changes at the state and federal levels to allow more community-based mental health treatments for children, adolescents,

and their families (Stroul, 2003; Tolan & Dodge, 2005). It is in this context of community based advocacy that the wraparound process first developed.

Wraparound has been consistently classified by researchers and policy makers as a promising approach for meeting the challenges faced by children with severe emotional and behavioral disorders while maintaining them in their local communities (Burns, Hoagwood, & Mautsby, 1998; Burns, Hoagwood, & Mrazek, 1999; New Freedom Commission on Mental Health, 2003; Tolan & Dodge, 2005). With widespread use across the country (Faw, 1999) and increasing evidence of its effectiveness (Burchard, Bruns, & Burchard, 2002), the approach has been accepted widely as a feasible alternative to restrictive residential placements. Despite these advances, there is surprisingly little agreement about what wraparound is and how to implement it (Goldman, 1999; Rosenblatt, 1996). Perhaps due to its widespread popularity without clear model specification, both the scope and boundaries of this approach remain too broad.

So what can help improve the specification of a widely disseminated, but poorly defined model? One possibility is an approach developed to improve the poor dissemination of clearly specified models. The Clinic/Community Intervention Development Model ([CID], Hoagwood, Burns, & Weisz, 2002), was introduced to facilitate connections between research and practice. The primary purpose of the CID model was to address findings that treatments found to be efficacious in carefully controlled experiments did not seem to be nearly as effective (if at all) when evaluated in real-world clinics (Weisz, Weiss, Han, Granger, & Morton, 1995). To that end, the model

includes eight steps: (a) construct, refine, and manualize the intervention where it will ultimately be delivered (e.g., clinic, office, school, etc.); (b) conduct initial efficacy trials under controlled conditions; (c) test the protocol with single cases; (d) conduct an initial effectiveness trial; (e) conduct a more thorough effectiveness study; (f) evaluate the effectiveness of treatment variations, key ingredients, moderators, mediators, and costs; and finally (g) disseminate the intervention, testing its quality and sustainability in new settings. The authors asserted that the CID model provides a useful framework for grounding developing treatments in the practice settings in which they will ultimately be used. However, it also provides a guide for assessing the current status of wraparound. Although wraparound originally developed in communities across the United States, it was neither theoretically based nor carefully specified, much less manualized. Thus, at least half of the first step was skipped before it was disseminated broadly (step g) and only more recently tested under real-world conditions (steps d through f). The result of this has been an evidence base that is difficult to interpret and, though it may seem promising, one that fails to provide clear directions for research and practice. If wraparound is to move forward as a viable and evidence-based intervention, researchers must return to refining its scope so the process may be better understood, implemented, and evaluated.

To address this need for further refining our understanding of wraparound, this introduction covers three key areas. First, it is important to begin with how wraparound has been conceptualized in the literature, including its definition, hypothesized key elements, and principles. This definition is particularly important because in the past few

years there have been two major efforts to provide guidance on the scope of wraparound (Burns, Hoagwood, & Mrazek, 1999; Walker & Bruns, 2003). Second, the outcome literature is reviewed as a basis for demonstrating that wraparound is indeed a promising approach, but it is sorely in need of further specification. Third, a discussion of treatment fidelity and recent measures that have attempted to assess adherence to the wraparound process is provided.

### *Wraparound Process*

It is important to begin examining the research on wraparound by considering how wraparound has been defined and conceptualized in the literature. Much of the research on wraparound has progressed in the absence of explicit definitions, leaving readers to guess what definition the authors had in mind, or simply to assume that their personal definition of wraparound is shared with the authors. The lack of clarity and consensus in conceptualizing this area has led to some interventions being identified as wraparound even though they violate some of its strongest beliefs (Rosenblatt, 1996).

### *Definitions*

The first use of the term *wraparound* to refer to a comprehensive community-based intervention has been attributed to Dr. Lenore Behar in 1986 (cited in, VanDenBerg, 1999). The term came from the idea that children and families with complex and multisystemic needs required an integrated array of services and supports to be “wrapped around” them to maintain them in their local communities. Other terms have been used to describe this approach including *wrap-around* (Parmelee, 2000), *individualized services*, and *individualized service / support planning* (ISP, Walker,

Koroloff, & Schutte, 2003). Regardless of the term that is used, at its core, wraparound seeks to provide whatever services and supports are necessary for the child and family, and for as long as they are needed (Burchard, Bruns, & Burchard, 2002).

Initial demonstrations of wraparound's unconditional commitment to provide services to high risk children and their families developed as alternative treatments to out-of-state residential placements. In Illinois, the Kaleidoscope Program employed an array of services and supports for families with children at risk of residential placement (VanDenBerg, 1999). Overtime the program moved from a group home model to diverting the same level of supports to maintain children with their families. In 1985 the state of Alaska faced a fiscal crisis and cut funding to pay for out-of-state placements for children. As a recipient of a federal grant through the newly developed Child and Adolescent Service System Program ([CASSP], Lourie, 2003) the state government decided to use the funding to create a program based on Kaleidoscope called the Alaska Youth Initiative (AYI). AYI became a vehicle for integrating the system efforts of CASSP and the values of Kaleidoscope. At AYI the first formally identified family team was created (VanDenBerg, 1999), and since that time the team planning process has become nearly synonymous with wraparound (Walker, Koroloff, & Schutte, 2003).

The foregoing brief history highlights three themes critical for conceptualizing and defining wraparound. First, wraparound did not begin as a carefully defined intervention, but rather developed organically, acquiring components and values based on the individuals and agencies that practiced it. Second, wraparound's connection to federal and state programs was solidified early in its development. This connection led to wide

dissemination across the country in short span of time. And third, because wraparound was a novel and flexible approach to delivering mental health care to children, many services, methods, and overarching goals had to be created in an ongoing fashion. That need for creativity continues today as team members seek to provide the services and supports that meet given children's and family's unique needs.

As wraparound interventions established themselves across the country, increasing calls were raised for clarification of exactly what constitutes wraparound (Rosenblatt, 1996). Administrators and practitioners began to call for standards, and researchers and program evaluators struggled to find a way to measure the effectiveness of an intervention that varied dramatically from community to community and family to family (Goldman, 1999). By the mid-1990s the field had witnessed four national conferences on wraparound (Burchard, Bruns, & Burchard, 2002), a training manual for service providers (VanDenBerg & Grealish, 1998), a special issue in the *Journal of Child and Family Studies* (Clark & Clarke, 1996), and a survey of state administrators indicating that as many as 200,000 children may have been receiving wraparound (Faw, 1999). However, no nationally recognized definitions or standards existed and the number of increasingly diverse examples of interventions labeled wraparound continued to rise.

In 1998, a group of 16 nationally recognized wraparound experts and advocates met at Duke University to address the continued confusion over how to conceptualize wraparound (Burns, Hoagwood, & Mrazek, 1999). Fulfilling one of the primary goals of the meeting, the wraparound leaders reached consensus on a definition of wraparound:

Wraparound is a philosophy of care that includes a definable planning process involving the child and family that results in a unique set of community services and natural supports individualized for that child and family to achieve a positive set of outcomes. (p.10, Goldman, 1999)

The definition contains several key elements that represented attempts to succinctly address concerns raised about whether an intervention was truly wraparound or not. The *philosophy of care* indicates that wraparound is best conceptualized as a process or framework (VanDenBerg & Grealish, 1996) rather than a specific intervention. The commonly used term *wraparound services* is therefore misleading because it implies that a single service or support (e.g., flexible funds) constitutes wraparound. A particular service may or may not be administered within the wraparound process. Wraparound also should employ a *definable planning process*, meaning that a cooperative plan should be developed that meets a child's and family's particular strengths and needs. Finally, the goal of the plan is to *achieve a positive set of outcomes*, rather than to simply reduce negative outcomes. Although this definition falls far short of a manual or blueprint for providing wraparound, it improves clarity and solidly places wraparound within a strengths-based perspective.

### *Components*

At the same meeting in 1998, the group created two lists of core components or key ingredients for the wraparound process (Goldman, 1999). The first set of components included ten essential elements that were hypothesized to constitute the scope or “essence” (p. 12) of wraparound. Table 1 presents these elements with brief descriptions

for the reader's quick reference. The second set listed ten requirements for practice that represent an operationalization of the wraparound process (see Table 2). Although the requirements for practice are necessary for implementing wraparound, the elements are especially important for understanding its scope. The elements are considered interrelated, as well as distinct dimensions that collectively create the construct of wraparound. As such, it is important to provide more than a tabular description of the elements.

*Voice and choice.* The first element refers to the necessity for active involvement and decision making on the part of the family. This component includes the concepts of *access* (family has the option to be included in decision making), *voice* (family is listened to by the team), and *ownership* (family agreed with all decisions made) (Goldman, 1999). Although, team members and professionals should actively participate in the planning process, the family must remain the ultimate decision maker. One of the benefits of this approach is that families do not have to relinquish control in order to receive services. Further, with families acting as partners, rather than as patients, they should be less reliant on professional sources of support.

*Youth and family team.* The second element emphasizes the importance of teams in the wraparound process. Often team formation is the first step in implementing wraparound for a particular family. Walker has written extensively about teams within wraparound, and she defined a team "as the caregiver and youth and at least two or three other consistently attending core members [e.g., friends, family, service providers] who are charged with creating and implementing plans" (pp. 3-4, Walker, Koroloff, &

Schutte, 2003). Another key component of the youth and family team is the resource coordinator (also referred to as resource facilitators or care managers), whose job is to implement the wraparound process with the family (Burchard, Bruns, & Burchard, 2002). Unlike interventions provided solely by professionals, within wraparound, team members actively work together to identify strengths, needs, and goals, as well as coordinate and implement services.

*Community-based.* The third wraparound element is considered the impetus for the development of the wraparound process: providing local, community-based services and supports rather than removing children from their families and communities to serve them. As described previously, wraparound programs developed historically from a need to keep the children with their families and communities. The argument is that whatever services are provided, they will ultimately be more effective if administered in the least restrictive environment possible. There remains little evidence for or against the effectiveness of placing children in residential treatment centers or in-patient hospitals (Burns & Goldman, 1999; M. Little, Kohm, & Thompson, 2005). Although such a placement may be necessary to ensure a child's safety during a crisis, the wraparound process endorses such a plan of action only as a last resort.

*Cultural competence.* Element four is endorsed by many in the mental health arena (Cross, Bazron, Dennis, & Isaacs, 1989; US Department of Health and Human Services, 2001), yet remains an elusive construct. Extending beyond cultural sensitivity (adopting a nonjudgmental stance toward other cultures), cultural competence includes a range of beliefs, values, facts, and strategies that help service providers work effectively

with families of different cultural backgrounds (Singh, 1998). D. W. Sue and D. Sue (Sue & Sue) outlined three aspects of cultural competence. First, they stated that providers must develop an awareness of their internalized assumptions, values, and biases. They must explore their own cultural background and consider what role their personal experiences may play in their interactions with others. Second, culturally competent providers seek to gain knowledge about the particular group(s) with whom they are working. Being open to learning about other groups' experiences creates opportunities to gain critical knowledge necessary for working with them. And third, awareness and knowledge are insufficient without providers learning and applying effective skills for working with diverse populations. Examples of culturally competent skills include adopting different roles (e.g., active consultant vs. passive aide) and communication styles (verbal and nonverbal) to better match a particular cultural group. Because culture is infinitely varied and always changing, cultural competence is considered an ongoing process rather than an end point (Sue & Sue, 2003).

*Individualized and strengths-based.* This element involves providing unique services and supports that capitalize on the child and family's strengths. Individualized services require a comprehensive assessment at the beginning of the wraparound process in order to identify the specific strengths and needs of the family. From that assessment a unique array of services can begin that may be very different from other families, even if they receive support from the same communities and providers.

*Natural supports.* The wraparound process strives to utilize a combination of formal clinical interventions and natural supports that exist or are created in the

community (Burns, Schoenwald, Burchard, Faw, & Santos, 2000). The primary purpose is to connect families with supports that are likely to be longer lasting than professional services. They may also be less stigmatizing and less expensive than professional services. Examples include summer camps, big brother/sister programs, and including neighbors and other community members on the team. While natural supports may be created for a family, wraparound strives to make changes in the services and in the communities to fit the child and family rather than the child having to be forced into existing categorical services.

*Continuation of care.* The seventh element dictates that providers should offer as much support as the family requests, unconditionally. No time limits should be imposed on the treatment and services are provided no matter what (Burns, Hoagwood, & Mrazek, 1999). This element is considered one of the oldest aspects of the wraparound process (VanDenBerg, 1999) and perhaps provides the greatest distinction between this approach and traditional time-limited interventions.

*Collaboration.* Element eight calls for active collaboration among team members, as well as service agencies, and is essential for providing integrated services.

Traditionally, mental health services are provided in a categorical and disjointed manner. For example, a child may be having trouble at home and at school, but qualify for services only in the home due to different eligibility criteria for mental health and special education. For teams to be effective, members must actively strive to work together. This is particularly critical for children with severe emotional and behavioral problems because nearly half of those receiving services are served by multiple sectors (Farmer,

Burns, Phillips, Angold, & Costello, 2003; Farmer, Stangle, Burns, Costello, & Angold, 1999).

*Flexible resources.* Element nine highlights the need to provide, and sometimes even to create, the individualized services and supports that a youth and family may require. As such, the funding system must be flexible enough to support such creativity. Managed care companies and Medicaid sometimes balk at paying for community-based interventions such as wraparound because the approach does not fit within a single, federally defined category. Successful implementations of wraparound have found creative ways to pool funding from multiple sources (ideally at higher administrative levels than the team). In that way funds could be immediately available to pay for the child and family's individualized (and perhaps rapidly changing) needs.

*Outcomes-based.* Finally, element ten stresses the importance of measuring meaningful outcomes. A goal for many of today's mental health interventions is providing evidence of progress and incorporating accountability into treatment. Although there are many ways to emphasize outcomes, a routinely used one on the team level is to include specific measurable goals into the treatment plan. Once clear objectives are established, they can be monitored for improvements or slippages overtime. Changes in outcomes can thus be immediately incorporated into the team's decision-making process.

### *Theory of Wraparound*

Though this relatively new conceptualization of wraparound greatly increased its specificity and provided an initial step toward improved practice standards, these gains should not be taken to indicate that wraparound developed from a formal theory of

change (Burchard, Bruns, & Burchard, 2002). Unlike mental health interventions that developed in controlled university settings as specific applications of theory (e.g., Behavior Therapy, Skinner, 1971), wraparound's roots grew from a combination of values from the community mental health movement, federal initiatives, and alternative treatments (Lourie, 2003). This does not mean, however, that wraparound is atheoretical. On the contrary, wraparound's development from multiple sources across different settings has allowed it to incorporate several prominent theories in its model of care.

Perhaps the most readily apparent theory that is consistent with the wraparound process is Bronfenbrenner's social-ecological model (Bronfenbrenner, 1977).

Wraparound, sharing values with systems of care (Stroul & Friedman, 1986), considers itself "child centered and family focused," which places its focus squarely at the center of Bronfenbrenner's ecological model. Social ecological theory emphasizes that a child's development occurs within and across multiple, interdependent, contexts including the family, organizations, and local communities. Wraparound applies this theory by trying to enact changes across multiple levels of ecology through youth and family teams (Bronfenbrenner's individual and microsystem levels), community-based services (exosystem), and cultural competence (macrosystem).

Another concept that Bronfenbrenner emphasized was stress experienced by individuals making ecological transitions. Such transitions are periods in which an individual is formally changing roles or moving across ecological levels (e.g., marriage, job loss, becoming a father). Wraparound recognizes the impact of such stressors by preventing unnecessary and potentially harmful transitions (e.g., out-of-state placements)

and actively preparing for others (e.g., including teachers in the plan before an upcoming graduation). The process for addressing these transitions occurs through effective collaboration among the family, providers, and service agencies.

Empowerment theory (Rappaport, 1987) provides further support that wraparound rests on a theoretical foundation. Rappaport stressed that empowerment is a multilevel construct that includes determination and control over one's own life as well as social influence on one's community. On the team level, empowerment includes the family's ability to identify their own strengths and needs and subsequently choose and coordinate their own services and supports (Evans & Armstrong, 2002). Wraparound facilitates this ideal through the active involvement of family members (Voice and Choice) and identification of family or community strengths and resources (Natural Supports). Additionally, the availability of flexible funds gives the family more control over the array of services and supports (Flexible Resources).

Finally, wraparound has been related (Burchard, Bruns, & Burchard, 2002) to social learning theory (Bandura, 1977). Social learning theorists emphasize the role of cognition in how people interpret and learn from their experiences. Learning and change occur based on the interplay between individuals and their environments, and the same cognitive processes can lead to adaptive or maladaptive behaviors. The wraparound process adheres to this theory by tailoring interventions to the unique strengths and needs of each person and setting. This strategy is embodied in wraparound's individualized and strengths-based approach. Because learned behaviors can be resistant to change,

wraparound also emphasizes an unconditional commitment (Continuation of Care) to provide individualized services as long as they are needed.<sup>2</sup>

### *Target Population*

Wraparound provides an intensive approach to service delivery that is not for everyone. Not all children need to receive an integrated array of services and supports coordinated by a youth and family team. Children whose mental health needs can be met by a single service (e.g., office-based psychotherapy) or support (e.g., mentoring), do not need wraparound. Although studies have shown that wraparound is typically less costly than residential placements (Bruns, Burchard, & Yoe, 1995; Hyde, Burchard, & Woodworth, 1996; Kamradt & Meyers, 1999) it does require more resources than traditional time-limited interventions. Therefore, wraparound is recommended for children with serious needs that span multiple service domains (e.g., education, child welfare, juvenile justice). These children have alternately been labeled children with: *emotional disturbances* (Bickman, Summerfelt, & Noser, 1997), *serious emotional disturbances* (Henggeler, Schoenwald, Rowland, & Cunningham, 2002), *complex needs* (VanDenBerg & Grealish, 1998), and poignantly, *unclaimed children* (Knitzer, 1982), referring to the failure of traditional categorical services to meet the needs of these children.

The target population for the wraparound process primarily has been youths who have been at risk of residential placement and their families (Burchard, Bruns, & Burchard, 2002). However, programs using the wraparound process have also targeted

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<sup>2</sup> For those keeping track of the elements I related to these three theories, I left out the element *Outcomes-Based*. Every good theory requires careful operationalization, measurement, and review. As such, this final element is equally relevant to all three theories discussed.

preschool students (Burns, Schoenwald, Burchard, Faw, & Santos, 2000), children in foster care (Clark, Lee, Prange, & McDonald, 1996; Clark et al., 1998), and even older adults and families coping with severe medical problems (Goldman, 1999). The current study focused on children with *severe emotional and behavioral disorders* (SEBD, Burns & Hoagwood, 2002). SEBD refers to children and adolescents (0 to 18 years) diagnosed with emotional or behavioral disorders from the *Diagnostic and Statistical Manual, fourth revision* (American Psychiatric Association, 1994) resulting in significant impairment that limits their role or ability to function at home, school, or in the community.<sup>3</sup> This definition has the advantage of not limiting the target population to those with particular risk factors or served by certain agencies, and is also not so broad as to include children who have a DSM-IV diagnosis in the absence of functional impairment.

No nationally representative epidemiological studies have been conducted on the prevalence of mental disorders in childhood and adolescence. However, several studies have provided consistent estimates on children and adolescents with SEBD. Friedman and his colleagues (Friedman, Katz-Leavy, Manderscheid, & Sondheimer, 1996; Friedman, Katz-Leavy, Manderscheid, & Sondheimer, 1999) estimated that approximately 20 percent of children from birth to 21 years met criteria for any mental disorder. When the criteria were changed to include functional impairment, the estimate dropped to 9-13% for substantial impairment, and 5-9% for extreme impairment.

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<sup>3</sup> This is the same definition used to define a *serious emotional disturbance* as operationalized by the Center for Mental Health Services (Center for Mental Health Services, 1998, December). However the U.S. Department of Education uses the same term with a different definition, so the more general term *severe emotional and behavioral disorders* (SEBD) was used for the current study.

Similarly, findings from the Methods for the Epidemiology of Child and Adolescent Mental Disorders study indicate that 21% of youth had diagnosable disorder, 11% with moderate impairment, and 5.4% with extreme impairment (Leaf et al., 1996; Shaffer et al., 1996). The Great Smoky Mountain Study of Youth examined both diagnostic status and functional impairment of 9, 11, & 13-year-olds and found that 20.3% met diagnostic criteria alone, while 11.1% met diagnostic and functional impairment criteria (Costello et al., 1996). Achenbach and his colleagues used the Child Behavior Checklist rather than diagnostic interviews and found that approximately 21% of a national sample had Total Problem scores in the borderline or clinical range (Achenbach, Dumenci, & Rescorla, 2003). Translating these estimates into numbers based on the 2000 U.S. Census, approximately 15 million youth met criteria for a mental disorder, more than 7 million with substantial impairment, and over 3 million with extreme impairment (Annie E. Casey Foundation, 2002, May). These estimates for the latter two categories most accurately fit the definition of SEBD, suggesting over 10 million affected children in the U.S.

### *Summary*

Wraparound developed from a combination of grassroots enthusiasm and policy pressures that led to its evolving conceptualization over the past two decades. It remains a highly praised and popular model (New Freedom Commission on Mental Health, 2003), but concerns continue to be raised about its lack of specificity and clear standards (Burchard, Bruns, & Burchard, 2002). Recent efforts by wraparound advocates yielded a definition and list of key components (Burns, Hoagwood, & Mrazek, 1999), yet this

move toward conceptual clarity of wraparound has not been systemically translated into universal standards for practice. As such, many of the treatment outcome studies fail to provide clear conceptualizations of wraparound and some describe interventions that appear to violate core values of the approach (Rosenblatt, 1996). If increased specificity continues to elude research on wraparound then the model is in danger of becoming simply another treatment fad and more well-defined professional and restrictive services will take its place, if only because they can be more easily defined, implemented, and evaluated.

The Duke University group (Burns, Goldman, Faw, & Burchard, 1999) represented a first step in providing necessary guidance and standards for wraparound. In the summer of 2003, a second meeting was held for wraparound leaders culminating in the National Wraparound Initiative (Walker & Bruns, 2003). Hosted by the Portland Research and Training Center, wraparound advocates met and established two overarching goals: (a) to develop consistent indicators of high-quality wraparound at multiple levels (team, program, and system) and (b) to compile specific strategies to facilitate implementation of high-quality services (Walker, Koroloff, & Schutte, 2003). The hope is that this will lead to greater specificity of wraparound and its core components. However, the ongoing need for such specification nearly 20 years after wraparound was first introduced underscores the continuing difficulty faced by practitioners and researchers as they struggle to implement and evaluate this approach.

### *Wraparound Evidence Base*

This section reviews the empirical evidence base for wraparound. While the wraparound process has been described as having a promising body of evidence (Burns, Hoagwood, & Mrazek, 1999; National Advisory Mental Health Council, 2001; New Freedom Commission on Mental Health, 2003), not everyone is convinced (Bickman, Smith, Lambert, & Andrade, 2003). Concerns about the state of the evidence include: too few studies, use of poor designs, small samples, and inconsistent findings. These are hardly trivial problems. Because the most recent review of wraparound outcome studies was completed several years ago (Burchard, Bruns, & Burchard, 2002), an updated review was conducted to provide context for the current study.

Eligible studies for this review were identified through electronic and manually based searches of the literature between January 1, 1986 and January 31, 2003. First, the 15 studies identified from the previous review were included.<sup>4</sup> Second, the Web of Science, PsycINFO and ERIC electronic databases were used to search for the keywords: *wraparound*, *wrap-around*, *individualized services*, and *individualized service plans*. Third, a manual search was conducted of the *Journal of Child and Family Studies*, *Journal of Emotional and Behavioral Disorders*, and the annual research conference proceedings of *A System of Care for Children's Mental Health: Expanding the Research Base* hosted by the University of South Florida, Louis de la Parte Florida Mental Health Institute, Research and Training Center for Children's Mental Health. These three sources were chosen because they have been the primary outlets for research on wraparound. This

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<sup>4</sup> A few of these studies had been updated (e.g., Illback, Neill, Call, & Andis, 1993; Illback, Nelson, & Sanders, 1998). In those cases only the most recent account of the study was included in the present review.

review included some unpublished and non peer-reviewed sources (e.g., conference proceedings and dissertations) due to the small total number of studies and because these sources were included in previous reviews (Burchard, Bruns, & Burchard, 2002; Burns, Hoagwood, & Mrazek, 1999). However, wraparound treatment outcomes presented in annual reports, newsletters, or other non-research outlets were not included in this review. Taken together, this review was designed to represent an exhaustive summary of the published evidence base on wraparound.

To be included in this review, a study had to meet the following criteria: (a) the intervention must be identified as wraparound or be sufficiently described as sharing the primary components of wraparound; (b) it must target children rather than adults; (c) it must include some measure of treatment outcome. No restrictions for inclusion were placed on studies with regard to design,<sup>5</sup> statistical analysis, or sample size. Clearly these are important criteria for evaluating the research base, yet these restrictions would have eliminated several studies commonly cited as providing evidence for wraparound's effectiveness. The primary goal for the current review was to include all empirical outcome studies in order to evaluate the full breadth of this literature.

The outcome studies are presented in Table 3 with the following sections: study citation and source (e.g., journal article, book chapter, etc.), brief program description, description of the participants, primary measures and findings, and notable details of the study analyses. Effect sizes were calculated for study findings whenever sufficient information was available (e.g., means, standard deviations). By Cohen's convention

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<sup>5</sup> However no new qualitative case studies, beyond the two identified by previous reviews, were included in this review.

(Cohen, 1992), effect sizes have been classified as small ( $d = .20$ ), medium ( $d = .50$ ), and large ( $d = .80$ ).

This literature search yielded 26 studies (11 more than the previous review, Burchard et al., 2002) including: 3 case study designs (2 qualitative and 1 multiple-baseline); 16 pretest-posttest single group designs; 4 quasi-experimental (non-equivalent comparison group designs), and 3 randomized clinical trials. The studies were presented in peer-reviewed journals ( $n = 10$ ), conference proceedings ( $n = 8$ ), doctoral dissertations ( $n = 4$ ), book chapters ( $n = 3$ ), and a single published monograph. Excluding the case studies, initial sample sizes ranged from  $N = 23$  to  $N = 954$ . However the largest study (Illback, Neill, Call, & Andis, 1993) was an extreme outlier, being a five year evaluation of a statewide program. Attrition rates also varied widely, ranging from a low of 0 to a high of 92%. The majority of participant attrition was due to incomplete data rather than participants dropping out of treatment. For example, one program stated that 324 participants received wraparound, yet data were available for only 27 (Robbins & Collins, 2003). Many questions have legitimately been raised about the quality of the wraparound evidence base. As such, it is especially important to evaluate the methodologies as well as the findings of this literature. Grouped by study design, the following sections briefly summarize the findings of these 26 empirical studies highlighting their strengths and limitations.

### *Qualitative Case Studies*

Two qualitative case studies<sup>6</sup> described two of the earliest formal applications of the wraparound process (Burchard, Burchard, Sewell, & VanDenBerg, 1993; Cumblad, 1996). These two studies have frequently been cited in the literature as providing compelling evidence for the positive changes wraparound can achieve for children with SEBD (Burns & Hoagwood, 2002; Burns, Hoagwood, & Mrazek, 1999). The first study, conducted as a doctoral dissertation, provided a retrospective qualitative analysis of eight youth with SEBD receiving care through Chicago's Kaleidoscope Program (Cumblad, 1996). This program targeted children in the child welfare system with histories of abuse and neglect. After receiving services through Kaleidoscope for an average of three years, there was no longer any evidence of maltreatment and none of the participants were removed from their families. Further, the participants no longer presented the behaviors that led to their initial referrals.

Burchard and his colleagues authored a thorough description and evaluation of the Alaska Youth Initiative ([AYI] Burchard et al., 1993). AYI was modeled after the Kaleidoscope Program, and the authors' description of the model of care closely paralleled that program. This evaluation was also conducted retrospectively using qualitative data from interviews and record reviews of ten children with SEBD. Overall, nine of the youth were successfully maintained in community settings following the intervention (five no longer required services and four needed less intensive supports).

These case studies provided a wealth of qualitative information regarding both outcomes and implementations of wraparound. As descriptions of the Kaleidoscope

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<sup>6</sup> The multiple baseline case study is reviewed in the *Experimental studies* section.

Program and AYI, they have been used as rationale and as guides for creating new wraparound interventions around the U.S. However, it is important to note that these case studies do not provide definitive evidence connecting wraparound and positive outcomes. No comparison groups were used, participants were not selected at random (in fact the participants from AYI were selected because they were deemed successful cases), and findings were collected retrospectively. As such, selection bias is a strong threat to validity. Therefore, the studies should be interpreted as offering evidence for *potential* or *best case* outcomes. Because these two case studies sufficiently achieve that goal no other case studies are included in the present review.

#### *Pretest-Posttest Studies*

The majority of the outcome studies reviewed (n = 16) used a pretest-posttest, no control group design (Anderson, Kooreman, Mohr, Wright, & Russell, 2002; Bartley, 1999; Bruns, Burchard, & Yoe, 1995; Clarke, Schaefer, Burchard, & Welkowitz, 1992; Eber, Osuch, & Redditt, 1996; Eber, Osuch, & Rolf, 1996; Hyde, Woodworth, Jordan, & Burchard, 1995; Illback, Neill, Call, & Andis, 1993; Kamradt, Kostan, & Pina, 1998; Kamradt & Meyers, 1999; Kutash, Duchnowski, Sumi, Rudo, & Harris, 2002; Lyman & de Toledo, 2002; Robbins & Collins, 2003; Seybold, 2002; Toffalo, 2000; Yoe, Santarcangelo, Atkins, & Burchard, 1996). As such they conducted within subjects comparisons across time, typically measuring outcomes at intake and 6 to 12 months later ( $M = 11.71$  months). The advantage of this design over the qualitative case study design is that it includes larger (and ideally more representative) samples and often employs standardized measures of outcomes. However, due to lack of comparison groups, these

studies cannot confirm that any observed changes occurred as a result of wraparound. Consequently, they provide evidence that wraparound may be associated with positive outcomes but should not be used to infer causal relationships.

Although all of these studies indicated that the participants received wraparound, the interventions were fairly heterogeneous with regard to setting, participants, and the types of outcomes measured. Many of the interventions provided services in the home and community, though several others also (or exclusively) took place in schools. Most of the youth fit criteria for SEBD, yet referral problems ranged from imminent risk of hospitalization to impaired functioning at school. Some interventions served primarily child or adolescent groups, while others simply targeted anyone 21 years or younger. Collectively, the studies provide evidence that children were able to remain in their communities following wraparound. Other reported findings were more difficult to interpret due to the range of measures used (e.g., assessing behavior problems, functioning and impairment, restrictiveness of living, etc.). Burchard and colleagues (2002) noted that there was some evidence for greater improvements at home than at school (Clarke, Schaefer, Burchard, & Welkowitz, 1992; Eber, Osuch, & Rolf, 1996; Kutash, Duchnowski, Sumi, Rudo, & Harris, 2002), however the null findings in the schools could be explained by the relatively low power of these studies. Findings from the four pretest-posttest studies with adequate power (Anderson, Kooreman, Mohr, Wright, & Russell, 2002; Illback, Neill, Call, & Andis, 1993; Kamradt & Meyers, 1999; Seybold, 2002) showed significant improvements on behavior problems and functioning following wraparound.

### *Quasi-Experimental Studies*

Three quasi-experimental studies were identified that had been published since the last review on wraparound (Burchard, Bruns, & Burchard, 2002) bringing the total to four.<sup>7</sup> These studies (Bickman, Smith, Lambert, & Andrade, 2003; Hyde, Burchard, & Woodworth, 1996; Reay, Garbin, & Scalora, 2003; Resendez, 2002) adopted pretest-posttest, non-equivalent comparison group designs. This design exerts a greater level of control over the independent variable (i.e., provision of wraparound) than either of the previously discussed designs, allowing the researcher to be more confident that changes in outcome may be attributed to the intervention. This does not mean, however, that this type of design allows one to unequivocally make causal inferences because none of these studies was able to completely rule out potential confounds. Yet, quasi-experimental designs represent a major leap forward in methodology, therefore I discuss each of these studies in turn.

The earliest of these quasi-experimental studies was conducted in urban Baltimore with children returned or diverted from residential out-of-state placements (Hyde, Burchard, & Woodworth, 1996). The authors examined outcomes for four groups: (a) youth who received wraparound after returning from residential placement (WR), (b) youth who received wraparound as an alternative to residential placement (WD), (c) youth who received traditional services during the year prior to the wraparound program initiating (PW), and (d) children who received traditional services instead of wraparound (NW). The authors stressed that the four groups were not equivalent (e.g., PW group was

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<sup>7</sup> The previous review included Myaard et al. (2000) as a quasi-experimental study, though it was moved to the *Experimental studies* section because the design reflects a “true experiment” (Kazdin, 2002).

older, WD had not experienced residential placement), and thus they cautioned against making direct comparisons. A community adjustment scale was developed for this study to provide a single rating of several relevant indicators (restrictiveness of the youth's living situation, school attendance, job/job training attendance, and serious problem behaviors). Children received ratings of "good" if they were living in regular community placements, attending school and/or working for the majority of the week, and had fewer than three days of serious behavior problems during the course of a month. After approximately two years of wraparound, 47% of the wraparound groups (WR and WD) received a rating of good, compared to 8% of children who received traditional mental health services. Unfortunately, high rates of attrition in the non-wraparound groups further compound the problem that the groups were not equivalent at baseline. As the authors stated, "this is not a comparison study" (Hyde et al., 1996, p. 70), so perhaps the biggest contributions are the identification of these groups for future comparison studies and the creation of a measurement tool that directly assessed the key indicators important to providers and families.

Bickman and his colleagues have conducted experimental evaluations of systems of care at Fort Bragg, NC (Bickman et al., 1995) and Stark County, OH (Bickman, Summerfelt, & Noser, 1997). Most recently, they completed a quasi-experimental study on a demonstration project of wraparound through the Department of Defense (Bickman, Smith, Lambert, & Andrade, 2003). A managed care company oversaw the demonstration, organizing the delivery of services hierarchically with professionals at the family level (case managers), program level (care managers), and system level (clinical

management committee). The demonstration group (n = 71) received both traditional (e.g., psychotherapy, psychiatric hospitalization) and nontraditional services (e.g., respite, recreation services, therapeutic foster homes). A comparison group (n = 40, treatment as usual) was formed from families referred to the demonstration project but refused to participate or were ineligible because the demonstration group had different exclusionary criteria.<sup>8</sup> Outcomes for the two groups were assessed from baseline to six months later. The authors' findings included (a) largely no baseline differences between the two groups, (b) higher utilization of "wraparound services" (e.g., case management, in-home supports, and nontraditional services) for the demonstration group, (c) higher costs for the demonstration group (primarily due to this group remaining in treatment longer), and (d) no consistent differences between the groups on the outcome measures. Limitations of this study include the short time span (6 months) and whether the demonstration project truly followed the wraparound process. The authors stated that the services were community-based, included informal services, and flexible funding was available. However, they were not aware if any of the remaining seven elements had been followed. Strengths include the similarities between the groups at baseline, use of standardized measures, adequate power, and sophisticated data analyses.

The next quasi-experimental study (Reay, Garbin, & Scalora, 2003) compared children receiving wraparound with those receiving Multisystemic Therapy (Henggeler, Schoenwald, Rowland, & Cunningham, 2002) within the Nebraska Family Central

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<sup>8</sup> Exclusionary criteria for the demonstration that were *not* exclusionary criteria for TAU included: requiring long-term residential care, history of treatment resistant drug use, persistent antisocial behavior not resulting from a treatable mental disorder, developmental or cognitive disorder that negatively impacts treatment, conviction/adjudication for sexual perpetration, and being amenable to treatment.

System of Care. The study included a third group of children that received a combined wraparound and MST intervention. Although MST and wraparound have been conceptually compared (Burns, Schoenwald, Burchard, Faw, & Santos, 2000), this study provided a unique opportunity to contrast the two approaches empirically. MST has a more established evidence base than wraparound and meets criteria as an empirically supported treatment for children with conduct problems (Brestan & Eyberg, 1998). Functional and impairment data were collected for the three groups at baseline, 6 months, and 12 months. All three groups showed significant improvements over the 12-month period, but no between-group differences were found. Although it may be tempting to suggest this study demonstrates that wraparound is just as effective as MST, without a control group (e.g., no-treatment, wait-list, etc.) there is no way to know whether the significant effects represent simple regression toward the mean or some other threat to internal validity. It is encouraging, however, that wraparound showed equivalent outcomes to a well-specified empirically supported treatment. The study also highlights a promising research design direction for comparison studies to follow, though future studies should include more comprehensive and intervention-specific outcomes coupled with a waitlist or no-treatment control.

The last quasi-experimental design reviewed (Resendez, 2002) compared groups of youth who did ( $n = 284$ ) or did not ( $n = 201$ ) receive “flexible wraparound funding” (p. 243) while receiving mental health services from the same agency. Flexible funds were primarily directed toward financial aid as well as recreational and social supports. The average amount of flexible funds allotted was \$155.81. Participants’ functioning and

impairment was measured at baseline and six months later. Like the previously reviewed studies, significant improvements were found for both groups over time, but no between-group differences were detected. Limitations include high attrition for the flexible funds group, relatively short time span (6 months), and weak manipulation of the independent variable. With the only difference between groups being an award ranging from \$5 to \$200, a significant difference on functioning scores seems unlikely. The main strength of this study was the assessment of the impact of a single wraparound element: Flexible Resources and Funding. As researchers begin to question the importance of the hypothesized components of wraparound, dismantling studies similar to this one will be invaluable.

### *Experimental Studies*

One multiple-baseline study (Myaard, Crawford, Jackson, & Alessi, 2000) and three randomized clinical trials (Carney & Buttell, 2003; Clark et al., 1998; Evans, Armstrong, Kuppinger, Huz, & McNulty, 1998) constitute the wraparound evidence base employing experimental designs. Experimental studies provide the strongest protections against threats to internal validity, thus allowing researchers to draw more confident connections between interventions and outcomes. However, one cannot assume that the findings will necessarily generalize to other settings or environments (external validity). This is a particularly noteworthy point for the randomized clinical trials reviewed here because they represent specific groups of children receiving wraparound including a foster care-based program (Clark et al., 1998), an intensive case management approach (Evans, Armstrong, Kuppinger, Huz, & McNulty, 1998), and a program for adjudicated

or court-referred youths (Carney & Buttell, 2003). These programs were deemed consistent enough with the wraparound process to be included in the evidence base (Burchard, Bruns, & Burchard, 2002), however the findings may not generalize to wraparound programs in other settings.

Clark and his colleagues (1998) conducted the most frequently cited empirical outcome study on wraparound. Participants included children in foster care randomly assigned to either the Fostering Individualized Assistance Program (n = 54) or standard practice foster care (n = 78). The program provided individualized services for children in foster care with the primary goals being to achieve an effective permanency plan and improve behavioral outcomes. Findings from this study demonstrated significantly fewer placement changes for children in the program, fewer days on runaway, fewer days incarcerated (for subset of incarcerated youths), and older children were significantly more likely to be in a permanency plan at follow-up. No group differences were found on rate of placement changes, days absent, or days suspended. Significantly fewer boys in the treatment program met criteria for conduct disorder compared to the children in standard practice foster care, but significantly *more* girls in the treatment group were diagnosed with conduct disorder. No group differences were found for internalizing disorders, but boys in the treatment program showed significantly greater improvement on externalizing problems than the comparison group. Taken together, the findings provided moderate evidence for better outcomes for the wraparound program, though the differences found appear largely limited to boys and externalizing problems. The

significant negative effect for girls diagnosed with conduct disorder is a particularly puzzling finding and must be addressed in future studies.

The second randomized clinical trial (Evans, Armstrong, Kuppinger, Huz, & McNulty, 1998) assigned children referred for out-of-home placements to either family centered intensive case management (n = 27) or treatment foster care (family based treatment, n = 15). The case management program largely followed the elements of the wraparound process by providing individualized, team-based, and comprehensive services and supports. Significant group differences in favor of the case management program were limited to behavioral and mood functioning. No differences were found with regard to other types of functioning (role performance or cognition), behavior problems (internalizing and externalizing), family cohesiveness, or self-esteem. Probably the most serious limitation of this study is the small sample size, plus further loss of data on many of the outcome measures. As a result, the study had very low power to detect differences between the groups.

The most recent randomized clinical trial (Carney & Buttell, 2003) evaluated the effectiveness of a wraparound program designed to reduce recidivism of adjudicated or court referred youths. Participants included 141 youths (out of 500 invited to participate) randomly assigned to a team-based wraparound program (n = 73) or conventional services (n = 68) after being referred to juvenile court. The two groups were followed for 18 months. Youths receiving wraparound demonstrated significantly less absenteeism and suspension from school, ran away from home less frequently, and were less assaultive than those in the conventional services group. However, youths receiving

conventional services were more likely to obtain a job, and no differences were found for subsequent arrests or incarceration.

Myaard and his colleagues (2000) conducted a multiple-baseline study of four adjudicated children participating in a wraparound program in rural Michigan. This design demonstrates the effect of an intervention by showing that outcome change occurs with (and only with) the introduction of wraparound at different points in time. The authors used the Daily Adjustment Indicator Checklist (Bruns, Woodworth, Froelich, & Burchard, 1994) to track five daily behavioral ratings (compliance, peer interactions, physical aggression, alcohol and drug use, and extreme verbal abuse) for each of the youth. Participants began receiving wraparound after 12, 15, 19, and 22 weeks. For all four participants, on all five behaviors, dramatic improvements occurred immediately following the introduction of wraparound.

Bickman and his colleagues (2003) criticized this study on the grounds that it had a small sample size and lacked a control group. These concerns need to be addressed because they represent a misunderstanding of the multiple-baseline approach. The purpose of the small sample size in the multiple-baseline approach is to collect a wealth of data before and after an intervention begins (in this case daily ratings for one year). If the pattern of data changes abruptly with the start of treatment, one can be much more confident about making a causal inference than if only two data points (pretest and posttest) had been collected. While no specific rules exist regarding how many baselines a study should have, Kazdin suggested that “two baselines are a minimum, but another one or two can measurably strengthen the demonstration” (Kazdin, 2002). Bickman and

colleagues (2003) also implied that causal inferences could not be made because the study did not have a control group. On the contrary, the experimental nature of multiple-baseline designs makes them well suited for addressing threats to internal validity. A more inherent limitation of this design is with external validity (i.e., generalizability of findings), however this problem pervades many of the between-group designs in the literature as well (Kazdin, 2002).

### *Summary*

The findings from this review were encouraging, though the majority of the studies have serious methodological limitations. The full range of outcome studies on wraparound was included to evaluate both the findings and the methodologies used. The findings indicate that positive outcomes are associated with wraparound, yet there is not sufficient evidence to state that wraparound resulted in better outcomes than comparison groups and alternative treatments. Methodological concerns and some suggestions for future studies follow.

If advocates of wraparound hope to provide convincing evidence that wraparound is an effective treatment for meeting the needs of children with SEBD, a number of methodological limitations must be addressed. First, more studies on wraparound need to include appropriate control and/or comparison groups. Although wraparound developed as an alternative to residential placements, no studies that directly compared these two interventions were found.<sup>9</sup>

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<sup>9</sup> Although (Hyde, Burchard, & Woodworth, 1996) examined both interventions, comparisons were explicitly not conducted.

Second, as noted in the previous review (Burchard, Bruns, & Burchard, 2002), few of the reviewed studies specified how participants were selected for inclusion. Most likely, the researchers chose children based on staff nominations or simply by using all available data. More care needs to be taken in future studies to specify how their samples were selected in order to determine if they are truly representative of their programs or children with SEBD in general. Increasing the number of studies that included randomized selection of participants would be another major benefit to the field.

Third, outcomes were measured from 4.5 to 42 months after baseline ( $M = 12.36$ ), often as posttests with children still receiving services. A goal of wraparound is to create long-standing changes in the youth in family. Thus, more longitudinal follow-ups are necessary to see if changes last beyond the end of treatment.

And fourth, one cannot conclude that all reviewed studies offered equivalent versions of wraparound. The programs varied on a number of factors including setting, target population, stated goals, and outcomes measured. Only three of the studies offered mechanisms for evaluating the degree to which they delivered wraparound as intended (Bickman, Smith, Lambert, & Andrade, 2003; Kutash, Duchnowski, Sumi, Rudo, & Harris, 2002; Toffalo, 2000). Without evaluating the fidelity of an intervention, it is difficult to determine if the program offers wraparound or merely “wannabe wraparound” (Walker & Bruns, 2003). The next section introduces the concept of fidelity, raises issues for considering fidelity to the wraparound process, and highlights several measures that have been used to measure fidelity of wraparound.

### *Wraparound Fidelity*

Treatment fidelity is a critically important, if somewhat rarely used, component to process evaluation research (Bruns, Burchard, Suter, Leverentz-Brady, & Force, 2004; Hogue, Liddle, & Rowe, 1996). The construct consists of two key components: treatment adherence (or integrity) and treatment differentiation (Hogue, Turner, Liddle, Rowe, & Dakof, 1998). Treatment adherence refers to the extent to which the intervention conformed to its core elements, manual, protocol, or standards. Treatment differentiation refers to the level with which different interventions remain distinct. Generally, treatment adherence is more commonly measured than differentiation, yet fewer than 50% of adult outcome studies and 20% of child outcome studies include measures of adherence (Schoenwald, Henggeler, Brondino, & Rowland, 2000). This is a surprising finding given that outcome measures alone cannot answer the question: Was the intervention carried out as intended?

In order to maintain and evaluate treatment fidelity, a number of conditions are required (Hogue, Liddle, & Rowe, 1996). First, the intervention must be clearly specified. Either through a theoretical model, treatment manual, or practice guidelines, the primary components of an intervention must be understood and operationalized. Second, a mechanism for maintaining fidelity to the intervention as conceptualized must be in place. Traditionally, this involves formal training before the intervention begins and supervision and monitoring while it is underway (Henggeler, Schoenwald, Liao, Letourneau, & Edwards, 2002). And third, fidelity can now be formally evaluated using

an instrument that measures the degree to which the operationalized protocol was followed.

A quick glance at this list of steps for ensuring fidelity indicates that wraparound may face an uphill battle. First, conceptualizations of wraparound continue to evolve. Only recently did a group of wraparound leaders provide a formal definition and list of essential elements for the wraparound process (Burns, Hoagwood, & Mrazek, 1999), and meetings among wraparound leaders continued as recently as 2003 (Walker & Bruns, 2003). Thus, those interested in measuring fidelity to the wraparound process can either try to measure the current conceptualization of wraparound (e.g., essential elements, practice principles, etc.) or propose a new model to evaluate. A second challenge is that one of the core features of wraparound is its individualized and flexible nature. The treatment plans for two people receiving wraparound may have very little in common (even if they receive wraparound through the same agency). As such, evaluators must choose fidelity indicators that remain constant across such diverse interventions. Third, wraparound has been widely disseminated without guidelines for maintaining fidelity. Individual agencies may adapt the approach to fit their needs yet continue to call the intervention wraparound. This leads to further confusion over what constitutes wraparound.

Because the wraparound model must be specified before fidelity can be maintained or evaluated, calls for measuring fidelity (Bruns, Burchard, Suter, Leverentz-Brady, & Force, 2004; Faw, Grealish, & Lourie, 1999; Malysiak, 1997, 1998; Rosenblatt, 1996) help push forward more specific and carefully considered conceptualizations of

wraparound. Ideally, fidelity measurement of wraparound would also (a) inform how well different agencies are adhering to the wraparound process, (b) help differentiate wraparound from other comprehensive community-based interventions, (c) provide a mechanism for quality assurance, and (d) act as a tool for evaluating links between specific components of wraparound and outcomes. Responding to these calls, several different wraparound fidelity measures have been created and each reflects the conceptualization on which it is based. The following review of wraparound fidelity measures was organized based on how completely the authors measured the construct of wraparound and whether psychometrics were collected.

#### *Basic Fidelity Measures*

Although the focus of their study was on consumer satisfaction and not fidelity, Rosen and colleagues (Rosen, Heckman, Carro, & Burchard, 1994) have been cited as one of the earliest efforts to measure wraparound fidelity. The authors surveyed children regarding their level of involvement in services (akin to Voice and Choice) and whether they perceived their team would “stick with them no matter what.” The youth informants generally gave high fidelity ratings. Further, the children’s perspectives of unconditional care were related to fewer negative behaviors (although children’s satisfaction and sense of involvement were not related to outcomes). Limitations of this approach are the use of one type of informant, only two of the essential elements were surveyed, and the measure has unknown psychometric properties.

Using a similar measure, a second study in Vermont compared children receiving wraparound versus traditional services on ratings of unconditional care and involvement

(Donnelly, 1994). As expected, the author found significantly higher ratings of youth involvement and unconditional care for the children receiving wraparound. This study had the same limitations as the previous study, though it offers some support that services provided through the wraparound process can be differentiated from traditional services. The study was conducted as the author's master's thesis and unfortunately remains unpublished.

As mentioned briefly in the review of wraparound's evidence base, Toffalo (2000) conducted a study specifically to measure the relationship between wraparound fidelity and outcomes. For this study the author operationally defined fidelity as the mean treatment hours divided by the number of hours prescribed, yielding a percentage "fidelity metric" (p. 355). This metric was calculated for three types of professional services the youth participants received (Behavior Specialist, Mobile Therapy, and Therapeutic Support Staff). Although the study participants demonstrated improvement on CBCL scores, the fidelity metric did not significantly predict outcomes for any of the treatments. The author found a significant relationship between the number of hours provided (the numerator of the fidelity metric and dubbed "treatment intensity" p. 359) by the Behavior Specialist and CBCL scores. The number of hours provided via the other treatments was not related to outcomes. In the author's discussion, Toffalo acknowledged that the goal of wraparound is to meet the youth and family's specific needs rather than simply provide the recommended number of treatment hours. As such, this metric does not provide a fidelity measure that is specific, or perhaps even appropriate for the

wraparound process. Although the finding related to the intensity of services received may be a useful construct for future studies to examine.

### *Promising Fidelity Measures*

One of the first formal fidelity measures was created by the Research and Training Center for Children's Mental Health, Louis de la Parte Florida Mental Health Institute (Malysiak Bertram, Bertram Malysiak, Rudo, & Duchnowski, 1999). The Florida fidelity form was designed to be completed at each team meeting by all participants. The form requested information on team dynamics (e.g., who was present, who facilitated the discussion), content of the family's individualized plan, and amount of involvement by the youth, family, and any community members. The form also asks informants to rate the extent to which the family received unconditional support and was treated as a full partner during the meeting. The conceptual basis for this measure derived from three theory-based constructs explored in earlier writings (Malysiak, 1997, 1998) and did not develop directly from wraparound's essential elements. Although it is considered one of the first formal wraparound fidelity measures (Faw, Grealish, & Lourie, 1999), the Florida tool has no evidence of reliability or validity and was written specifically for Florida's intervention.

Researchers at the University of California, Santa Barbara set out to create a psychometrically and theoretically sound fidelity measure for wraparound (Flam, 1998; Pavelski, Woodbridge, & Flam, 1999). Scale development followed a four stage process in which the authors: (a) attempted to operationalize core components of the wraparound process (from the essential elements but also from other sources), (b) generated an initial

list of 78 items for a pilot survey, (c) obtained expert ratings and rankings for each of the items, and (d) created a final scale based on the items ranked as most essential for service planning. The final scale, Measuring the Integrity of Systems of Care (MISC), included two forms (caregiver and care coordinator) each with 22 items. The items were grouped into five subscales measuring (a) respect toward the family, (b) understanding of the family's experiences, (c) involvement of family members, (d) the family's services and supports, and (e) the extent to which the service plan was individualized. Although the researchers carefully documented the scale development process, they did not report any psychometric analyses regarding the reliability or validity of the MISC Scale. Further, the subscales were neither empirically nor theoretically derived, and it remains unclear whether they reflect a thorough conceptualization of wraparound.

#### *More Established Fidelity Measures*

The Wraparound Observation Form – Second Version (WOF-2), developed by Epstein and his colleagues at the University of Nebraska, represents the only observational fidelity measure of wraparound (Epstein et al., 2003; Nordness & Epstein, 2003). Adapted from the original version (Epstein et al., 1998), the WOF-2 is completed by trained observers at team meetings. The form includes 48 items on eight components of wraparound, and the observers rate each item as *yes*, *no*, or *not applicable* for a given team meeting. The authors have demonstrated good interrater reliability (percent agreement  $M = 96.7\%$ ; kappa  $M = 0.89$ ), and they presented findings from a sample in Nebraska indicating that some wraparound components (e.g., having informal supports present at meetings) may be more difficult to implement than others (Epstein et al.,

2003). These findings indicate that the WOF-2 is a reliable tool for evaluating adherence during team meetings, however the authors also pointed a few of its limitations. First, the WOF-2 does not include items on Cultural Competence due to lack of reliability of those items in the previous version (Epstein et al., 1998). Second, only team meetings are assessed for the presence or absence (not quality) of wraparound principles. The WOF-2 does not evaluate how well services and supports are implemented in the field. And third, as with any observational measure, the presence of observers at team meetings may alter the behaviors of the team participants.

The second adherence measure with growing empirical support is the Wraparound Fidelity Index (Bruns, Suter, & Burchard, 2002; Bruns, Suter, Force, & Burchard, 2005). This measure evaluates fidelity through a structured interview format of essential team members: children, caregivers, and resource facilitators. The WFI was designed explicitly to measure the essential elements conceptualized by the 1998 focus group (Burns, Hoagwood, & Mrazek, 1999). For the sake of specificity the element Individualized and Strengths-Based Services was split into two elements, yielding a total of 11. The WFI has demonstrated preliminary findings of test-retest reliability (Bruns, Ermold, & Burchard, 2001), internal consistency (Bruns, Suter, & Burchard, 2002), and relation to outcomes (Bruns, Suter, Force, & Burchard, 2005). The primary strengths of the WFI include: multi-informant assessment, inclusion of the full set of hypothesized elements of wraparound, and assessing fidelity beyond team meetings. Limitations of this approach include the potential bias of subjective ratings rather than trained observers, and though

the items were written for each element, the factor structures of these interviews have not been established.

### *Summary*

Maintaining and evaluating fidelity to the wraparound process is an important, yet unmet, goal. Wraparound fidelity evaluation has the promise to help researchers and practitioners assess adherence during implementation and further refine the wraparound process. Because wraparound has been delivered in such varied ways, a standardized method of measuring fidelity is essential for drawing comparisons across different implementations. The field has demonstrated that everything that is called wraparound is not (Rosenblatt, 1996). Although, some researchers created fidelity measures based on their own conceptual models (e.g., Malysiak Bertram, Bertram Malysiak, Rudo, & Duchnowski, 1999), the most clearly articulated and widely accepted conceptualization of wraparound remains the essential elements from the 1998 focus group (Goldman, 1999). The WFI is the only fidelity instrument that includes all of these elements.

Despite having a fidelity measure that was designed to assess the full conceptual model of wraparound, there is currently no empirical support for these particular elements. Bickman correctly pointed out “there is no evidence that connects these wraparound elements to outcomes. Furthermore, the conceptualization does not describe just how many of these elements should be present and in what amount and quality” (Bickman, Smith, Lambert, & Andrade, 2003). In other words, these elements, and their utility as a formal conceptualization of wraparound remain to be tested.

### *Present Study*

Since wraparound began in the mid-1980s the model has grown and changed fluidly in ways that have sparked great enthusiasm and creativity. Unfortunately, this flexibility also has confounded attempts to understand, evaluate, and disseminate its core features with fidelity. Researchers have struggled to build an evidence base for wraparound, but their efforts have progressed in a disjointed fashion due to wide variation in how this process has been implemented across studies. The development of fidelity measures provides a mechanism for examining wraparound's implementation, but the components on which the measures are based have not been examined empirically. If wraparound is going to meet its promise for providing effective individualized services, it is critical to understand whether its proposed framework occurs in the real world.

The broad goals of this study are to strengthen the conceptual framework of the wraparound process and help put wraparound on the path to becoming an evidence-based intervention for children with SEBD. The present study evaluates whether the essential elements of wraparound, proposed by the Duke University group (Burns & Goldman, 1999), matched with family and service providers' perspectives. Confirmatory factor analysis (CFA) was used to test whether children, caregivers, and service providers' responses on the WFI adequately fit the hypothesized essential element model of wraparound. This study constitutes the first effort to empirically test wraparound's hypothesized elements. The next section provides a description of the WFI and its national evaluation from which the current study's participants are drawn. A discussion

of the data analysis follows this, leading to the specific objectives and hypotheses of the present study.

## Method

### *Measure*

The Wraparound Fidelity Index (WFI) is a structured interview that measures the degree to which a family receives services and supports consistent with the elements of the wraparound process. The WFI is completed through brief, confidential telephone or face-to-face interviews with three types of informants: caregivers (parents or legal guardians), youths (11 years of age or older), and resource facilitators (service providers who coordinate the family team). Combined with a demographics interview, the full WFI is composed of four forms (see Appendix for demographics, resource facilitator, and youth interviews<sup>10</sup>).

### *Organization of the WFI*

The WFI assesses fidelity by having the interviewer assign a score to four items for each of the 11 elements. The youth form does not include the elements Collaboration, Flexible Resources and Funding, and Outcome-Based Services. This decision was based on the views of caregivers, resource facilitators, and from pilot interviewers that youths often did not have enough information to be accurate reporters on these 3 elements. This also shortens the youth form to a more appropriate length for young people. Thus, the

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<sup>10</sup> The WFI Caregiver interview was not included because it is identical to the resource facilitator version with only minor changes in wording. For example item 2D on the resource facilitator form reads, “Does the team consist of people the caregiver wants on the team?” The same item on the caregiver form reads, “Does the team consist of people *you* want on the team?” (italics added).

caregiver and resource facilitator forms include a total of 44 items, while the youth form has 32 items.

Informants are asked to respond to WFI items based on the last 30 days of services and supports. Most items are worded as questions (e.g., “Is there a friend or advocate of the family who actively participates on the team?”). For items like these, informants may agree with the statement and answer *Yes*, partially agree with the statement and answer *Somewhat* or *Sometimes*, or disagree with the statement and answer *No*. A few items do not follow a question format (e.g., “Please tell me all the different places the youth has lived in the past 30 days”). For these questions, instructions were provided on the forms to elicit three ratings to parallel the *Yes*, *Sometimes/Somewhat*, and *No* responses: 30 days, 15-29 days, and less than 15 days.

Typically, item responses are rated on a 3-point ordinal scale: 0 (*low fidelity*), 1 (*medium fidelity*), and 2 (*high fidelity*). For the present study, items were recoded as binary 0 and 1 (*low fidelity*) versus 2 (*high fidelity*) to improve variance and to create unambiguous categories. The four item scores for each element are added together to calculate an element subscale score ranging from 0 (*low fidelity*) to 4 (*high fidelity*).

#### *Development of the WFI*

The WFI has gone through two revisions prior to the current version (WFI-3). On the first version of the WFI (Bruns, Ermold, & Burchard, 2001) only nine elements were used. Strengths-Based Services and Natural Supports were combined into one element and no items assessed Continuation of Care. Further, only caregivers and youths responded to questions about Voice and Choice and Cultural Competence. Only resource

facilitators answered questions about Youth and Family Team, Community-Based Services, Collaboration, Flexible Funding, and Outcome-Based Services. All three informants answered questions about Individualized and Strength-Based Services/Natural Supports. This earlier version was pilot tested in 1999-2000 and demonstrated adequate internal consistency (Bruns, Ermold, & Burchard, 2001), though there were concerns regarding a *ceiling effect* (i.e., the majority of ratings were quite high and demonstrated a lack of variability). WFI fidelity scores were also found to correlate well with an external fidelity criterion (ratings by an independent wraparound expert), but only for elements for which multiple informant scores were combined (Bruns, Burchard, Suter, Leverentz-Brady, & Force, 2004).

The findings from the WFI-1, in combination with family and service provider focus groups, lead to two major changes for the WFI-2. First, efforts were made to improve items and increase variability in responses by scripting items that were more specific to each element being assessed. Second, parents and resource facilitators were asked questions on all 11 elements while youths were asked to report on 8. This latter change continued to the WFI-3.

A second revision (WFI-2.1) reflected only minor changes in wording (in response to feedback from family members, providers, and survey administrators) and additional demographic questions. WFI-2.1 results from over 250 families in over a dozen wraparound sites nationwide suggested that the revised WFI was improved with respect to item score variability and internal consistency (Bruns, Suter, & Burchard, 2002). This version of the WFI also demonstrated high test-retest reliability for resource

facilitators (.86), caregivers (.73), and youths (.76, Suter et al., 2005). Further, results of an additional study found that WFI 2.1 fidelity scores related to future outcomes for individual families, an important criterion for a valid fidelity instrument (Bruns, Suter, Force, & Burchard, 2005). However, many WFI-2.1 items remained problematic, both with respect to their low variability (i.e., ceiling effect) and WFI interviewers and informants. These items were revised to create the WFI-3 (Bruns, Burchard, Suter, Leverentz-Brady, & Force, 2004), used in the present study.

### *Reliability and Validity*

*Reliability.* From the present sample, Cronbach's coefficient alpha (a measure of internal consistency) for total scores was very good for the three forms: resource facilitator ( $\alpha = .82$ ), caregiver ( $\alpha = .89$ ), and youth ( $\alpha = .81$ ). Alpha coefficients were much lower for element scores on the resource facilitator (range .19 to .56,  $M = .41$ ,  $SD = .11$ ), caregiver (range .18 to .70,  $M = .52$ ,  $SD = .17$ ), and youth forms (range .22 to .68,  $M = .48$ ,  $SD = .15$ ). Lower scores on the element scales are not unexpected, because, typically, alpha increases as the number of items increases (Ayers, Sandler, West, & Roosa, 1996).

Test-retest reliability of the WFI-3 was assessed in a small, unpublished study conducted in two separate wraparound programs (Suter et al., 2005). Sixteen Resource Facilitators, 14 caregivers, and 11 youths completed the WFI-3 twice within two weeks, and were asked to provide ratings of wraparound adherence for the same retrospective six-month period. Pearson correlations were found to be  $r = .84$  ( $p < .05$ ) for the resource

facilitator form,  $r = .88$  ( $p < .05$ ) for the caregiver form, and  $r = .64$  ( $p < .1$ ) for the youth form.

In an unpublished conference paper, Leverentz-Brady assessed the inter-rater reliability of the WFI-3 (Leverentz-Brady, 2005). Intraclass correlations indicated moderate agreement among all three respondents (.58), between resource facilitators and caregivers (.44), resource facilitators and youths (.45), and caregivers and youths (.49).

*Validity.* Content validity for the WFI is supported by its foundation on the essential elements of wraparound (Burns & Goldman, 1999) and its development and revisions based on feedback from researchers, wraparound consultants and trainers, service providers, and family members (Bruns, Burchard, Suter, Leverentz-Brady, & Force, 2004; Bruns, Suter, & Burchard, 2002).

The construct and criterion validity of the WFI has been assessed by WFI developers and research collaborators (see procedure section for more information on collaborators). In one study, resource facilitators in Nevada with higher WFI-3 scores achieved better child and family outcomes (e.g., child behavior and functioning, residential restrictiveness, and family resources) than facilitators with lower WFI-3 scores (Bruns, Rast, Walker, Peterson, & Bosworth, in press). In addition, WFI scores differentiated resource facilitators who received intensive training and coaching on the wraparound process from those who were implementing wraparound but with less intensive training (Rider, Peterson, Earnest, & Mears, 2004). The WFI has also been shown to distinguish between sites. Finally, WFI scores were significantly different for a sample of youth receiving services through the wraparound process than for a matched

sample of youth receiving child welfare services as usual (Bruns, Rast, Walker, Peterson, & Bosworth, in press). Currently, a study is underway assessing the relationship between the WFI-3 and the System of Care Practice Review (a fidelity measure of system of care components) to provide a measure of criterion validity (Hernandez et al., 2001).

### *Procedure*

Data for the current study comes from a larger validation study on the WFI-3. The WFI was offered to sites (e.g., mental health agency) that reported using the wraparound process and were interested in evaluating their level of implementation. To participate, interested agencies (i.e., collaborators) first reviewed the interview forms and, if they decided they wanted to use them, completed formal requests for collaboration. These applications included information on the goals of the agency, population served, methodology, and consent procedure to be used in administering the WFI. Interested sites were also required to establish methods for ensuring confidentiality of all participants.

Once accepted as collaborating sites, program representatives signed a formal memorandum of agreement and the *WFI User's Manual* (Suter et al., 2005) was sent. Collaborating sites then engaged families to be included in their local data collection; trained interviewers based on the research team's guidelines and WFI user's manual; administered interviews to caregivers, youth, and resource facilitators; entered data into a database provided; and forwarded data, with identifying information deleted, to the research team. In turn, the research team provided national collaborators with summary reports on their sites' fidelity profiles describing the results for their site.

### *Participants*

Ten programs administering a wraparound process for families with children experiencing SEBD participated in the current study. The agencies included two from Minnesota and one each from Indiana, Missouri, Nebraska, North Carolina, Pennsylvania, Massachusetts, Nevada, and Florida (see Table 4 for number of informants per site). Agencies collected data as frequently as they wanted, and some agencies conducted interviews with multiple caregivers and youths from the same family. However, for the present study no more than one youth, caregiver, and resource facilitator interview at a single time point for each family was used. This decision was made to reduce statistical dependency among informants and time. Multiple time points or informant types (e.g., two caregiver interviews for same child) were excluded at random. This process yielded 667 individual families with at least one WFI informant interview. Of these 667 families, the ten agencies contributed 623 resource facilitator, 491 caregiver, and 368 youth interviews.

An examination of missing data patterns revealed that a small number of these interviews represented a large percentage of the missing data, suggesting that the missing data was systematic and thus *nonignorable* (R. J. A. Little & Rubin, 2002). To increase confidence that the missing data in the present study was *missing at random* (Kline, 2005; R. J. A. Little & Rubin, 2002), interviews that were missing more than 80% of the items were removed from analyses. This decision resulted in the final sample of participants from 663 families including 610 (92.01%) resource facilitator, 481 (72.55%)

caregiver, and 355 (69.32%<sup>11</sup>) youth interviews. These participants had no missing data on 97.44% of the responses. The majority of families (66.40%) include interviews from all three informants ( $n = 275$ ) or caregivers and resource facilitators ( $n = 165$ ). The remaining families included interviews with resource facilitators and youths without caregivers (7.84%,  $n = 52$ ), caregivers and youths without resource facilitators (2.41%,  $n = 16$ ), resource facilitators alone (17.80%,  $n = 118$ ), caregivers alone (3.77%,  $n = 25$ ), or youths alone (1.81%,  $n = 12$ ).

It is important to note that several agencies did not collect complete information on sample demographics. Approximately 29% of the children in this sample were female ( $n = 192$ ), 60% were male ( $n = 401$ ), and youth's sex was not reported or unknown for the remaining 70 families. Youths' ages were reported for 460 (69.38%) families and ranged from 1.64 to 20.98 years ( $M = 13.82$ ,  $SD = 3.26$ ). Approximately 9% of the youth ( $n = 57$ ) were identified as having Hispanic ethnicity (not reported for 71 families). Youth's race was identified for approximately 85% of the families ( $n = 566$ ) with 409 (61.69%) identified as Caucasian, 109 (16.44%) African-American, 5 (0.75%) Native American, 6 (0.90%) Asian/Pacific Islander, 12 (1.80%) biracial, 1 (0.15%) Haitian, and 1 (0.15%) Filipino. Custody status was reported for 91% of the families ( $n = 606$ ) including: 46% ( $n = 305$ ) in state custody, 37.10% ( $n = 246$ ) living with a biological parent, 4.83% ( $n = 32$ ) living with a relative, 3.32% ( $n = 22$ ) in an adoptive or foster family, and 0.15% ( $n = 1$ ) living independently. At the time of the WFI administration, families had been receiving wraparound for an average of 12.11 months ( $SD = 7.90$ ), and they had been working with the same resource facilitator for an average of 10.00 months

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<sup>11</sup> Percentage based on number of families eligible for youth interview (youth 11 years or older).

( $SD = 6.84$ ). All youths in the sample were classified by the sites as experiencing SEBD, defined as resulting in a diagnosable disorder that causes significant impairment in home, school or community functioning and involvement by one or more public child-serving agencies (e.g., juvenile justice, mental health, social services, or special education).

### Data Analysis

Analyses for the present study employed confirmatory factor analysis (CFA) in an exploratory manner to evaluate the hypothesized model of wraparound across the three WFI informants. This section outlines the rationale and procedures that guided these data analyses. First, a brief review of factor analysis is presented. Second, strategies for using CFA in an exploratory fashion are explored. And third, a description of the multitrait-multimethod approach is offered. This section ends with an outline of the specific study objectives, hypotheses, and a power analysis.

#### *Overview of Factor Analysis*

Factor analysis is a generic term that refers to a number of methods for analyzing the relationships among a set of variables. Usually the result is the identification of a smaller set of variables (called factors) that still contain the essential information of the larger set of variables, but can explain that information more parsimoniously (Tabachnick & Fidell, 2001). For example, authors of the CBCL used factor analysis to combine groups of co-occurring behavior problems into factors they dubbed syndromes (Achenbach & McConaughy, 1997).

Factor analysis draws a distinction between *latent* variables (factors) and *observed, manifest, or indicator* variables (Byrne, 2001). Latent variables represent

hypothetical constructs that cannot be observed or measured directly (e.g., self-esteem, impulse control). In order to conduct analyses with latent variables, measurable items (indicators) that are thought to reflect these latent variables must be identified. Factor analysis focuses on how, and the extent to which, the observed variables are connected to their underlying factors (Byrne, 2001). In most models, the underlying latent variables are believed to cause or generate the indicators (Tabachnick & Fidell, 2001). For example, a child's high self-esteem causes her to positively endorse items on scale measuring self-esteem, not the other way around. The gestalt belief that the whole is greater than the sum of its parts fits with such models. With that said, one can also hypothesize that the latent variables are the direct result of the indicators (e.g., socioeconomic status), but this is less common (Kline, 2005).

In the introduction it was suggested that the WFI could be used as a tool for evaluating the 10-element hypothesized components of wraparound (Goldman, 1999). Translating the wraparound model into factor analytic terms, the essential elements become the latent variables and the WFI items are the observed variables.

Although there are many different ways of conducting factor analysis, the techniques can be separated into two main categories (Bollen, 1989). The first set of methods is called *exploratory factor analysis* (EFA), and is used to derive factors from a set of observed variables when the researchers do not have a priori theories or hypotheses regarding the number or nature of factors. As such, EFA has been considered a theory generating procedure. The second major category is *confirmatory factor analysis* (CFA), and it falls under the broader category of structural equation modeling (SEM). Unlike

EFA, researchers using CFA begin with an explicit hypothesis or theory regarding the relationships among the observed and latent variables. The hypothesis takes the form of a proposed model that specifies (in part) which observed variables are derived from which factors (referred to as a *measurement model*) and possible correlations or causal paths among the factors (the *structural model*, Kline, 2005). CFA methods then compare the observed (data collected from a sample) and hypothesized factor structures in order to determine how well the hypothesized structure fits the data. Thus, CFA provides a method for testing (i.e., confirming or disconfirming) a hypothesized model. Both of these approaches have strengths and weaknesses as appropriate analytic methods for the current study.

As described above, EFA is optimally used when researchers have no hypotheses regarding the structure of the variables they are studying. Often the goal of an EFA study is to identify a minimal number of factors that underlie the observed variables (Byrne, 2001) and bring greater understanding of the underlying patterns in the data (Bollen, 1989). However, when hypotheses have been formed regarding a model (e.g., wraparound is comprised of ten essential elements), EFA procedures can hinder or confuse efforts to examine those hypotheses. Items are permitted to relate to any factors, and a derived solution is subject to capitalization on chance variations from a particular sample (Kline, 2005; Stickle & Blechman, 2002). EFA does not include an external criterion against which a factor model can be tested, and many different factor solutions can be identified from the same data because different forms of rotation<sup>12</sup> are used.

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<sup>12</sup> The purpose of rotation in EFA is to increase the interpretability of the model (e.g., one method maximizes high correlations and minimizes small ones, Tabachnick & Fidell, 2001).

Because the primary goal of the current study is to evaluate a specific hypothesized model of wraparound (i.e., wraparound is comprised of ten essential elements), EFA is not the ideal choice.

CFA, on the other hand, is used when researchers hold an a priori theory or hypothesis regarding the factor model they are interested in testing. Some have argued that the CFA procedures should be used only when the model is “based on theory or on results from previous empirical studies” (Floyd & Widaman, 1995). The essential elements of wraparound represent a hypothesis, but not a theory. A theory represents a coherent account of a domain of interest leading to testable explanations consistent with that theory, whereas a hypothesis can be a single tentative prediction (Reber, 1995). The current conceptualization of wraparound as being comprised of ten elements is not formally based on theory (see section on *Theory of Wraparound*), and further, the model has never been empirically tested.

#### *Exploratory Approach to Confirmatory Factor Analysis*

The previous discussion of EFA and CFA emphasized their distinctiveness, yet in practice, the line between these approaches is blurred (Bollen, 1989). CFA procedures were developed largely within the last 30 years whereas EFA procedures have been available for over 100 years (Floyd & Widaman, 1995). Researchers interested in testing structural hypotheses did not wait for the development of CFA procedures, thus EFA has been used to evaluate implicit and explicit theories for decades. For example, simply by restricting the variables to those hypothesized to come from a single factor a hypothesis is

essentially being tested. Also, there are statistical methods for evaluating factor solutions derived through EFA (Tabachnick & Fidell, 2001).

Similarly, CFA studies can include exploratory methods; in fact, most do not follow a strictly confirmatory approach (i.e., a model is proposed, tested, then either rejected or accepted). Many researchers find that their hypothesized models need revisions or respecifications to more accurately fit the data, and thus use CFA in an exploratory or model generating fashion (Byrne, 2001). When hypothesized models are not initially confirmed, researchers must choose whether to base their respecifications on empirical or theoretical grounds.

For example, Connor-Smith and her colleagues (Connor-Smith, Compas, Wadsworth, Thomsen, & Saltzman, 2000) proposed a hierarchical model of adolescent coping. The model included two broad factors (Engagement and Disengagement Coping), subsuming four lower level factors (primary and secondary engagement; primary and secondary disengagement), and these factors generated ten observed variables. Findings from CFA revealed that this model did not provide a good fit with the data, so, based on empirical and theoretical guides, they dropped the two lower level factors for Disengagement Coping and retested the model. This time the model did yield a good fit, and the authors then cross-validated the new model with two new samples. By using both empirical and theoretical reasoning for respecification, the authors offered a more interpretable and conceptually sound model.

Another example of using CFA methods in exploratory ways comes from research evaluating fidelity measures for the community-based treatment MST

(Schoenwald, Henggeler, Brondino, & Rowland, 2000). These authors developed adherence measures to evaluate the degree to which professionals delivered services consistent with the nine principles of MST. In previous research (Henggeler, Melton, Brondino, Scherer, & Hanley, 1997) an EFA of the therapist measure yielded six factors, however CFA of the therapist measure in a new sample (Henggeler, Schoenwald, Liao, Letourneau, & Edwards, 2002) did not support the six-factor model. The authors chose to conduct a second EFA with the new sample and found a three-factor solution accounted for over 90% of the variance. The EFA was followed by a second CFA that yielded an adequate fit for the three-factor model.

Limitations from this latter study lead to precautions for using CFA in an exploratory manner. First, although the authors used two independent samples in their study, they conducted EFA on both samples before using CFA to confirm the model on one. A much stronger test of this model would have been to restrict EFA methods to one sample and CFA methods to the other. This provides needed cross-validation or replication of a factor solution that may exist only within a given sample (Bollen, 1989; Floyd & Widaman, 1995). A second limitation involves the factor solution itself. Although they reported that the three-factor solution related conceptually to the earlier six-factor one derived through EFA, it remained unclear how these factors relate to the original nine principles of MST. Thus, it is unclear how these results should be interpreted. This lack of clarity underscores the importance of making analytic decisions based on conceptual and/or theoretical reasoning rather than empirical findings alone.

### *Multitrait-Multimethod Approach*

It is critical to evaluate constructs from multiple perspectives to provide evidence that findings are not limited to a particular type of measurement (Kazdin, 2002). This can be accomplished by employing different informants (e.g., youths and parents), types of measures (e.g., observations, interviews, questionnaires), and even different settings (e.g., home and school). This type of measurement design is called the multitrait-multimethod (MTMM) approach (Campbell & Fiske, 1959). MTMM design provides a strong test of construct validity by examining multiple procedures (methods) and multiple constructs (traits). More specifically, the MTMM approach allows one to evaluate (a) convergent validity (measures of the same traits by different methods are similar), (b) discriminant validity (different traits measured by the same methods are different), and (c) method effect (the degree to which the different methods influence the measurement of the traits, Dumenci, 2000).

A key aspect of the wraparound process is its commitment to team planning and collaboration among team members. As such, an analysis of the wraparound model could be considered incomplete if data were collected using only one informant (i.e., method). The WFI includes separate interviews with caregivers, youths, and resource facilitators, so a MTMM approach can be used. However, using the MTMM approach to specify the wraparound process yields an extremely complicated model (11 elements, 3 informants, and 30 indicators). If tested all at once, such a complex model would likely fail to fit the data and not provide guidance for how the model could be improved or where the problems may lie.

### *Modeling Steps and Hypotheses*

The previous discussion touches on an ongoing debate for how best to specify and test models in SEM (and by extension CFA). Some argue that the only proper way is to specify the full hypothesized model (e.g., MTMM of the WFI) and test it in a single step (e.g., Hayduk & Glasser, 2000). This *one-step* method has the benefit of providing a strong and conservative test for a given model. Yet if the model does not fit the data, this approach offers no guidance for how to proceed. To address this limitation, others have recommended breaking complex models down into simpler ones, then testing them in a sequence of nested models, building toward the more complex hypothesized model. Specific strategies include the *two-step* (testing the measurement and structural models separately, Anderson & Gerbing, 1988; Bollen, 1989) and the *four-step* approaches ((a) EFA, (b) CFA, (c) imposing constraints on pairs of latent variables, and (d) imposing all constraints among the latent variables hypothesized in the full model, Mulaik & Millsap, 2000). The two and four-step approaches provide rubrics for utilizing SEM procedures in a more exploratory manner than the one-step method.

Bollen (2000) offered another nested modeling strategy that was the guide for the present study. Dubbed the *jigsaw piecewise technique* because the goal is to first fit pieces of the model separately before combining them to form a whole. This technique is particularly useful for the present study because the WFI has 11 separate elements assessed by three informants, and none of them have been empirically tested before.

For the present study, a series of CFA models were tested starting with individual elements and building in complexity toward a test of wraparound's full conceptual

model. This approach was divided into three steps examining how well the sample data fit each element separately for each informant (Step 1), combining elements together but still separately for each informant (Step 2), and all elements and informants included in a single model (i.e., MTMM, Step 3). Each of these steps is described in greater detail below organized by five stages of CFA: (1) model specification, (2) model identification, (3) model estimation, (4) model fit, and (5) parameter estimation. Specific hypotheses were proposed for each of the three steps. Overall, it was hypothesized that elements of the wraparound process provide a useful structure for conceptualizing wraparound. All data analyses were conducted using Mplus statistical software (Muthén & Muthén, 2004).

#### *Step 1: Separate Element Models*

*Model specification.* Model specification refers to the process through which the relationships among the latent and manifest variables are defined (Bollen, 1989; Kline, 2005). In CFA these relationships are known as parameters, and they include: variances and covariances of the latent variables (element factors and error terms for each of the indicators) as well as the direct effects (i.e., loadings) of the latent variables on the indicators. Parameters can be *freed* (allowing the computer program to estimate them) or *fixed* (setting the parameter to a constant). By specifying how parameters should behave, a researcher is establishing hypotheses that can be depicted in the form of structural equations or path diagrams.

Figure 1 depicts the path diagram for one of the models tested in Step 1 (Voice and Choice). The ellipse represents the latent element factor and the boxes represent the four indicators. The circles labeled  $e_A$ ,  $e_B$ ,  $e_C$ , and  $e_D$ , represent the four error terms (i.e.,

residuals) for each of the indicators. Single-headed arrows represent direct effects (i.e., loadings) of the single factor and four residuals on the indicators. The curved double-headed arrow on the factor represents the element's variance. Arrows with the number 1 represent fixed parameters, while unbroken arrows depict freed parameters. Taken together, the models for Step 1 were specified so that each indicator was hypothesized to have two causes, a single underlying latent factor and an error term (representing all other unique sources of variance). In addition, the error terms were specified as independent of each other and the factor (a basic statistical specification for CFA). Step 1 evaluated this model specification for 30 CFA models (11 CFA models each for caregivers and resource facilitators, and 8 for youths<sup>13</sup>).

*Model identification.* There are two general forms of model identification: theoretical and empirical. Theoretical model identification refers to having enough observations available to estimate the model (Kenny, Kashy, & Bolger, 1998; Kline, 2005). Observations are based on the number of indicators and have nothing to do with sample size. When there are fewer observations than parameters, the model cannot be estimated and it is classified as *underidentified*. Models can also be *overidentified* (more observations than parameters) or *just-identified* (equal number of observations and parameters). The difference between the number of observations and parameters is considered the model degrees of freedom (Kline, 2005). Theoretical identification also requires that each latent variable be *scaled* by fixing its unit of measurement to a constant (e.g., 1.0). Finally, a model that is theoretically identified may not be empirically identified due to problems with the data (e.g., multicollinearity among variables).

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<sup>13</sup> See WFI description in Method section for explanation on why there are only 8 elements for youths.

All CFA models in Step 1 were theoretically identified based on the conditions outlined by Kenny and his colleagues (1998). First, the element factors were scaled by fixing the factor variance to 1.0 (see Figure 1). Second, the model had at least three indicators with uncorrelated residuals. CFA models in Step 1 had four such indicators. And third, every indicator had at least one other indicator with which it did not have a correlated error term.

*Model estimation.* There are many different methods for estimating CFA models; the most common is maximum likelihood (ML). However, ML estimation methods assume that the data are multivariate normal, an assumption often violated with indicators that are measured on an ordinal scale. For Step 1, scores on all indicators were analyzed as ordinal categories (0-1). Therefore, model estimates were obtained using the Weighted Least Squares with robust standard error and mean and variance adjusted fit statistic (WLSMV) because this method takes into account the ordinal nature of the data (Muthén & Muthén, 2004).

The WLSMV model estimation was structured to handle two other important considerations of the current sample. First, as reported in the Participants section, not all informants completed their interviews. Rather than use traditional methods for handling missing data (e.g., listwise or pairwise deletion) that can introduce estimation bias, full-information maximum likelihood estimation methods (FIML, Graham, 2003; R. J. A. Little & Rubin, 2002) were employed. Second, participants submitted data through 10 collaborating agencies creating statistical dependencies among their data (i.e. individuals

were clustered within agencies). To account for this dependency, Collaborating Agency was included as a cluster variable in all CFA models (Muthén & Muthén, 2004).

*Model fit.* Rarely are models specified that yield perfect fit with the sample data. Therefore it is necessary to evaluate the degree to which a hypothesized model fits the data. Similar to estimation methods, many indexes of model fit are available. As recommended by Kline (2005), the following indexes were reported: Root Mean Square Error of Approximation (RMSEA), Tucker-Lewis Index (TLI), Comparative Fit Index (CFI) and model chi-square ( $\chi^2$ ). For WLSMV estimation, the following cutoffs indicate *good* fit (i.e., minimizing Type I and Type II error):  $RMSEA \leq .06$ ,  $TLI \geq .95$ , and  $CFI \geq .95$  (Yu, 2002). Reasonable or *adequate* fit cutoffs have also been proposed including:  $RMSEA \leq .08$ ,  $TLI$  and  $CFI \geq .95$ . A significant  $\chi^2$  indicates lack of model fit to the data (i.e., the model is significantly different from the data), thus good model fit is reflected by nonsignificant  $\chi^2$ . However, the  $\chi^2$  index has overly high power to reject models with larger sample sizes resulting in high Type I error (Bollen, 1989; Tabachnick & Fidell, 2001). The  $\chi^2$  fit index was reported for all models tested because it remains a common measure of fit, but findings from the RMSEA, TLI, and CFI indexes were given greater weight for interpreting model fit.

*Parameter estimates.* Fit indexes provide a metric to assess how well the model fit the data overall. However, these model-level indexes do not provide details regarding specific parameters such as the item factor loadings, variances, and covariances in the model. The item factor loadings were particularly salient for the present study, because they measure the strength of the relationship between the WFI items and the elements

they were designed to reflect. Factor loadings were tested for statistical significance by dividing the parameter estimates by their standard errors, which yielded a standardized test statistic (or z score).

*Hypotheses.* The goal of Step 1 was to determine what elements and items provided a reasonable fit to the data and therefore should be included in the combined element model in Step 2. Using the jigsaw piecewise technique as a guide (Bollen, 2000), each element model was considered separately at Step 1. *Hypothesis 1:* Each of the 30 single-element models would adequately fit the data. *Hypothesis 2:* The four indicators for each of the CFA models would have significant loadings to their element factors. Due to low power to detect adequate or good fit for the models in Step 1, only items and elements that resulted in especially poor solutions were dropped from analyses before Step 2.

#### *Step 2: Combined Element Models*

*Model specification.* The three CFA models in Step 2 were planned to build on the findings from Step 1. Thus, if all single element models and indicators provide good fit to the data (as predicted in Step 1) then the resource facilitator and caregiver models would contain 11 element factors with 44 indicators and the youth model 8 elements and 32 indicators. Any elements or items that did not demonstrate adequate fit in Step 1 would not be included in Step 2 models. Figure 2 depicts a portion of the caregiver model (four elements) as specified for this step. The element factors were expected to predict indicators that did not cross-load on any other elements, which is known as an “independent clusters model” (McDonald & Ho, 2002, p.65). In other words, all other

factor loadings were constrained to zero (e.g., item 2A was not permitted to load on element 3). As in Step 1, the direction of these factor loadings (shown by the arrows between element and items) indicated that elements predicted items. The elements were allowed to correlate (represented by the curved, double arrow arcs in Figure 2). Finally, the residuals or error terms (depicted as ovals pointing to the items) were left uncorrelated.

*Model identification.* The CFA models for Step 2 met the three conditions for theoretical identification reported in Step 1 (element factors were scaled by fixing all factor variances to 1.0, each element factor had at least three indicators with uncorrelated residuals, and every indicator has one other indicator with which it does not have a correlated residual). In addition, the models in Step 2 fulfilled another condition relevant to CFA models with multiple factors: there needed to be at least two indicators for each pair of element factors without correlated error terms (Kenny, Kashy, & Bolger, 1998).

*Model estimation, fit, parameter estimation.* Despite the exponential increase in complexity from CFA models in Step 1 to Step 2, the same model estimation, model fit, and parameter estimation methods are used. WLSMV estimation remained the preferred estimation method because the same ordinal binary indicators (0 versus 1) were used in these analyses. FIML estimation continued to be used to account for patterns of missing data, and Collaborating Agency was used as a cluster variable to control for the nested data. Model fit was assessed through the same indexes (RMSEA, TLI, CFI,  $\chi^2$ ). Parameter estimates, particularly factor loadings, were estimated using the same

procedures as Step 1. The only difference was the ability to estimate the correlations among the element factors.

*Hypotheses.* Examining the full conceptual model separately for each informant yields information on how the items relate to their hypothesized elements in the context of the other elements as well as information on the relation of the elements to each other. Thus, the third and fourth hypotheses parallel the first and second taking the full model into account. *Hypothesis 3:* Each of the three CFA models would demonstrate adequate fit based on the fit indexes (and cutoffs) covered above. *Hypothesis 4:* The item factor loadings would remain statistically significant with their underlying element factors in the context of the larger model. *Hypothesis 5:* These correlations among the element factors were expected to be significant, but not so high as to approach unity (greater than .85, Kline, 2005). This hypothesis was based on literature on the wraparound process that has emphasized that the elements are interrelated (Goldman, 1999).

### *Step 3: Multitrait-Multimethod Model*

*Model specification.* With this step, the present study's use of Bollen's (2000) jigsaw piecemeal technique of fitting simpler portions of the model together to build toward a more complex model reaches its conclusion. Steps 1 and 2 tested separate models for each of the three informants. As depicted in Figure 3, Step 3 included the three informants in a single model. A MTMM analysis (Dumenci, 2000) was planned to evaluate this final model containing three informant factors (i.e., methods) and a maximum of 11 element factors (i.e., traits). This model allowed each indicator to cross-load on two factors (informant and element). For example, the caregiver indicator for

Natural Supports was specified to have loadings on both the Caregiver factor and Natural Supports factor. This model also allowed correlations among the element factors and among the informants, but correlations between the element and informant factors were not permitted. All other factor loadings were fixed at zero.

Unlike the previous two steps, Step 3 used single total scores for each factor rather than individual items. Total scores are simply aggregate scores of groups of items that have been determined to measure the same construct. They are distinct from *item parcels* in that a total score combines items to measure a latent construct with a single score while a set of item parcels (smaller unidimensional groups of items) is necessary to measure a single construct (i.e., unidimensional, Bandalos, 2002; Hagtvet & Nasser, 2004). For example, the four items for Voice and Choice can be summed to create a single indicator for that element. Total scores were included as the indicators for Step 3 because there is evidence that using total scores rather than items can improve the distribution of scores and thus model fit (Bandalos, 2004). Further, Steps 1 and 2 provided a mechanism for testing whether the items for each element were unidimensional, and therefore appropriate to combine into total scores. This process yielded three total scores for each element, one for each respondent. Elements that had no youth informant (Collaboration, Flexible Resources, Outcome-Based) had only two indicators. Figure 3 depicts a portion of this MTMM model with four elements.

The MTMM CFA model described above is known as a correlated-trait correlated-method (CTCM) model (Dumenci, 2000). Such models are notorious for failing to converge or being empirically underidentified (Kenny, Kashy, & Bolger, 1998;

Kline, 2005) resulting in inadmissible solutions. Therefore, it may become necessary to follow a simpler method for specifying a MTMM model. Two examples of simpler MTMM models are the *trait-only* model and the *correlated-uniqueness* model.

Depicted in Figure 4, the trait only model is a standard CFA measurement model with indicators loading on single correlated factors (Dumenci, 2000). Unlike similar CFA models in Step 2, the trait-only model goes one step further by including indicators from multiple informants in the same model. The correlated-uniqueness model is similar to the trait-only model in that only trait factors are included. The added complexity of the correlated-uniqueness model is the specification that error terms for indicators measured by the same method (e.g., informant) are correlated to account for the potential method effect (e.g., correlated-uniqueness model, Saris & Aalberts, 2003). The correlated-uniqueness model is shown in Figure 5.

*Model identification.* The CFA model specified in Step 3 met all previously reported conditions for theoretical identification including (a) fixed factor variances to 1.0, (b) at least three indicators with uncorrelated error terms per factor, (c) there are at least two indicators that do not have correlated error between them, and (d) every indicator must have at least one other indicator with which it does not have a correlated residual. This model does not meet one of Kenny's (1998) sufficient identification conditions for models with cross-loadings: there must be at least one indicator, per factor, that loads on only one factor. Although this is not a required condition for theoretical identification, it is recommended because MTMM models are often empirically underidentified.

*Model estimation, fit, and parameter estimation.* Although total scores rather than individual items were used in the Step 3 model, the indicators remain ordinal so the same WLSMV estimation methods were planned. As such the same procedures and indexes were used for Steps 1 and 2.

*Hypotheses.* Showing that subscales from the three informants are significantly related to their underlying element factors (and to a greater extent than the contribution of the method factors) provides evidence of convergent validity. Examining the correlations among the element factors assesses discriminant validity. The lower the correlations, the less the elements are related to one another, the greater evidence for discriminant validity (Dumenci, 2000). *Hypothesis 6:* the MTMM model of the wraparound process, including the element factors and method factors (caregiver, youth, and resource facilitator), will provide an adequate fit to the data. *Hypothesis 7:* The MTMM model will provide evidence of convergent validity with WFI subscales significantly relating to their underlying factors and trait factors achieving higher factor loadings than method factors. Because the element factors are expected to moderately correlate with each other, I made no hypotheses with regard to discriminant validity.

#### *Power Analysis*

Power analyses for Steps 1 through 3 were conducted using a SAS program for covariance structure modeling (MacCallum, Browne, & Sugawara, 1996). Because the present study employed an existing data set (see *Participants* section), power analyses were conducted in a post-hoc fashion using the current sample sizes (resource facilitators,  $n = 610$ ; caregivers,  $n = 481$ ; youths,  $n = 355$ ) and model degrees of freedom. The

RMSEA fit index was used to detect power for good ( $RMSEA \leq .06$ ) and adequate ( $RMSEA \leq .08$ ) model fit. For Step 1, power to detect good and adequate model fit were .45 and .71 for resource facilitators, .36 and .60 for caregivers, and .28 and .46 for youths. Steps 2 and 3 had power of 1.00 to detect good fit based on the RMSEA. The single factor CFA models tested in Step 1 had low power because the models only had two degrees of freedom, while the degrees of freedom were higher for Step 2 ( $df$  range 377 to 847) and Step 3 ( $df = 303$ ).

## Results

Findings from the present study are presented separately for steps 1, 2, and 3. Step 1 covered analyses on the separate CFA models for each element and informant. Step 2 evaluated the correlated element factor models, separately for the three informants. And Step 3 provided a test of convergent and discriminant validity through the MTMM CFA model. Each of these steps reviewed relevant descriptive information (e.g., intercorrelations), tested the specific hypotheses, and outlined respecification where necessary.

### *Step 1: Separate Element Models*

Tables 5 to 15 show correlations and item proportions for each element and informant. Each table includes the tetrachoric correlations (correlations between binary variables, Kline, 2005) among the items and the proportion of responses that were classified as *low* or *high* fidelity. Correlations and item proportions are presented separately for each informant.

### *Hypothesis 1*

The hypothesis that each of the single-element models for each of the informants would provide a good fit to the data was tested by examining the fit indexes for each of the 30 CFA models (Table 16). For resource facilitators, 9 of the 11 elements demonstrated good fit measured by at least two of the fit indexes (4 demonstrated good fit on all indexes). The elements Flexible Resources and Outcomes-Based did not demonstrate good fit. Responses by caregivers yielded 8 elements with good fit on all indexes and 3 elements (Strengths-Based, Natural Supports, Collaboration) with poor fit on all. Finally, data from youths led to good fit on all indexes for 5 elements, good fit on all but one index for 1 element, and poor fit on all indexes for the remaining two elements (Individualized Services and Continuation of Care). Taken together, 23 of the 30 separate CFA models showed at least some evidence of good fit.

### *Hypothesis 2*

The second hypothesis predicted that the four indicators for each model would have significant factor loadings on the elements they were designed to reflect. Standardized factor loadings for CFA models tested in Step 1 are depicted in Table 16. This prediction was largely supported because only 11 out of 120 factor loadings (four indicators for 30 models) were not significant. Excluding inadmissible loadings (i.e., greater than absolute value of 1.00, see below), factor loadings ranged from .14 to .98 ( $M = .57$ ,  $SD = .20$ ). Responses by resource facilitators and caregivers showed a similar pattern of nonsignificant factor loadings for two elements: Youth and Family Team (Item A and Item B were not significant) and Community-Based Services (item B was not

significant). Youth responses also demonstrated difficulty with Community-Based Services items, however the youth standardized factor loadings were so extreme (A, B, C = .00; D = 96.89) that they represented an inadmissible solution for this model. Problems with these items can also be seen by their low, and in some cases negative, correlations in Table 6 (Youth and Family Team) and Table 7 (Community-Based Services). The last problematic item was Item C on Flexible Resources on the resource facilitator form. The standardized factor loading for this item was also out-of-bounds (C = 1.10).

#### *Respecification for Step 1*

Based on the collective findings from the single element model CFAs (model fit, factor loadings, and correlations), the elements Youth and Family Team and Community-Based Services were targeted for respecification. These two elements demonstrated problems across multiple informants, and the items did not appear to hold together as adequate indicators of their element factors. Because these items were considered to be important indicators of wraparound, if not their hypothesized elements, they were examined individually to determine if they conceptually fit with other elements.

The Youth and Family Team items were respecified for the caregiver and resource facilitator models (this element received adequate support for youths). Two of the items (Item 2B, “Is there a friend or advocate of the family who actively participates on the team?” and Item 2C, “Is there a representative from the school [or childcare provider] who actively participates on the team?”), conceptually fit with the element Natural Supports. Similarly, two of the items from Community-Based Services (Item 3A, “How many hours a week does the youth spend at a regular community school, paying

job, or job training program?” and Item 3D, “How many days did the youth live in community living situations?”), seemed conceptually related to Natural Supports. However, when these items were added to the Natural Supports models they made model fit worse for resource facilitators ( $\chi^2 [2] = 17.02$ , CFI = .97, TLI = .97, RMSEA = .09) and youths ( $\chi^2 [2] = 10.97$ , CFI = .93, TLI = .88, RMSEA = .09), and fit remained poor for caregivers ( $\chi^2 [2] = 17.96$ , CFI = .69, TLI = .58, RMSEA = .10). Items 2B and 2C yielded significant, though small, factor loadings (range .14 to .30) on all informants with the exception of a nonsignificant loading for Item 2C in the resource facilitator model. Therefore, items 2B and 2C were removed from further data analyses. Items 3A and 3D had similar problems when added to Natural Supports, so they also were removed from further analyses.<sup>14</sup>

The remaining items from Youth and Family Team (2A and 2D) and Community-Based Services (3B and 3C) were considered conceptually related to separate elements. Item 2A, “Do the youth and one of her or his biological parents actively participate on the team?” was added to the element Individualized Services resulting in no meaningful differences for resource facilitators ( $\chi^2 [2] = 5.58$ , CFI = .92, TLI = .92, RMSEA = .04) and caregivers ( $\chi^2 [2] = 3.60$ , CFI = .99, TLI = .99, RMSEA = .02). Standardized loadings were significant across resource facilitators (.46) and caregivers (.38). Based on slight improvements in Individualized Services model, and the benefit of retaining a conceptually important item, Item 2A was added to Individualized Services in the caregiver and resource facilitator models for Step 2.

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<sup>14</sup> It should be noted that items 3A and 3D remained strongly correlated with each other for resource facilitators (.50), caregivers (.41), and youths (.57). They may represent another variable not included in the present model (e.g., community-based outcomes)

Item 2D asked, “Does the team consist of people the caregiver wants on the team?” and was considered conceptually related to the element Voice and Choice. Adding Item 2D resulted in slight decreases in model fit for resource facilitators ( $\chi^2 [2] = 2.40$ , CFI = 1.00, TLI = 1.00, RMSEA = .02) and caregivers ( $\chi^2 [2] = 4.12$ , CFI = .99, TLI = .99, RMSEA = .03), but fit indexes remained solidly in the good fit range. Standardized loadings were significant for resource facilitators (.63) and caregivers (.51). Therefore, Item 2D was added to Voice and Choice for the resource facilitator and caregiver forms.

Item 3C, “Does the team help the youth get involved with activities in her or his community?” seemed most related Strengths-Based Services. This addition negatively impacted model fit for resource facilitators ( $\chi^2 [2] = 24.51$ , CFI = .80, TLI = .59, RMSEA = .14), caregivers ( $\chi^2 [2] = 8.00$ , CFI = .90, TLI = .70, RMSEA = .12), and youths ( $\chi^2 [2] = 42.61$ , CFI = .71, TLI = .56, RMSEA = .24). Standardized loadings were significant for caregivers (.53) and youths (.75), but yielded an inadmissible solution for resource facilitators (1.02). Due to these problems, Item 3C was removed from further analyses.

Finally, Item 3B, “Are the services and supports that the family needs hard to reach because they are far away?” was moved to Flexible Resources. This respecification yielded improvements in model fit for resource facilitators ( $\chi^2 [2] = 7.26$ , CFI = .88, TLI = .88, RMSEA = .07) and caregivers ( $\chi^2 [2] = 3.37$ , CFI = .99, TLI = .99, RMSEA = .04). The youth form does not cover Flexible Resources. Standardized loadings for Item 3B were significant for resource facilitators (.48) and caregivers (.60). Further, the addition

of this item on the resource facilitator form changed the inadmissible loading for Item 10C from 1.10 to .99. Based on these improvements, Item 3B was included in future analyses for Flexible Resources.

### *Step 2: Combined Element Models*

After examining each of the wraparound elements separately in the first step, the second step evaluated the full model for each of the three informants. Findings from Step 1 revealed problems with Youth and Family Team and Community-Based Services for resource facilitators and caregivers, and Community-Based Services for youths. These elements were removed from the CFA models before Step 2. As such, this step evaluated three models with fewer than the hypothesized number of elements: resource facilitator (nine elements), caregiver (nine elements), and youth (seven elements). Item factor loading estimates from Step 1 were used as start values for the estimates in the CFA models in Step 2.

### *Hypotheses 3, 4, and 5*

Three CFA models were used to test the prediction that the combined element models for each of the informants would provide reasonable fit to the study data (Hypothesis 3). Contrary to this hypothesis, none of the three models fit the data well. The youth CFA model provided, at best, adequate fit to the data ( $\chi^2 [5] = 15.55$ , CFI = .89, TLI = .89, RMSEA = .08), and the caregiver and resource facilitator models produced inadmissible solutions due to non-positive definite psi matrixes (i.e., estimated correlations that were out-of-bounds). The non-positive definite matrices may indicate linear dependency among variables (Rigdon, 1997; Wothke, 1993). This possibility is

supported by the extremely high estimated correlations found among many of the element factors for the resource facilitator and caregiver models (Table 17).

The inadmissible solutions for the resource facilitator and caregiver models meant that the item factor loadings, factor correlations, and other parameter estimates should not be trusted (Kline, 2005). Therefore, hypotheses four (predicting significant item factor loadings) and five (predicting that correlations among the elements would be significant and not greater than .85) could not be tested for the adult informants. The youth model item factor loadings were all significant (supporting Hypothesis 4), and youth factor correlations ranged from .31 to .75 (supporting Hypothesis 5). However, the below-adequate fit of the youth model, and inadmissible solutions for resource facilitators and caregivers, suggested that these models could be improved greatly through respecification.

### *Respecification for Step 2*

Recalling that the plan for data analyses was based on a jigsaw piecemeal process for building complex models from simpler components (Bollen, 2000), it was decided that the transition from Step 1 (single element models) to Step 2 (combining all elements) was too abrupt. The majority of elements stood reasonably well on their own, but led to high multicollinearity and inadmissible solutions when combined simultaneously (see Table 17). Therefore, an iterative process was chosen in which elements were added to the CFA models one at a time, with the primary goal being the identification of a good fitting model while including the maximum number of WFI items from Step 1. After respecification, these revised models were compared to alternative single factor models.

Single factor models are considered more parsimonious and thus should be chosen over more complex ones if they fit the data equally well (Dumenci, Erol, Achenbach, & Simsek, 2004).

*Resource facilitators.* The resource facilitator model yielded an inadmissible solution, most likely due to high multicollinearity among estimated correlations among factor elements. To address this concern, the correlations were used as a guide for adding single elements to the model. This iterative process is described in detail for the resource facilitator model to allow readers to form their own opinion on this exploratory approach.

The first model tested included those elements with the fewest extremely high (greater than .85) correlations: Voice and Choice, Natural Supports, Flexible Resources, and Outcomes-Based. This model provided an adequate fit to the data ( $\chi^2 [5] = 19.64$ , CFI = .93, TLI = .93, RMSEA = .07), all item factor loadings were significant, and element factor correlations ranged from .38 to .80. Next, the element Collaboration was added, resulting in no changes to model fit ( $\chi^2 [5] = 19.40$ , CFI = .92, TLI = .92, RMSEA = .07). Adding the element Cultural Competence led to a nonpositive definite matrix with Collaboration identified as problematic element (estimated correlation between Cultural Competence and Collaboration was .89). Collaboration was removed and Cultural Competence retained resulting in good model fit based on RMSEA ( $\chi^2 [5] = 17.51$ , CFI = .92, TLI = .92, RMSEA = .06).

Nonpositive definite problems returned when separately adding Individualized Services and Strengths-Based Services. In each case the added elements demonstrated extremely high correlations with Cultural Competence. Therefore a model was tested that

combined these three elements into one factor (Cultural-Individualized-Strengths), resulting in good model fit ( $\chi^2 [5] = 9.05$ , CFI = .94, TLI = .94, RMSEA = .04) with significant standardized loadings for all items. This combined factor was added to the model with Family Team, Natural Supports, Flexible Resources, and Outcomes-Based yielding an admissible solution and good fit based on RMSEA ( $\chi^2 [5] = 15.45$ , CFI = .90, TLI = .90, RMSEA = .06).

At this stage only two elements from Step 1 were left out of the model:

Continuation of Care and Collaboration. Adding these elements separately led to an inadmissible solution (Continuation of Care) and an extremely high factor correlation (Collaboration with the new combined element). Combining the items from these two elements into one factor created a new, good fitting model ( $\chi^2 [5] = 9.41$ , CFI = .97, TLI = .97, RMSEA = .04). Adding this new factor (Continuation-Collaboration) to the iterative process, yielded a nonpositive definite psi matrix with Continuation-Collaboration correlating extremely high with Flexible Resources (.90) and the other new factor, Cultural-Individualized-Strengths (.93). Combining the two new models (Continuation-Collaboration and Cultural-Individualized-Strengths) led to a good fitting model ( $\chi^2 [5] = 14.43$ , CFI = .92, TLI = .92, RMSEA = .05), that was returned to the larger model with an admissible solution and adequate, if somewhat poorer fit ( $\chi^2 [5] = 16.45$ , CFI = .90, TLI = .90, RMSEA = .06).

This iterative process yielded a resource facilitator model retaining all WFI items from Step 1. Five elements that were hypothesized as distinct constructs were found to have such high correlations that their indicators could only be included in the model as a

single factor. The final resource facilitator model for Step 2 included five factors: (a) Voice and Choice, (b) Natural Supports, (c) Flexible Resources, (d) Outcomes-Based, and (e) a factor combining items from the Cultural Competence, Individualized, Strengths-Based, Continuation of Care, and Collaboration scales. This model provided a better fit to the data than a single factor model including the same items ( $\chi^2 [5] = 24.62$ , CFI = .81, TLI = .81, RMSEA = .08), thus passing the “rule of parsimony” (p. 338, Dumenci, Erol, Achenbach, & Simsek, 2004). Finally, this resource facilitator model met nearly all criteria from Step 2’s hypotheses: (a) good fit, (b) significant item factor loadings, and (c) factor correlations were significant and less than .85 (see Table 18).

*Caregivers.* The model developed through the iterative process for resource facilitators was tested for the caregiver informants. This decision based in the predicted convergent validity of the wraparound model across informants. Testing this five factor model for caregivers resulted in an inadmissible solution (nonpositive definite psi matrix), that seemed primarily driven by an extremely high correlation between Natural Supports and the new combined factor (.98). Thus, items for Natural Supports were added to the combined factor and tested separate from the larger model yielding an adequate fit to the data ( $\chi^2 [6] = 17.55$ , CFI = .94, TLI = .92, RMSEA = .07) that was improved to good fit when the one nonsignificant item (7D) was dropped ( $\chi^2 [2] = 14.51$ , CFI = .95, TLI = .95, RMSEA = .06). When this larger combined factor was returned to the large model (i.e., adding Voice and Choice, Flexible Resources, and Outcomes-Based) the fit remained good ( $\chi^2 [6] = 14.87$ , CFI = .94, TLI = .95, RMSEA = .05).

The caregiver model created through respecification included four factors: (a) Voice and Choice, (b) Flexible Resources, (c) Outcomes-based, and a factor including items from Cultural Competence, Individualized, Strengths-Based, Natural Supports, Continuation of Care, and Collaboration scales. This revised model provided a slightly better fit to the data than the single factor model including the same items ( $\chi^2 [6] = 16.86$ , CFI = .93, TLI = .94, RMSEA = .06). Examining hypotheses for Step 2: (a) fit for the model was good, (b) item factors loadings were all significant (after removing Item 7D), and (c) all factor correlations were significant, but two were still quite high (Flexible Resources and Outcomes-based with the combined factor, .86 and .84 respectively).

*Youth.* The concern with the youth model at Step 2 was not an inadmissible solution, but rather an adequate (rather than good) fit based on RMSEA ( $\chi^2 [5] = 15.55$ , CFI = .89, TLI = .89, RMSEA = .08). This fit was an improvement over a single factor model using the same items ( $\chi^2 [5] = 19.61$ , CFI = .85, TLI = .85, RMSEA = .09), but room for improvement remained. The first step in this respecification was to test models similar to the revised resource facilitator and caregiver models. It is important to remember that the youth WFI does not include items measuring Collaboration, Flexible Resources, and Outcomes-Based, so an exact match to either the resource facilitator or caregiver model was not possible.

First, a combined factor was created using the items from Cultural Competence, Individualized Services, Strengths-Based, Natural Supports, and Continuation of Care. This was akin to the combined caregiver factor, although the youth version could not include the element Collaboration. To further mirror the revised caregiver and resource

facilitator models, this combined factor was included in a model with Voice and Choice and the element Family Team was removed. This two-factor model yielded a poor fit to the data ( $\chi^2 [5] = 20.43$ , CFI = .88, TLI = .88, RMSEA = .09), so respecification continued. Next, the element Natural Supports was removed from the combined factor to parallel the revised resource facilitator model. This three-factor model (Voice and Choice, Natural Supports, and combined factor) provided a just-adequate fit to the data ( $\chi^2 [5] = 17.88$ , CFI = .90, TLI = .90, RMSEA = .08). The fit of this model was very similar to the originally specified seven-element youth model, but has the benefit of being more directly comparable to the revised caregiver and resource facilitator models. Therefore this is the model that was used for Step 3.

Before continuing to Step 3, the hypothesized youth model (seven elements after Step 1) was examined to see if model fit could be improved while keeping it as similar to the original as possible. The model was returned to the seven separate element factors from the beginning of Step 1 ( $\chi^2 [5] = 15.55$ , CFI = .89, TLI = .89, RMSEA = .08), and then revised by dropping the item from each element that had the lowest item factor loading. This maintained the hypothesized structure of the model, if not all the hypothesized indicators. Removing the items with the lowest item factor loadings improved model fit for the seven-element model ( $\chi^2 [5] = 13.49$ , CFI = .93, TLI = .93, RMSEA = .07). Next, the element Youth and Family Team was removed, as it was not included in either of the adult informant models in Step 2. This six-factor model provided a good fit to the data ( $\chi^2 [5] = 12.99$ , CFI = .95, TLI = .95, RMSEA = .06). Element factor correlations for this revised model are presented in Table 18.

This revised youth model included six factors: (a) Voice and Choice, (b) Cultural Competence, (c) Individualized, (d) Strengths-Based, (e) Natural Supports, and (f) Continuation of Care. This model provided a better fit to the data than the single factor youth model including the same items ( $\chi^2 [5] = 21.21$ , CFI = .90, TLI = .90, RMSEA = .10). Examining hypotheses for Step 2: (a) fit for the revised model was good, (b) item factors loadings were all significant, and (c) all factor correlations were significant and below the .85 cutoff.

### *Step 3: Multitrait-Multimethod Model*

The purpose of Step 3 was to use a MTMM approach to provide a strong test of wraparound's elements (traits) across multiple informants (methods). As mentioned earlier, several researchers have cautioned that MTMM models frequently fail to yield an admissible solution (Kenny, Kashy, & Bolger, 1998; Kline, 2005). Because of known difficulties with convergence and empirical identification, two steps were taken to increase the likelihood that a solution would be found.

First, total scores were used as the indicators in Step 3 rather than the WFI items. Recall that total scores are combinations of items that form unitary constructs. For this step, the items representing each of the factors from Step 2 were summed to create total scores for each element. There were five resource facilitator total scores: (a) Voice and Choice, (b) Natural Supports, (c) Flexible Resources, (d) Outcomes-Based, and (e) a parcel containing items from Cultural Competence, Individualized Services, Strengths-Based Services, Continuation of Care, and Collaboration). Caregivers had four total scores very similar to resource facilitators except only three items for Natural Supports

were used, and they were added to the larger combined item parcel. The youth total scores included the sums for (a) Voice and Choice items, (b) Natural Supports items, and (c) the combination of Cultural Competence, Individualized Services, Strengths-Based, and Continuation of Care. Because these total scores were sums of separate items, their distributions expanded from binary (0 versus 1) to Likert type scales (0 to 4; 0 to 5; 0 to 21; 0 to 24). This change in indicator metric necessitated a change in estimation method. Maximum Likelihood Estimation, a much more commonly used method than WLSMV (Kline, 2005), was used for Step 3.

The second strategy used to increase the odds that an admissible solution would be found, has been discussed throughout this paper. A jigsaw piecemeal process was used that began with testing simple portions of the full wraparound model and built toward the more complex. This was done throughout the first two steps in this study, and continued in Step 3. The MTMM CFA model depicted in Figure 3 represents the most complex of the MTMM models due to cross-loadings of indicators on multiple factors and high parameter to observation ratios that can lead to empirical underidentification (Kline, 2005). This model is known as a correlated-trait correlated-method (CTCM) model. A simpler MTMM approach was chosen for Step 3 due to the poor fit of the hypothesized models in Step 2. The simplest and most parsimonious MTMM model is the trait-only model (Dumenci, 2000). This model is a standard CFA measurement model with indicators loading on single correlated factors.

As shown in Figure 6, the trait-only model for Step 3 included 12 total scores (5 resource facilitator, 4 caregiver, and 3 youth) loading on four traits. The traits represent

two factors from Step 2 that received support from all three informants (Voice and Choice), two factors measured by two informants (Flexible Resources and Outcomes-Based), and a Combined trait that predicted somewhat different combinations of indicators for each informant. This last trait was hypothesized to include indicators from the elements Cultural Competence, Individualized Services, Strengths-Based Services, Natural Supports, Continuation of Care, and Collaboration. For caregivers, this trait was a direct match to the indicator created from the combined factor from Step 2. For resource facilitators and youths, Natural Supports did not fit with that combined factor in Step 2, resulting in separate item parcels for Natural Supports. Thus, resource facilitators and youths had two total scores that loaded on this combined trait factor (Natural Supports and their own combined factors). In this model, trait factors were allowed to correlate, but total scores could only load on single factors (i.e., no cross-loadings were allowed). To establish identification, and set the scale metric, indicator residual loadings and factor variances were fixed to 1.00.

#### *Hypotheses 6 and 7*

Despite substantial efforts to avoid an inadmissible solution, running this model resulted in a nonpositive definite matrix. The model was modified once to improve a potential empirical underidentification, by combining the Flexible Resources and Outcomes-Based trait factors (each had only two indicators). However, this revised model continued to yield the nonpositive definite matrix. Because the model failed at the most simplest level of MTMM options, no further respecification was attempted. Hypothesis 6 was rejected because the model clearly did not provide a good fit to the

data. Hypothesis 7 was rejected as well, for no evidence of convergent validity across wraparound elements could be found.

## Discussion

The present study provides the first empirical test of the ten essential elements of wraparound as a coherent model (Goldman, 1999). To evaluate these elements, a jigsaw piecemeal process (Bollen, 2000) was followed to build toward the most complex and integrative model (ten elements and three informants) by testing, refining, and combining smaller portions of the larger model. Findings from the present study did not support the ten-element model, and results evaluating the simpler models were mixed and only somewhat supported the study's hypotheses. Specific findings from this study, strengths and limitations of the methodology, future directions, and conclusions are discussed below.

### *Primary Findings*

#### *Step 1: Separate Element Models*

At the simplest level of analysis in the present study, individual elements and the items that were designed to measure them were evaluated separately. Hypotheses that these elements and items would be supported by informants' responses on the WFI received modest support. The majority of the single element models provided adequate to good fit to the data, and elements that did not demonstrate good model fit are noted but are not given strong consideration due to low power. For the elements that did not meet criteria for adequate to good fit for resource facilitators (Natural Supports, Flexible Resources, and Outcomes-Based), caregivers (Natural Supports and Collaboration), and

youths (Individualized Services and Continuation of Care) only the element Natural Supports was problematic across two informants.

Clearer patterns across informants emerged when the items were examined for each element. The majority of WFI items were significantly related to their underlying elements, yet items for Community-Based Services and Youth and Family Team did not hold together across informants. The element Community-Based Services was the most problematic, with difficulties occurring with all three informants. Only one of the items from Community-Based Services (“Are the services and supports that the family needs hard to reach because they are far away?”) could be added to another element (Flexible Resources) on conceptual grounds. The element Youth and Family Team was problematic for resource facilitators and caregivers, but not for youths. Two of the items from this element (“Do the youth and one of her or his biological parents actively participate on the team?” and “Does the team consist of people the caregiver wants on the team?”) were moved to other elements for the adult informants (Individualized Services and Voice and Choice respectively), and the other items were dropped.

It is difficult to confidently determine why these two elements were problematic across multiple informants. One possible explanation for problems with Community-Based Services is the use of different scoring methods for three of the four items (see Appendixes B and C). Items 3A, 3C, and 3D did not follow the typical pattern of asking informants to rate their level of agreement to each question. Instead, these items asked for the number of days the child spent at a regular school or job-training program, specific examples of community activities, and how many days were spent in community-based

living situations. Responses were then recoded to fit the normal pattern of responses (0, 1, 2), but using such a different scoring procedure may have imposed a strong method effect. An alternative explanation is that these same items may more accurately reflect outcomes than implementation of the wraparound process. Involving children in community-based activities, regular school, and least-restrictive living situations are primary goals of wraparound (Burchard, Bruns, & Burchard, 2002), but may better be conceptualized as successful outcomes rather than process steps. Items from the element Youth and Family Team may similarly be mismatched as indicators of wraparound implementation. The two items that were removed from analyses (2B and 2C) queried informants about the participation of family advocates and school personnel on the team. Perhaps the element Youth and Family Team is better represented by items measuring the process for team formation rather than team membership (Walker & Schutte, 2005).

The explanations given for the failure of these two elements emphasize problems with the items measuring the elements, rather than the elements themselves. Such explanations should not be taken as evidence for or against the importance or utility of these two elements. An equally justifiable alternative explanation for the failure of these two elements is that the elements do not represent unidimensional constructs. However, the present findings cannot provide direction on the extent the underlying elements or the available items are problematic.

### *Steps 2 and 3: Combined Element and Multitrait-Multimethod Models*

None of the hypotheses for Step 2 were supported with the wraparound process models derived from Step 1. The trimmed resource facilitator (nine elements), caregiver

(nine elements), and youth (seven elements) models all failed to demonstrate good fit. The youth model provided at least an adequate fit to the data, but neither adult informant models yielded interpretable solutions. The resource facilitator and caregiver models required significant revision because several of the elements were so highly related that they fit better as combined constructs. For both adult informants, the items for the elements Cultural Competence, Individualized Services, Strengths-Based, Continuation of Care, and Collaboration were combined into a single factor. The elements Voice and Choice, Flexible Resources, and Outcomes-Based remained as unique constructs in the final models. The primary distinction between the caregiver and resource facilitator models was that for caregivers the items for the element Natural Supports fit better when added to the combined factor, while Natural Supports remained a distinct element in the resource facilitator model. When responses by youths were examined using this new framework, the elements Voice and Choice and Natural Supports remained distinct elements, while Cultural Competence, Individualized Services, Strengths-Based, and Continuation of Care were combined.

Previous research on the components of wraparound provides no guidance for why these elements (five for resource facilitators, six for caregivers, and four for youths) should better be conceptualized as combined constructs than as separate elements. Perhaps when teams have achieved a high level of understanding of a child and family (Cultural Competence, Individualized-Services, and Strengths-Based Services) they nearly always provide unconditional care (Continuation of Services) and are more likely to work together cohesively (Collaboration). Continuing with this line of reasoning,

caregivers may perceive that when this sequence of team activities occurs they are more likely to receive support from friends and nonprofessional sources (Natural Supports), but resource facilitators and youths see the presence of natural supports as less related to this sequence.<sup>15</sup>

As mentioned above, the youth model provided the closest match to the originally hypothesized model. Before revision, a seven-element youth model (after Community-Based Services was removed) provided an adequate fit to the data. This model improved to good fit when the weakest items and the element Youth and Family Team were removed. Better fit obtained by dropping the Youth and Family Team element simply provides more evidence that either this construct or its items are problematic, but the better fit does not determine which is more problematic. Improvements to the model based on item deletion suggest that better items may increase the ability of the WFI to measure the hypothesized elements of wraparound. Thus, the youth model provided the strongest evidence for the underlying element structure of the wraparound process. It is unclear whether the youth model most closely represented the hypothesized model due to (a) unique perspectives that youths have on the wraparound process, (b) more (or less) accurate understanding of how the wraparound process was delivered, or (c) somewhat greater variability on fidelity ratings compared to other informants (this has been demonstrated in previous research as well, Bruns, Leverentz-Brady, & Suter, 2005; Bruns, Suter, Force, & Burchard, 2005).

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<sup>15</sup> It should be noted that the items for Natural Supports are somewhat different for youth informants (see Appendix C).

Finally, hypotheses were not supported due to inadmissible solutions for the MTMM model tested in Step 3. This was not surprising considering only the caregiver model from Step 2 provided a good fit to the data. Combining the separate informants into a single model appeared to compound the difficulties within each model. The only clear finding from this stage, was that improvements in model fit would need to occur first for the informants separately before such a MTMM approach is attempted again.

#### *Strengths and Limitations*

The present study had a number of positive characteristics that instill confidence that poor model fit was not due to poor methodology. First, the model chosen for evaluation was the most widespread and cited for the wraparound process. Since the 1998 Duke meeting, the ten essential elements have been viewed as the optimal ingredients for high quality wraparound (Burchard, Bruns, & Burchard, 2002; Goldman, 1999). Second, the jigsaw piecemeal process (Bollen, 2000) provided a robust method for building toward the more complex hypothesized model of wraparound through a series of iterative steps. This process allowed a test of the wraparound process that capitalized on the benefits of CFA procedures, while avoiding the pitfalls of EFA. Third, the present study recognized that the categorical nature of the WFI items violated the normal distribution assumption of the most common form of estimation in structural equation modeling, Maximum Likelihood Estimation (DiStefano, 2002). Thus, CFA models in this study employed the WLSMV estimation method which is much more appropriate for ordinal data (Flora & Curran, 2004; Muthén & Muthén, 2004). Fourth, a fairly large sample was used with excellent power for the primary analyses. Fifth, data included responses from

multiple informants to provide more robust indicators of the wraparound process. Sixth, statistical dependencies created by collecting data from different agencies were accounted for in the analyses. Seventh, rather than relying on deletion (listwise or pairwise) or imputation of cases with missing values, estimation methods that account for the missing data within the model were used (FIML, Graham, 2003). And eighth, respecification of the models was conceptually rather than statistically driven. There is no doubt that a better fitting model could have been found had solely empirical methods been used, however such a model would have been difficult or impossible to interpret and most likely would have been the result of chance variations from the present sample (Klein, 2005).

Despite these strengths, the present study had a number of important limitations. Perhaps the most salient limitation is the self-selected sample that greatly limits generalizability of these findings. The WFI was offered nationally for agencies that wanted to use it and were willing to share their data. Although participants reported racial and ethnic membership similar to that of the United States (US Census Bureau, 2006), there was no way to determine if the participants were representative of those involved in the wraparound process. Perhaps the agencies that chose to participate were providing exceptionally high quality wraparound. In addition, each agency chose which providers, caregivers, and youths to interview. Agencies were strongly encouraged to use independent evaluators and collect random samples of informants, but there was no mechanism for confirming that this was done. As such, the present findings may reflect idiosyncrasies of the present sample.

Although three informants were used to provide information from multiple sources, interviews were entirely based on self-report. The use of direct observations (e.g., Wraparound Observation Form, Epstein et al., 1998; Epstein et al., 2003) or other methods would provide evidence of criterion validity (Kazdin, 2002). Further, the inclusion of additional measures, even simply a larger number of items on the WFI, may have resulted in clearer interpretation of whether the elements or items were problematic.

Finally, all data for the present study were collected at a single point in time. The lack of longitudinal data precludes an examination of whether the hypothesized ten-element model may exist at some stages in the wraparound process but not others. For example, Walker and her colleagues (Walker & Schutte, 2004) have proposed that wraparound is not a static model, but rather a series of stages that unfold over time. The present study collected fidelity information on families who had been receiving wraparound for varying amounts of time. Perhaps the ten-element model is more appropriate for families who have been receiving wraparound for at least several months.

#### *Future Directions*

Due to the uncertainty of whether the WFI items or the underlying elements were driving the poorly fitting (and inadmissible) models, perhaps the clearest direction is for improvements in the WFI itself. Findings from the present study have highlighted a number of potentially problematic items (e.g., those for Youth and Family Team and Community-Based Services) as well items that may be stronger indicators for their underlying elements (e.g., Voice and Choice, Flexible Resources, and Outcomes-Based). A careful item analysis comparing the items that added to the models in the present study

with those that did not, might provide direction for developing and testing a much larger item pool. Another finding from this study was that the small number of answer choices (*Yes, Sometimes or Somewhat, and No*) led to low variability in responses and necessitated a more specialized method of model estimation than is routinely employed (WLSMV). Therefore, items should be pilot tested using both expanded and reduced item response choices to determine which more accurately depicts fidelity to the wraparound process as measured by team member interviews.

A second, and strong recommendation for future studies is to recruit a representative sample from which to collect data. Without knowing the extent to which the environments and participants adequately represent the population of those providing and receiving wraparound, all tests of the wraparound process model remain severely limited. Although ideal, it is not necessary to provide a nationally representative sample. Instead smaller studies with known representation to specific environments and/or service systems (e.g., schools, child welfare, court diversion) would provide a foundation on which to extend evaluations of the wraparound model. A related recommendation is to collect data from informants who are not receiving (or providing) wraparound but other interventions. Such samples would provide greater evidence for the specificity of the wraparound model.

Finally, as mentioned previously, new conceptualizations are being offered to describe high quality wraparound. The National Wraparound Initiative (NWI) is currently developing the most prominent, emphasizing a number of components of wraparound that extend beyond the ten essential elements (Walker & Bruns, 2003). The NWI has

proposed a series of phases and activities of wraparound that include (a) engagement and team preparation, (b) initial plan development, (c) implementation, and (d) transition (Walker & Schutte, 2004). In addition, the NWI is attempting to update the ten essential elements (Bruns et al., 2004) and connect them to the proposed phases and activities. This process model attempts to capture the necessary components of wraparound, not just at the team level, but also the agency and overall system level (e.g., state system of care plan). The NWI provides an excellent opportunity to further develop the theoretical and conceptual foundation of wraparound, and the present study proposed a strong methodological tool that could be used to evaluate and provide feedback to the models developed by the NWI.

### *Conclusions*

Findings from the present study underscore the challenges of researching the wraparound process, even when using flexible methods. Confirmatory factor analyses using WFI responses from resource facilitators, caregivers, and youths largely provided inconclusive evidence for the hypothesized ten-element model of wraparound. Adequate to good fit for combinations of elements for resource facilitators and caregivers, coupled with good fit for many of the hypothesized youth elements, implies that this model is not completely without merit, but much more foundational work is needed. If wraparound is going to make the transition from *promising* to *evidence-based*, greater specification of its model and empirical evidence regarding its validity is sorely needed. Such information would have important implications for providers who seek to track and improve the quality of wraparound they provide. Further, with reliable and valid measures for

wraparound fidelity, researchers could make much stronger assertions regarding the efficacy and effectiveness of this approach.

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Table 1

## Conceptual Elements of the Wraparound process (Goldman, 1999)

Element	Description
1. Voice and Choice	The youth and family must be full and active partners at every level and in every activity of the wraparound process.
2. Youth and Family Team	The wraparound process must be a team-driven process involving the family, child, natural supports, agencies, and community services working together to develop, implement, and evaluate the individualized plan.
3. Community-Based	Wraparound must be based in the community, with all efforts toward serving the identified youth in community residential and school settings.
4. Cultural Competence	The process must be culturally competent, building on the unique values, preferences and strengths of children and families, and their communities.
5. Individualized and Strength-Based	Services and supports must be individualized, built on strengths, and meet the needs of children and families across life domains to promote success, safety, and permanence in home, school and community.
6. Natural Supports	Wraparound plans must include a balance of formal services and informal community and family supports.
7. Continuation of Care	There must be an unconditional commitment to serve children and their families.
8. Collaboration	Plans of care should be developed and implemented based on an interagency, community-based collaborative process.
9. Flexible Resources	Wraparound child and family teams must have flexible approaches and adequate and flexible funding.
10. Outcome-Based	Outcomes must be determined and measured for the system, for the program, and for the individual child and family.

Table 2

*Requirements for Practice of the Wraparound process (Goldman, 1999)*

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1. The community collaborative structure, with broad representation, manages the overall wraparound process and establishes the vision and mission.
  2. A lead organization is designated to function under the community collaborative structure and manage the implementation of the wraparound process.
  3. A referral mechanism is established to determine the children and families to be included in the wraparound process.
  4. Resource coordinators are hired as specialists to facilitate the wraparound process, conducting strengths/needs assessments; facilitating the team planning process; and managing the implementation of the services/support plan.
  5. With the referred child and family, the resource coordinator conducts strengths and needs assessment.
  6. The resource coordinator works with the child and family to form a child and family team.
  7. The child and family team functions as a team *with* the child and family engaged in an interactive process to develop a collective vision, related goals, and an individualized plan that is family centered and team based.
  8. The child and family team develops a crisis plan.
  9. Within the service/support plan, each goal must have outcomes stated in measurable terms, and the progress on each monitored on a regular basis.
  10. The community collaborative structure reviews the plans.
-

Table 3

*Empirical Evidence Base for the Wraparound Process*

Citation(s) / Source(s)	Program Description	Participants	Primary Measures / Findings	Analytic Details
Case studies				
(Burchard, Burchard, Sewell, & VanDenBerg, 1993) <sup>a</sup> Published monograph	Alaska Youth Initiative (AYI) goal to avoid residential placement Setting: urban & rural regions in Alaska Duration: 9-36 months	N=10 SEBD youth with history of residential treatment No attrition Age: 9-21 Sex: 50% female Race/Ethnicity: 60% Caucasian 30% Native Alaskan 10% Latino	Structured interviews and record reviews: 9 out of 10 youth stabilized in community settings; 5 no longer requiring services, 4 receiving less intensive services, and 1 not stabilized in community	Qualitative retrospective analysis  Participants selected because rated “successful” and “instructive” cases by AYI staff from initial sample of 84
(Cumblad, 1996) <sup>a</sup> <i>Cited in (Burchard, Bruns, &amp; Burchard, 2002)</i> Unpublished doctoral dissertation	Kaleidoscope program welfare organization emphasizing family reunification and community placement Setting: urban setting in Chicago, IL Duration: <i>M</i> = 36 months	N=8 SEBD youth referred due to high-risk behaviors No attrition  <i>Demographics unknown</i>	Interviews and record review: At assessment no youth were displaying problems behaviors that led to referral, no evidence of abuse/neglect, four youths reunited with families, two not reunited but ongoing contact (remaining two youths’ parents were deceased)	Qualitative retrospective analysis

Citation(s) / Source(s)	Program Description	Participants	Primary Measures / Findings	Analytic Details
Pre-post, no comparison studies				
(Anderson, Kooreman, Mohr, Wright, & Russell, 2002) <sup>a, b</sup> Conference proceedings	Dawn Project System of Care Setting: Duration: 6 months	N = 384 SEBD youth With attrition: N = 146 Age: <i>M</i> = 13 Sex: 30% female Race/Ethnicity: 70% African American or biracial	CAFAS: significant improvement on total scores ( <i>d</i> =.44)	
(Bartley, 1999) Doctoral dissertation	Children's Health and Mental Health Preservation Services provides community-based mental health services Setting: Philipsburg, PA; supports in home & school Duration: 16 months	N = 25 SEBD youth (5 prematurely discharged) No attrition Age: 6-13, <i>M</i> = 9.8 Sex: 20% female Race/Ethnicity: not reported	SCICA: 60% of participants improved CBCL: 59% of participants improved TRF: 40% of participants improved	No tests of statistical significance
(Bruns, Burchard, & Yoe, 1995) <sup>a</sup> Journal article	Vermont's statewide wraparound initiative Setting: urban & rural areas Duration: 12 months	N = 27 SEBD youth No attrition Age: 8-18, <i>M</i> = 13.6 Sex: 30% female Race/Ethnicity: not reported	CBCL: significant improvement on total ( <i>d</i> =.58), internalizing ( <i>d</i> =.64), and externalizing scales ( <i>d</i> =.47) DAIC: significant improvement on total negative behaviors ( <i>d</i> =.61) ROLES: no significant change Costs: no significant change	

Citation(s) / Source(s)	Program Description	Participants	Primary Measures / Findings	Analytic Details
(Clarke, Schaefer, Burchard, & Welkowitz, 1992) <sup>a</sup>  Journal article	Project wraparound providing individualized services to youth Setting: rural New England; in home & school Duration: 12-24 months	N = 28 SEBD youth receiving services in home and school With attrition: school (n=12) home (n=19) Age: 5-18, <i>M</i> = 11 Sex: 100% male Race/Ethnicity: 53% Native American 47% Caucasian	CBCL (home): significant improvement on total ( <i>d</i> =1.18), internalizing ( <i>d</i> =1.12), and externalizing scales ( <i>d</i> =1.00) TRF (school): no significant improvement on total ( <i>d</i> =.65), internalizing ( <i>d</i> =.40), and externalizing ( <i>d</i> =.63) SCRS: significant improvement (home, <i>d</i> =.65), not significant (school, <i>d</i> =.56) Connors Hyperkineses Index: significant improvement (home, <i>d</i> =1.36), not significant (school, <i>d</i> =.92) Child Well-Being Scale: significant improvement ( <i>d</i> = 1.21)	Outcomes examined separately for home and school-based wraparound groups
(Eber, Osuch, & Rolf, 1996) <sup>a</sup>  Conference proceedings	Emotional and Behavioral Disability Partnership Initiative Setting: statewide in Illinois Duration: <i>M</i> = 12 months	N = 81 (at baseline) With attrition: CBCL (n=25), FACES (n=46) CAFAS, TRF, ROLES (not reported) Age: 7-19, <i>M</i> = 14.64 Sex: 18% female Race/Ethnicity: not reported	CBCL: significant improvement for <u>females</u> on internalizing scale ( <i>d</i> =2.11), all other scales nonsignificant (females, <i>d</i> =.44; males internalizing, <i>d</i> =.43; externalizing, <i>d</i> =1.31) TRF: no significant changes CAFAS: significant improvements in performance ( <i>d</i> =1.06), mood scales ( <i>d</i> =.90) only; not significant: behavior ( <i>d</i> =.33), thinking ( <i>d</i> =0), and drugs ( <i>d</i> =-.09) FACES: significant improvement for both adaptability ( <i>d</i> =.48) and cohesiveness ( <i>d</i> =.73) ROLES: positive change (statistical significance not reported)	

Citation(s) / Source(s)	Program Description	Participants	Primary Measures / Findings	Analytic Details
(Eber, Osuch, & Redditt, 1996) <sup>a</sup> Journal article	Wraparound in Schools (WAIS) & wraparound Interagency Network (WIN) Setting: school-based Duration: 9 months	N = 44 WIN (n = 25) WAIS (n = 19) Age: not reported Sex: 11% female Race/Ethnicity: 86% Caucasian 7% African American 7% Other	ROLES: positive change (statistical significance not reported) CBCL, TRF, CAFAS data provided only for baseline	No tests of statistical significance
(Hyde, Woodworth, Jordan, & Burchard, 1995) <sup>a</sup> Conference proceedings	Family Preservation Initiative of Baltimore City Setting: urban Duration: <i>M</i> = 9.73 months	N = 70 SEBD youth Attrition not reported Age: 9-21, <i>M</i> = 15.97 Sex: 36% female Race/Ethnicity: 67% African American 33% Caucasian	Costs: lower than out-of-state residential placement (\$269/day vs. \$216/day) ROLES: shift from 20% to 88% of youth with living situation no more restrictive than group home Critical behaviors (suspension, hospitalization, suicide attempts, arrests) assessed post only	No tests of statistical significance
(Illback, Neill, Call, & Andis, 1993) <sup>a, b</sup> Book chapter	Kentucky IMPACT Program Setting: rural and urban Duration: 16.43 months	N = 954 SEBD youth With attrition: CBCL (N=431) ROLES (N=953) Age: 0-21 Sex: 29.1% female Race/Ethnicity: not reported	CBCL: significant improvement on total (d=.66), internalizing (d=.63), and externalizing (d=.50), social competence (d=.44) scales ROLES: significant decrease in participants in hospital placements (d=.24), but also significant increase in residential placements (d=-.25)	

Citation(s) / Source(s)	Program Description	Participants	Primary Measures / Findings	Analytic Details
(Kamradt, Kostan, & Pina, 1998) <sup>a,b</sup> Conference proceedings	Wraparound Milwaukee Pilot Project update Setting: initially residential treatment center then community, urban Duration: <i>M</i> = 20.18 months	N = 25 SEBD youth placed in residential services No attrition Age: <i>M</i> = 14.36 Sex: 36% female Race/Ethnicity: 52% Caucasian 44% African American 2% Hispanic	Placement status: home (10), foster home (11), residential (2), corrections (2) School performance: 21 participants were rated as improved Costs: wraparound service plan less than 1/3 cost of residential placement	No tests of statistical significance
(Kamradt, Gilbertson, & Lynn, 2005) Chapter	Wraparound Milwaukee Setting: Milwaukee County, WI, urban Duration: at least 12 months	N = 1031 SEBD youth receiving wraparound With attrition: CBCL (n=383); YSR (n=278); CAFAS (n=543) Age: <i>M</i> = 14.2 Sex: 20% female Race/Ethnicity: 65% African American 27% Caucasian 7% Hispanic 1% Native American	CBCL: Significant reductions in mean <i>T</i> -scores from intake (73) to 6 months (64) to 12 months (55) YSR: Significant reductions in mean <i>T</i> -scores from intake (56) to 6 months (50) to 12 months (45) CAFAS: Significant reductions in total scores from intake (74) to 6 months (60) to 12 months (54)	Demographics not reported, but available from previous report (Kamradt & Meyers, 1999) <sup>a</sup>

Citation(s) / Source(s)	Program Description	Participants	Primary Measures / Findings	Analytic Details
(Kutash, Duchnowski, Sumi, Rudo, & Harris, 2002)  Journal article	School, Family, and Community Partnership Setting: school-based Duration: 2 years	N = 23 ED students With attrition: N = 15 Age: $M = 11.7$ Sex: 13% female Race/Ethnicity: 78% Caucasian	CBCL: no significant improvements on total, internalizing, and externalizing CAFAS: no significant improvements ( $d=.36$ ) WRAT-III reading ( $d=.14$ ) & math ( $d=.03$ ): no significant changes Discipline referrals: significant decrease ( $d=.44$ ) % of day in special education: no change ( $d=.25$ ) Absences: no change ( $d=-.04$ ) Fidelity: significantly related to reading scores but no other outcomes	Initially study had a matched comparison group but dropped due to high and differential attrition      Fidelity measure
(Lyman & de Toledo, 2002)  Conference proceedings	Family Advocacy, Stabilization, and Support Team (FASST) Setting: intensive home-based program in Massachusetts Duration: $M = 4.5$ months	N = 79 SEBD youth Attrition not reported Age: 4-19 Sex: not reported Race/Ethnicity: not reported	CAFAS: Reductions in mean total scores from intake (98) to discharge (80) GAF: Increase in mean scores from intake (49) to discharge (56)	No tests of statistical significance
(Robbins & Collins, 2003)  Conference proceedings	Bridges Project school-based wraparound Setting: schools in rural Kentucky Duration: 12 months	N = 324 SEBD students With attrition: N = 27 Age: $M = 12.4$ Sex: 28% female Race/Ethnicity: 97% Caucasian	CBCL: decrease in mean total problems from baseline (71) to 12 months (62) CAFAS: improved mean total scores from baseline (104) to 12 months (79) School indicators: higher grades, fewer suspensions/detentions	No tests of statistical significance Large attrition due to incomplete data for post-treatment

Citation(s) / Source(s)	Program Description	Participants	Primary Measures / Findings	Analytic Details
(Seybold, 2002) <sup>a</sup> Doctoral dissertation	Wraparound Milwaukee Program Setting: agencies in Milwaukee Co. Duration: at least one year	N = 332 youth with externalizing disorders With attrition: N = 100 Age: 8-17 Sex: <i>unknown</i> Race/Ethnicity: not reported	CBCL: growth curve analyses revealed significant reductions in externalizing problems	
(Toffalo, 2000) Journal article	Nonprofit service agency providing wraparound Setting: rural Pennsylvania Duration: at least 6 months	N = 33 SEBD youth With attrition: N = 28 Age: 4-7, <i>M</i> = 8.78 Sex: 39% female Race/Ethnicity: 100% Caucasian	CBCL: significant improvement on total scale score ( <i>d</i> = .50) Fidelity metric: not significantly related to outcomes	Fidelity measure
(Yoe, Santarcangelo, Atkins, & Burchard, 1996) <sup>a</sup> Journal article	Vermont's Wraparound Care Initiative Setting: urban & rural settings Duration: at least 12 months	N = 40 SEBD youth Attrition not reported Age: 7-20, <i>M</i> = 16 Sex: 48% female Race/Ethnicity: not reported	ROLES: significant decrease in mean level of restrictiveness ( <i>d</i> = .50) and increase in community placements ( <i>d</i> = .70) QAIC: significant decreases in total ( <i>d</i> = .59), externalizing ( <i>d</i> = .59), internalizing ( <i>d</i> = .42), and abuse related problems ( <i>d</i> = .59) but not public externalizing problems ( <i>d</i> = -.08).	

Citation(s) / Source(s)	Program Description	Participants	Primary Measures / Findings	Analytic Details
		Quasi-experimental		
(Bickman, Smith, Lambert, & Andrade, 2003) Journal article	Department of Defense managed care delivery of wraparound Setting: generally rural across 16 states Duration: 6 months	N = 612 SEBD youth With attrition: N = 111 2 Groups: wraparound (n=71) Treatment as Usual (n=40) Age: 4-16, <i>M</i> = 12.2 Sex: 42% female Race/Ethnicity: 72% Caucasian	Service utilization for case management, in-home treatment, and nontraditional services higher for Wrap & lower discontinuity of care Pre-post data (CBCL, YSR, VFI) reported significant improvements over time, but amount of improvement equal across groups 7-wave longitudinal measures (Ohio Scales) reported no significant improvements over time, and no differences between groups Costs were significantly higher (42%) for Wrap group	Fidelity measure Effect sizes could not be calculated
(Hyde, Burchard, & Woodworth, 1996) <sup>a</sup> Journal article	Family Preservation Initiative of Baltimore City, Inc. Setting: urban Duration: 6 – 36 months	N = 107 SEBD youth 4 Groups: 2 received wraparound either following (WR, n=25) or instead of residential treatment (WD, n=24); 2 received traditional services and measured before receiving wraparound (PW, n=39) or did not receive wraparound (NW, n=19) With attrition: N = 69 WR (n=21) WD (n=24) PW (n=14) NW (n=10) Age: <i>M</i> = 17.28	Community adjustment rating in “good” range: Higher for wraparound groups WR had higher % in good range than PW ( <i>d</i> =.76) and NW ( <i>d</i> =1.53) and WD higher than PW ( <i>d</i> =.72) and WD ( <i>d</i> =1.49) % of youth with more than 10 days community involvement: WR higher than PW ( <i>d</i> =.53) and NW ( <i>d</i> =1.94); WD higher than PW ( <i>d</i> =.28) and NW ( <i>d</i> =1.69)	No tests of statistical significance

Citation(s) / Source(s)	Program Description	Participants	Primary Measures / Findings	Analytic Details
(Reay, Garbin, & Scalora, 2003) Conference proceedings	Nebraska Family Central System of Care included youth receiving wraparound, Multisystemic Therapy (MST), and both Setting: not reported Duration: at least 12 months	Sex: 25% female Race/Ethnicity: 63% African American  N = 456 SEBD youth 3 Groups: wraparound (n=271), MST (n=157), both (n=28) With attrition: N = 162 wraparound (n=104), MST (n=38), both (n=20) Age: 3.4 – 21, <i>M</i> = 13.3 Sex: 50% female Race/Ethnicity: not reported	CAFAS: significant improvement in total scores from intake to 12 months for all groups (wraparound <i>d</i> =.98, MST <i>d</i> =.81, both <i>d</i> =.85) however there were no significant between group differences	
(Resendez, 2002) Conference proceedings	Riverside County Department of Mental Health provided “flexible wraparound funding” Setting: not reported Duration: not reported <i>intake to discharge</i>	N = 485 SEBD youth 2 groups: receiving flexible funds (n=284) and a group receiving services but not flexible funds (n=201) With attrition: flex funds (n=60), attrition for comparison not reported Age: <i>M</i> = 13 Sex: majority male Race/Ethnicity: majority Caucasian	CAFAS: significant improvement in total scores from intake to discharge for flexible funds (71 to 51) and non-flexible funds (73 to 50); there were no between group differences	

Citation(s) / Source(s)	Program Description	Participants	Primary Measures / Findings	Analytic Details
Experimental studies				
(Clark et al., 1998) <sup>a</sup> Book chapter	Fostering Individualized Assistance Program (FIAP) Setting: foster care in Florida Duration: unknown	N = 132 SEBD youth in foster care 2 groups: FIAP (n=54) and standard practice (SP) foster care (n=78) With attrition: SP (n=77) Age: 7-15, <i>M</i> = not reported Sex: 40% female Race/Ethnicity: 62% Caucasian 33% African American 5% Hispanic & biracial	Permanency status: FIAP group significantly more likely to live in permanency-type setting following program Significantly fewer days on runaway and fewer days incarcerated for FIAP No group differences on rate of placement changes, days absent, & days suspended DISC conduct disorder: FIAP males showed significantly less, but FIAP females <i>significantly more</i> Delinquency score: FIAP males demonstrated significantly less YSR (n=43) & CBCL (n=41) Internalizing & Total scores: no repeated measures differences; yet significantly smaller % boys (not girls) in clinical range for FIAP Externalizing: repeated measures showed significant improvement over time for boys not girls, plus significantly smaller % of FIAP group in clinical range	

Citation(s) / Source(s)	Program Description	Participants	Primary Measures / Findings	Analytic Details
(Carney & Buttell, 2003) Journal article	Juvenile Delinquency Task Force Implementation Committee (JDIC) demonstration project Setting: Urban Duration: 18 months	N = 307 youth referred to court or adjudicated and/or entered children's services for delinquent behaviors With attrition: N=141 2 groups: wraparound (n=73) and conventional services (n=68) Age: $M = 14.8$ Sex: 38% female Race/Ethnicity: 50% Caucasian 48% African American 1% Biracial	Wraparound group missed less school ( $d=.48$ ), suspended less ( $d=.48$ ), less likely to run from home ( $d=.46$ ), less assaultive ( $d=.47$ ), and less likely to be stopped by police ( $d=.51$ ), but conventional services more likely to have a job ( $d=-.39$ ). Wraparound group somewhat less likely to be arrested ( $d=.23$ ) somewhat more likely to be incarcerated ( $d=-.18$ )	
(Evans, Armstrong, Kuppinger, Huz, & McNulty, 1998) <sup>a</sup> Book chapter	Family Centered Intensive Case Management (FCICM)– similar to wraparound and Family Based Treatment (FBT) Setting: rural New York home-based and foster care Duration: 12 months	N = 42 SEBD youth 2 Groups: FCICM (n=27) and FBT (n=15) Differential attrition among measures Age: 5-13, $M = 9$ Sex: 10% female Race/Ethnicity: 83% Caucasian 5% African American 5% Native American 5% Biracial 2% Hispanic	CAFAS (n=31): significant improvement for FCICM overtime on behavior and moods subscales but not role performance and cognition CBCL (n=28): no significant improvements for FCICM vs. FBT overtime on total, internalizing, and externalizing scales FACES-III (n=35): no significant differences between groups Piers-Harris (n=23): no significant differences between groups TRF: dropped due to missing data	

Citation(s) / Source(s)	Program Description	Participants	Primary Measures / Findings	Analytic Details
(Myaard, Crawford, Jackson, & Alessi, 2000) <sup>a</sup> Journal article	Wraparound Initiative Setting: rural Michigan Duration: 12 month study with youth receiving wraparound for 10, 9.25, 8, & 7.25 months	N = 6 SEBD youth With attrition: N = 4 Age: 14-16, <i>M</i> = 14.7 Sex: 100% male Race/Ethnicity: 100% Caucasian	DAIC: was used to provide daily longitudinal ratings of compliance (improved), peer interactions (improved), physical aggression (improved), alcohol/drug use (eliminated), and verbal abuse (improved) CAFAS: substantial reductions in CAFAS scores	Parent provided daily rating of behaviors and was not blind to start of treatment  Multiple baseline study

*Note.* SEBD = serious emotional and behavioral disorders; CBCL = Child Behavior Checklist; DAIC = Daily Adjustment Indicator Checklist; TRF = Teacher Report Form; SSRS = Self-Control Rating Scale; FACES = Family Adaptability and Cohesiveness Evaluation Scales; CAFAS = Child and Adolescent Functioning Scales; GAF = Global Assessment of Functioning; YSR = Youth Self Report

<sup>a</sup> Project included in previous review

<sup>b</sup> More recent study replaces one cited in previous review

Table 4

*Number of Completed Wraparound Fidelity Index Interviews at Collaborating Agencies*

Agency	Number of Interviews			
	Families	RF	CG	Y
Florida	26	26	23	11
Indiana	49	44	39	22
Massachusetts	74	72	70	27
Minnesota 1	27	23	17	4
Minnesota 2	16	11	14	8
Missouri	34	33	32	25
Nebraska	367	333	221	208
Nevada	31	31	30	22
North Carolina	22	22	22	16
Pennsylvania	17	15	13	12
Total	663	610	481	355
<i>M</i>	66.30	61.00	48.10	35.50
<i>SD</i>	107.06	97.12	63.00	61.09

*Note.* RF = Resource Facilitator; CG = Caregiver; Y= Youth.

Table 5

*Element 1 (Voice and Choice) Tetrachoric Correlations Between Items for Three Informants*

Item	Item Correlations				Item Proportions	
	A	B	C	D	Low	High
Resource Facilitator ( $n = 605$ )						
A	–	.21	.27	.32	.12	.88
B		–	.40	.45	.17	.83
C			–	.47	.20	.80
D				–	.25	.75
Caregiver ( $n = 481$ )						
A	–	.30	.41	.45	.10	.90
B		–	.59	.55	.26	.74
C			–	.68	.19	.81
D				–	.22	.78
Youth ( $n = 355$ )						
A	–	.36	.69	.22	.21	.79
B		–	.29	.27	.39	.61
C			–	.35	.22	.78
D				–	.16	.84

Table 6

*Element 2 (Family Team) Tetrachoric Correlations Between Items for Three Informants*

Item	Item Correlations				Item Proportions	
	A	B	C	D	Low	High
Resource Facilitator ( <i>n</i> = 610)						
A	–	.18	.04	.17	.27	.73
B		–	.08	.07	.62	.38
C			–	.21	.43	.57
D				–	.09	.91
Caregiver ( <i>n</i> = 481)						
A	–	.13	.00	.06	.19	.81
B		–	.05	.15	.64	.36
C			–	.18	.55	.45
D				–	.14	.86
Youth ( <i>n</i> = 355)						
A	–	.23	.08	.14	.19	.81
B		–	.18	.17	.72	.28
C			–	.20	.60	.40
D				–	.29	.71

Table 7

*Element 3 (Community-Based) Tetrachoric Correlations Between Items for Three Informants*

Item	Item Correlations				Item Proportions	
	A	B	C	D	Low	High
Resource Facilitator ( $n = 609$ )						
A	–	-.03	.21	.50	.22	.78
B		–	.10	.15	.23	.77
C			–	.24	.54	.46
D				–	.19	.81
Caregiver ( $n = 481$ )						
A	–	.06	.03	.41	.18	.82
B		–	.10	.10	.25	.75
C			–	.12	.67	.33
D				–	.16	.84
Youth ( $n = 355$ )						
A	–	-.10	-.05	.57	.19	.81
B		–	.03	-.02	.22	.78
C			–	.06	.67	.34
D				–	.21	.79

Table 8

*Element 4 (Cultural Competence) Tetrachoric Correlations Between Items for Three Informants*

Item	Item Correlations				Item Proportions	
	A	B	C	D	Low	High
Resource Facilitator ( <i>n</i> = 610)						
A	–	.41	.42	.34	.07	.93
B		–	.48	.35	.12	.88
C			–	.24	.11	.89
D				–	.11	.89
Caregiver ( <i>n</i> = 480)						
A	–	.61	.49	.20	.13	.87
B		–	.60	.54	.12	.88
C			–	.38	.22	.78
D				–	.13	.87
Youth ( <i>n</i> = 354)						
A	–	.45	.28	.22	.22	.78
B		–	.56	.62	.13	.87
C			–	.43	.25	.75
D				–	.26	.74

Table 9

*Element 5 (Individualized Services) Tetrachoric Correlations Between Items for Three Informants*

Item	Item Correlations				Item Proportions	
	A	B	C	D	Low	High
Resource Facilitator ( $n = 610$ )						
A	–	.13	.39	.21	.08	.92
B		–	.33	.35	.19	.81
C			–	.29	.09	.91
D				–	.15	.85
Caregiver ( $n = 481$ )						
A	–	.31	.52	.28	.15	.85
B		–	.49	.40	.29	.71
C			–	.37	.16	.84
D				–	.28	.72
Youth ( $n = 355$ )						
A	–	.24	.71	.29	.18	.82
B		–	.27	.43	.53	.47
C			–	.49	.14	.86
D				–	.33	.67

Table 10

*Element 6 (Strengths-Based) Tetrachoric Correlations Between Items for Three Informants*

Item	Item Correlations				Item Proportions	
	A	B	C	D	Low	High
Resource Facilitator ( <i>n</i> = 610)						
A	–	.31	.18	.34	.08	.92
B		–	.08	.25	.16	.84
C			–	.13	.49	.51
D				–	.31	.69
Caregiver ( <i>n</i> = 480)						
A	–	.52	.35	.48	.13	.87
B		–	.47	.47	.28	.72
C			–	.18	.61	.39
D				–	.20	.80
Youth ( <i>n</i> = 355)						
A	–	.49	.32	.35	.14	.86
B		–	.28	.44	.36	.64
C			–	.16	.69	.31
D				–	.37	.63

Table 11

*Element 7 (Natural Supports) Tetrachoric Correlations Between Items for Three Informants*

Item	Item Correlations				Item Proportions	
	A	B	C	D	Low	High
Resource Facilitator ( <i>n</i> = 610)						
A	–	.32	.27	.29	.32	.68
B		–	.14	.30	.34	.66
C			–	.77	.69	.31
D				–	.85	.15
Caregiver ( <i>n</i> = 480)						
A	–	.53	.29	.10	.46	.54
B		–	.14	-.12	.44	.56
C			–	.50	.73	.27
D				–	.91	.09
Youth ( <i>n</i> = 355)						
A	–	.59	.43	.46	.40	.60
B		–	.58	.42	.50	.50
C			–	.47	.32	.68
D				–	.40	.60

Table 12

*Element 8 (Continuation of Care) Tetrachoric Correlations Between Items for Three Informants*

Item	Item Correlations				Item Proportions	
	A	B	C	D	Low	High
Resource Facilitator ( <i>n</i> = 610)						
A	–	.32	.37	.00	.22	.78
B		–	.36	.22	.25	.75
C			–	.15	.15	.85
D				–	.27	.73
Caregiver ( <i>n</i> = 481)						
A	–	.54	.41	.32	.35	.65
B		–	.54	.34	.20	.80
C			–	.30	.19	.82
D				–	.22	.78
Youth ( <i>n</i> = 355)						
A	–	.61	.32	.09	.48	.52
B		–	.36	.18	.26	.74
C			–	.45	.12	.88
D				–	.25	.75

Table 13

*Element 9 (Collaboration) Tetrachoric Correlations Between Items for Two Informants*

Item	Item Correlations				Item Proportions	
	A	B	C	D	Low	High
Resource Facilitator (n = 610)						
A	–	.13	.33	.23	.37	.63
B		–	.15	.22	.14	.86
C			–	.44	.11	.89
D				–	.26	.74
Caregiver (n = 481)						
A	–	.42	.34	.26	.28	.72
B		–	.49	.23	.27	.73
C			–	.52	.14	.86
D				–	.24	.76

Table 14

*Element 10 (Flexible Resources) Tetrachoric Correlations Between Items for Three Informants*

Item	Item Correlations				Item Proportions	
	A	B	C	D	Low	High
Resource Facilitator (n = 609)						
A	–	.15	.28	.19	.44	.56
B		–	.62	.09	.69	.31
C			–	.43	.44	.56
D				–	.12	.88
Caregiver (n = 481)						
A	–	.49	.43	.29	.48	.52
B		–	.54	.32	.55	.45
C			–	.25	.39	.61
D				–	.14	.86

Table 15

*Element 11 (Outcomes-Based) Tetrachoric Correlations Between Items for Two Informants*

Item	Item Correlations				Item Proportions	
	A	B	C	D	Low	High
Resource Facilitator (n = 609)						
A	–	.24	.31	.51	.24	.76
B		–	.33	.09	.10	.90
C			–	.60	.07	.93
D				–	.16	.84
Caregiver (n = 480)						
A	–	.43	.61	.61	.26	.74
B		–	.69	.71	.22	.78
C			–	.81	.13	.87
D				–	.13	.87

Table 16

*Model Fit and Standardized Item Loadings for Each CFA Model (Step 1)*

Element	Model Fit				Standardized Loadings			
	$\chi^2$	CFI	TLI	RMSEA	A	B	C	D
Resource Facilitator ( $n = 610, df = 2$ )								
1. Voice and Choice	0.74	1.00	1.01	.00	.40*	.61*	.65*	.74*
2. Family Team	4.37	0.86	0.71	.04	.30	.18	.36*	.54*
3. Community-Based	2.01	0.96	0.93	.04	.52*	.15	.31*	.94*
4. Cultural Competence	1.92	1.00	1.00	.00	.65*	.69*	.61*	.50*
5. Individualized Services	4.16	0.93	0.90	.04	.46*	.47*	.75*	.46*
6. Strengths-Based	0.20	1.00	1.07	.00	.68*	.46*	.21*	.53*
7. Natural Supports	6.60*	1.00	0.99	.10	.32*	.26*	.78*	.98*
8. Continuation of Care	3.59	0.97	0.91	.07	.54*	.59*	.65*	.16*
9. Collaboration	2.08	1.00	1.00	.01	.41*	.32*	.72*	.61*
10. Flexible Resources	5.97*	0.87	0.75	.09	.28*	.55*	–	.39*
11. Outcome-Based	9.60*	0.89	0.78	.12	.57*	.24*	.68*	.86*
Caregiver ( $n = 481, df = 2$ )								
1. Voice and Choice	3.09	0.99	0.99	.03	.51*	.68*	.83*	.83*
2. Family Team	0.84	1.00	1.06	.00	.16	.26	.28*	.60*
3. Community-Based	1.27	1.00	1.33	.00	.40*	.17	.14*	.94*
4. Cultural Competence	2.18	0.99	0.97	.05	.64*	.95*	.67*	.53*
5. Individualized Services	1.14	1.00	1.00	.02	.52*	.70*	.70*	.56*
6. Strengths-Based	8.25*	0.92	0.87	.08	.70*	.80*	.49*	.59*
7. Natural Supports	30.48*	0.81	0.43	.25	.78*	.42*	.54*	.64*
8. Continuation of Care	0.80	1.00	1.02	.00	.66*	.80*	.66*	.45*
9. Collaboration	18.72*	0.69	0.69	.13	.54*	.74*	.66*	.48*
10. Flexible Resources	0.14	1.00	1.02	.00	.64*	.80*	.67*	.40*
11. Outcome-Based	4.02	0.99	0.99	.05	.65*	.72*	.92*	.93*
Youth ( $n = 355, df = 2$ )								
1. Voice and Choice	1.37	1.00	0.99	.03	.80*	.39*	.86*	.38*
2. Family Team	4.83	0.94	0.87	.06	.36*	.44*	.42*	.44*
3. Community-Based	0.41	1.00	1.28	.00	.00	.00	.00	–
4. Cultural Competence	1.13	1.00	1.00	.02	.40*	.95*	.62*	.65*
5. Individualized Services	33.33*	0.79	0.68	.21	.68*	.48*	.97*	.54*
6. Strengths-Based	0.79	1.00	1.01	.00	.63*	.81*	.34*	.53*
7. Natural Supports	1.25	1.00	1.00	.03	.70*	.82*	.69*	.65*
8. Continuation of Care	9.34*	0.92	0.76	.15	.67*	.71*	.65*	.49*

Note: WFI = Wraparound Fidelity Index; CFI = Comparative Fit Index; TLI = Tucker Lewis Index;

RMSEA = Root Mean Square Error of Approximation.

Values greater than .95 for CFI and TLI indicate a good fit. Values less than .06 for the RMSEA indicate a good fit. Dashes indicate out-of-bounds parameter estimates.

\* $p < .05$ .

Table 17

*Estimated Element Factor Correlations and Model Fit for Hypothesized Resource Facilitator, Caregiver, and Youth Models (Step 2)*

Elements	1	4	5	6	7	8	9	10	11
Resource Facilitators ( $n = 610$ ): Nonpositive definite psi matrix									
1. Voice and Choice	–	<b>.87</b>	.49	.60	.35	.55	.66	.45	.43
4. Cultural Competence		–	<b>.92</b>	<b>1.03</b>	.64	.83	<b>.86</b>	.50	.56
5. Individualized			–	<b>.93</b>	.54	<b>1.03</b>	.73	.64	.57
6. Strengths-Based				–	.66	<b>1.12</b>	<b>1.05</b>	.59	.70
7. Natural Supports					–	.56	.31	.36	.27
8. Continuation of Care						–	<b>1.06</b>	<b>1.06</b>	.84
9. Collaboration							–	.75	.73
10. Flexible Resources								–	.82
11. Outcome-Based									–
	1	4	5	6	7	8	9	10	11
Caregivers ( $n = 481$ ): Nonpositive definite psi matrix									
1. Voice and Choice	–	.83	.58	.82	.69	.61	.61	.42	.60
4. Cultural Competence		–	<b>.87</b>	<b>.96</b>	.79	<b>.85</b>	.79	.71	.72
5. Individualized			–	<b>.85</b>	<b>.88</b>	<b>.89</b>	.79	.71	.72
6. Strengths-Based				–	<b>.96</b>	.84	.83	.77	.83
7. Natural Supports					–	<b>1.00</b>	<b>.94</b>	<b>.93</b>	.74
8. Continuation of Care						–	<b>.95</b>	.84	.78
9. Collaboration							–	<b>.90</b>	<b>.93</b>
10. Flexible Resources								–	.76
11. Outcome-Based									–
			1	2	4	5	6	7	8
Youths ( $n = 355$ ): $\chi^2 = 15.55$ , CFI = .89, TLI = .89, RMSEA = .08									
1. Voice and Choice			–	.31	.61	.56	.52	.37	.65
2. Family Team				–	.62	.64	.53	.42	.49
4. Cultural Competence					–	.75	.70	.62	.64
5. Individualized						–	.70	.69	.78
6. Strengths-Based							–	.69	.58
7. Natural Supports								–	.46
8. Continuation of Care									–

Note: Correlations in bold were above .85 criteria set in Hypothesis 5. Correlations greater than 1.00 are considered inadmissible. CFI = Comparative Fit Index; TLI = Tucker Lewis Index; RMSEA = Root Mean Square Error of Approximation.

All correlations significant at  $p < .05$ .

Table 18

*Estimated Element Factor Correlations and Model Fit for Respecified Resource Facilitator, Caregiver, and Youth Models (Step 2)*

Elements	1	2	3	4	5	
Resource Facilitators ( $n = 610$ ) $\chi^2 = 16.45$ , CFI = .90, TLI = .90, RMSEA = .06						
1. Voice and Choice	–	.35	.45	.43	.65	
2. Natural Supports		–	.36	.26	.51	
3. Flexible Resources			–	.82	.75	
4. Outcomes-Based				–	.71	
5. Combined Factor-RF					–	
		1	2	3	4	
Caregivers ( $n = 481$ ) $\chi^2 = 14.87$ , CFI = .94, TLI = .95, RMSEA = .05						
1. Voice and Choice		–	.42	.60	.71	
2. Flexible Resources			–	.76	<b>.86</b>	
3. Outcomes-Based				–	.84	
4. Combined Factor-CG					–	
	1	2	3	4	5	6
Youths ( $n = 355$ ) $\chi^2 = 12.99$ , CFI = .95, TLI = .95, RMSEA = .06						
1. Voice and Choice	–	.58	.56	.55	.37	.56
2. Cultural Competence		–	.67	.81	.52	.59
3. Individualized			–	.77	.72	.79
4. Strengths-Based				–	.70	.57
5. Natural Supports					–	.51
6. Continuation of Care						–

*Note:* Correlations in bold were above .85 criteria set in Hypothesis 5. Combined Factor-RF includes items from Cultural Competence, Individualized Services, Strengths-Based, Continuation of Care, and Collaboration elements. Combined Factor-CG includes items from Cultural Competence, Individualized Services, Strengths-Based, Natural Supports, Continuation of Care, and Collaboration elements. CFI = Comparative Fit Index; TLI = Tucker Lewis Index; RMSEA = Root Mean Square Error of Approximation. All correlations significant at  $p < .05$ .

Figure 1.  
Single element CFA model (Step 1).

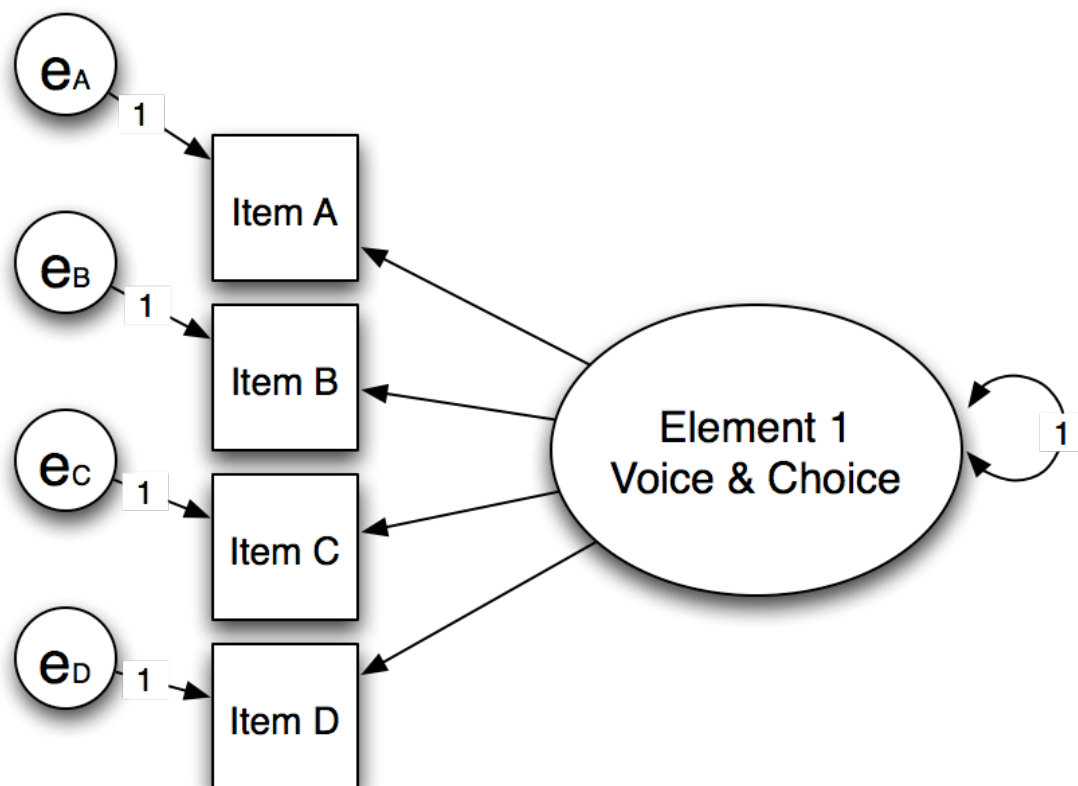


Figure 2.

Partial correlated elements CFA model for a single informant (Step 2).

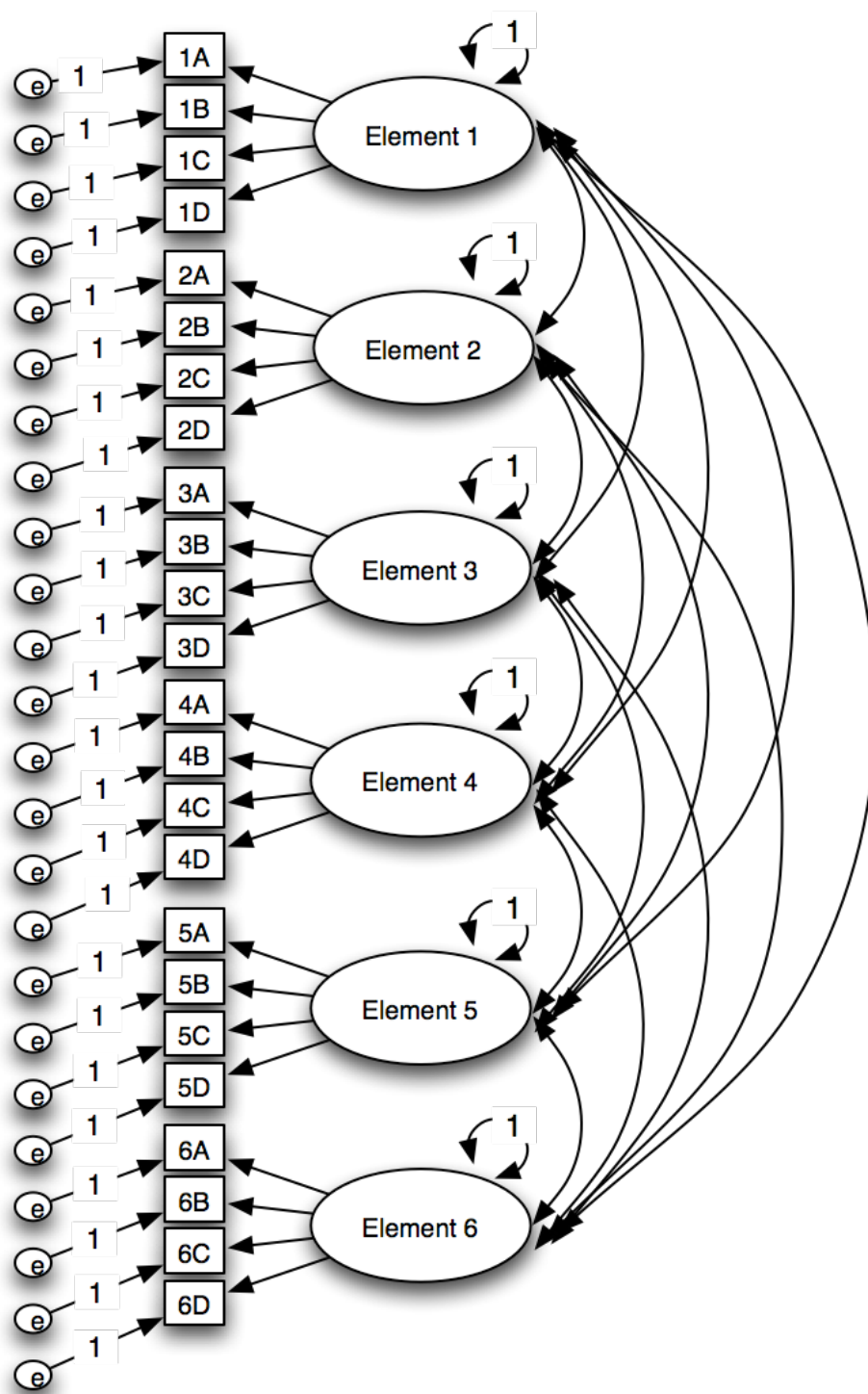


Figure 3.

Partial multitrait-multimethod model: correlated-trait correlated-method (Step 3)

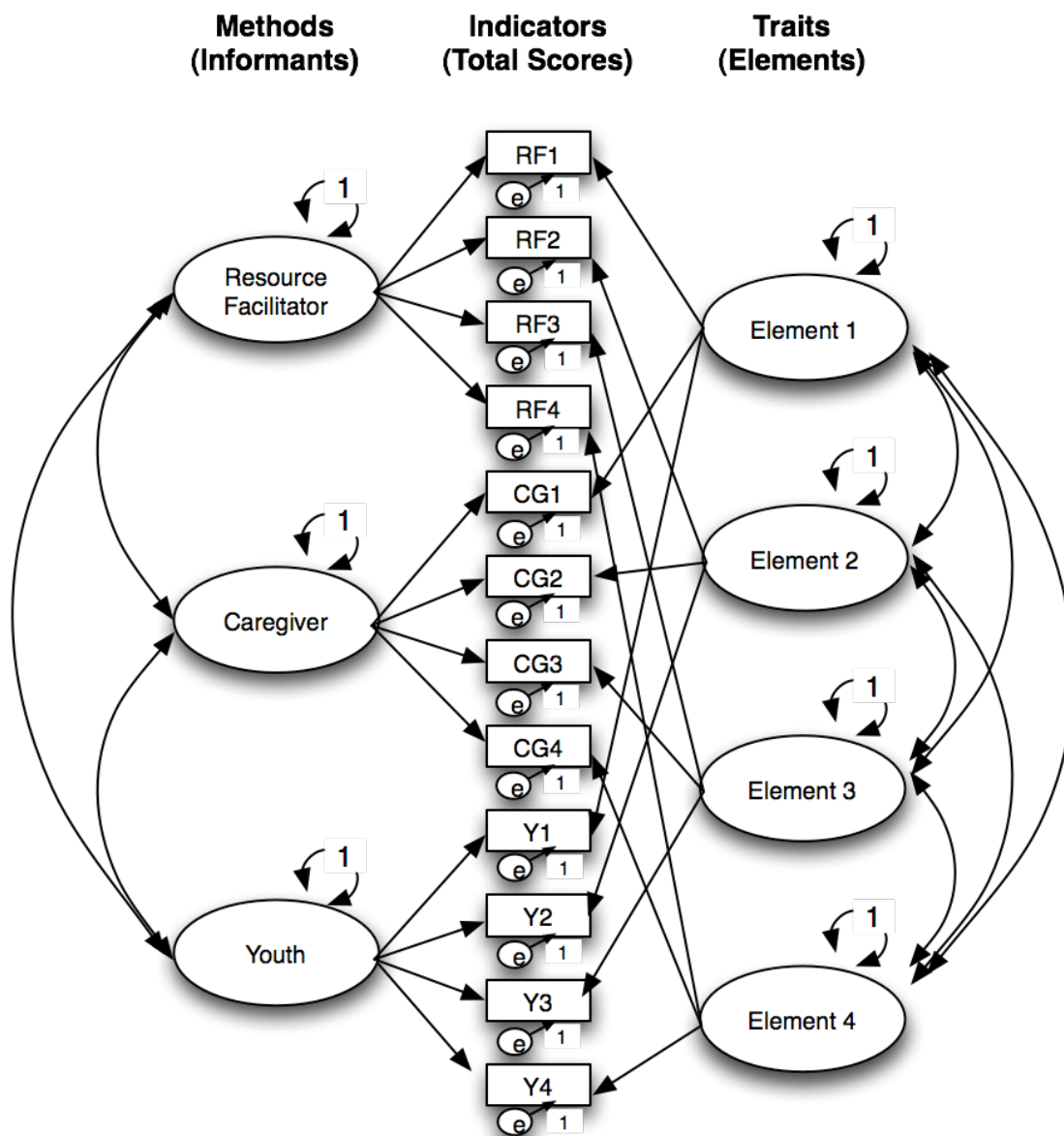


Figure 4.

Partial multitrait-multimethod model: trait-only model (Step 3)

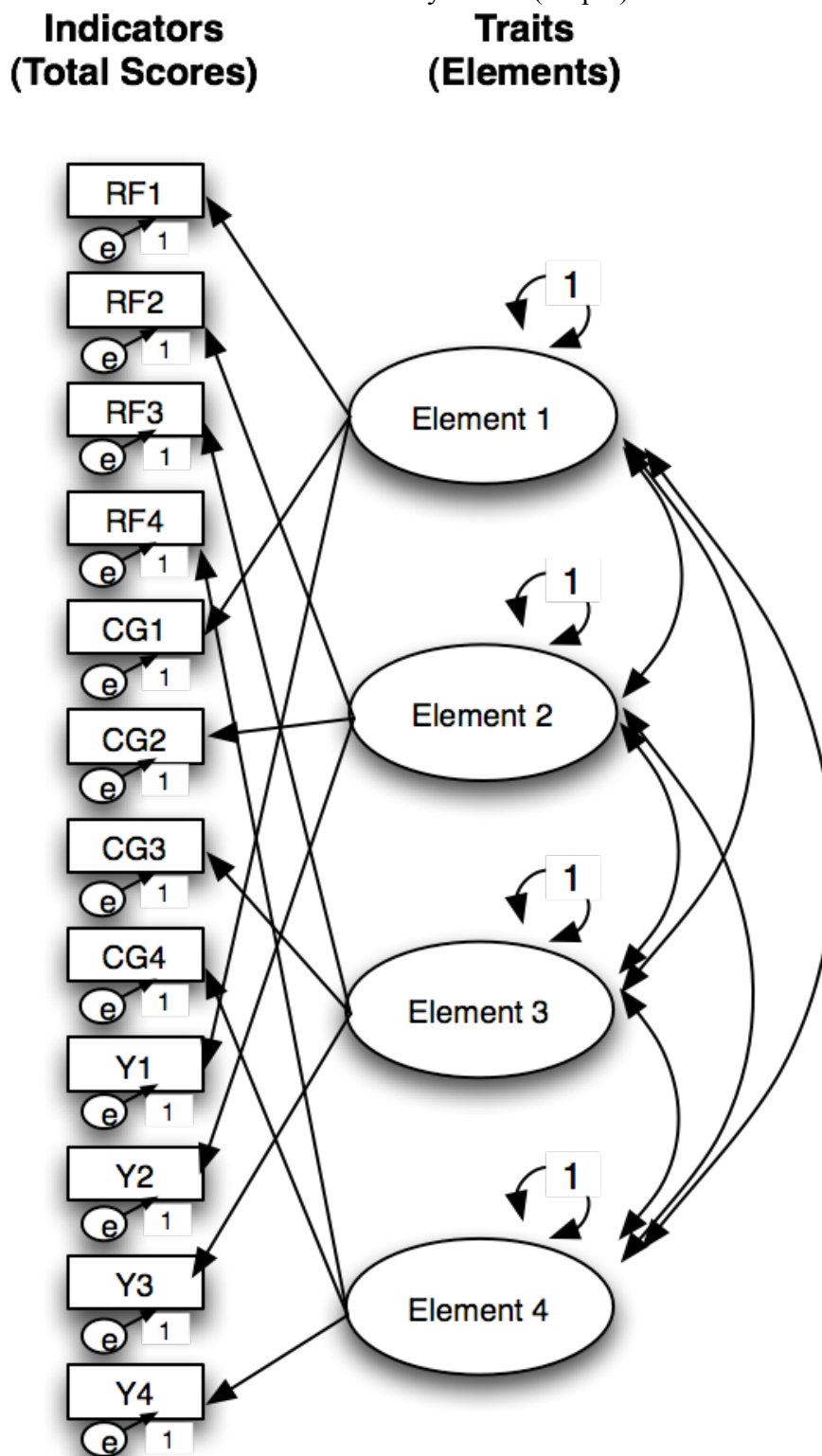


Figure 5.

Partial multitrait-multimethod model: correlated-uniqueness model (Step 3)

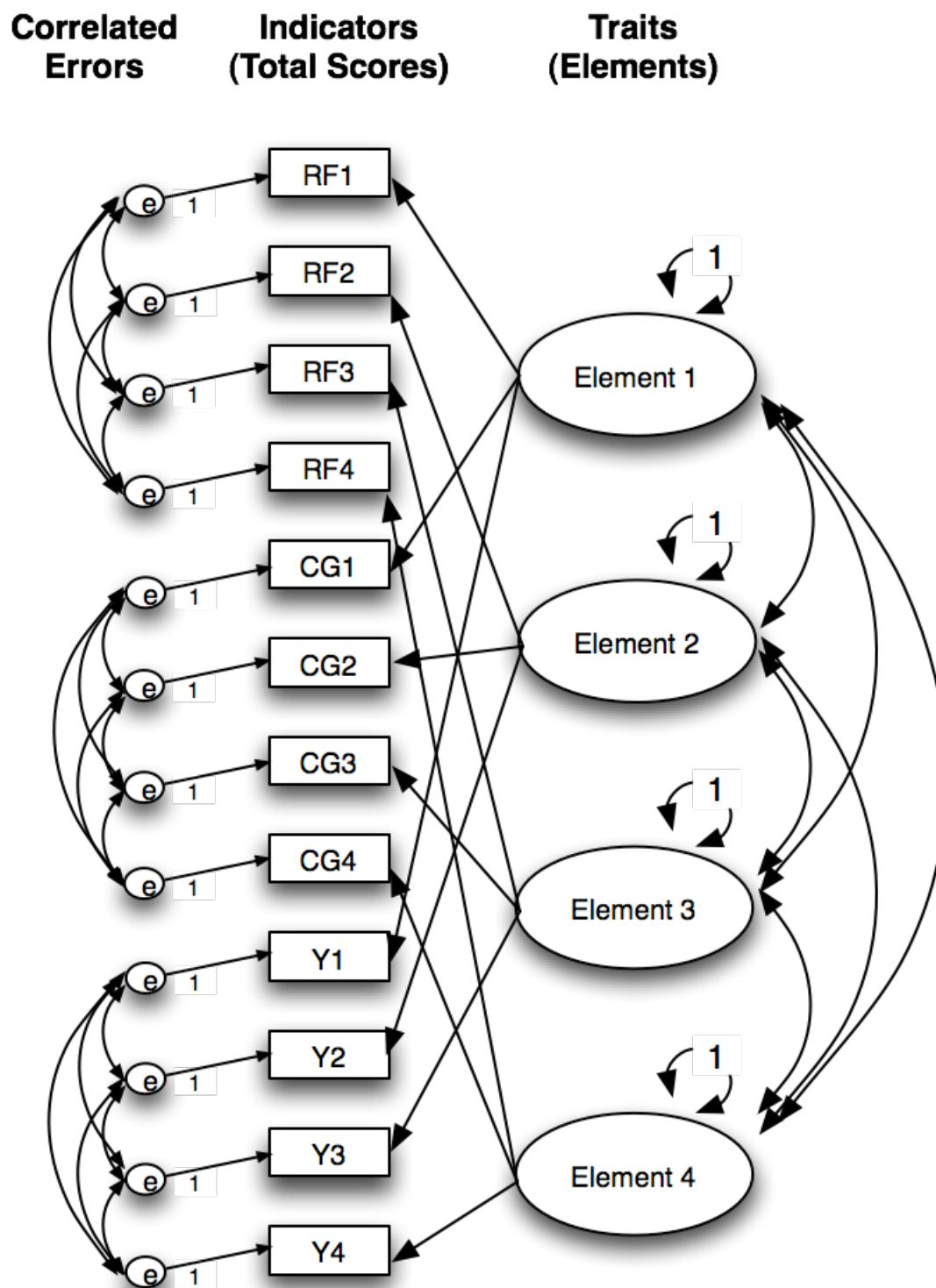
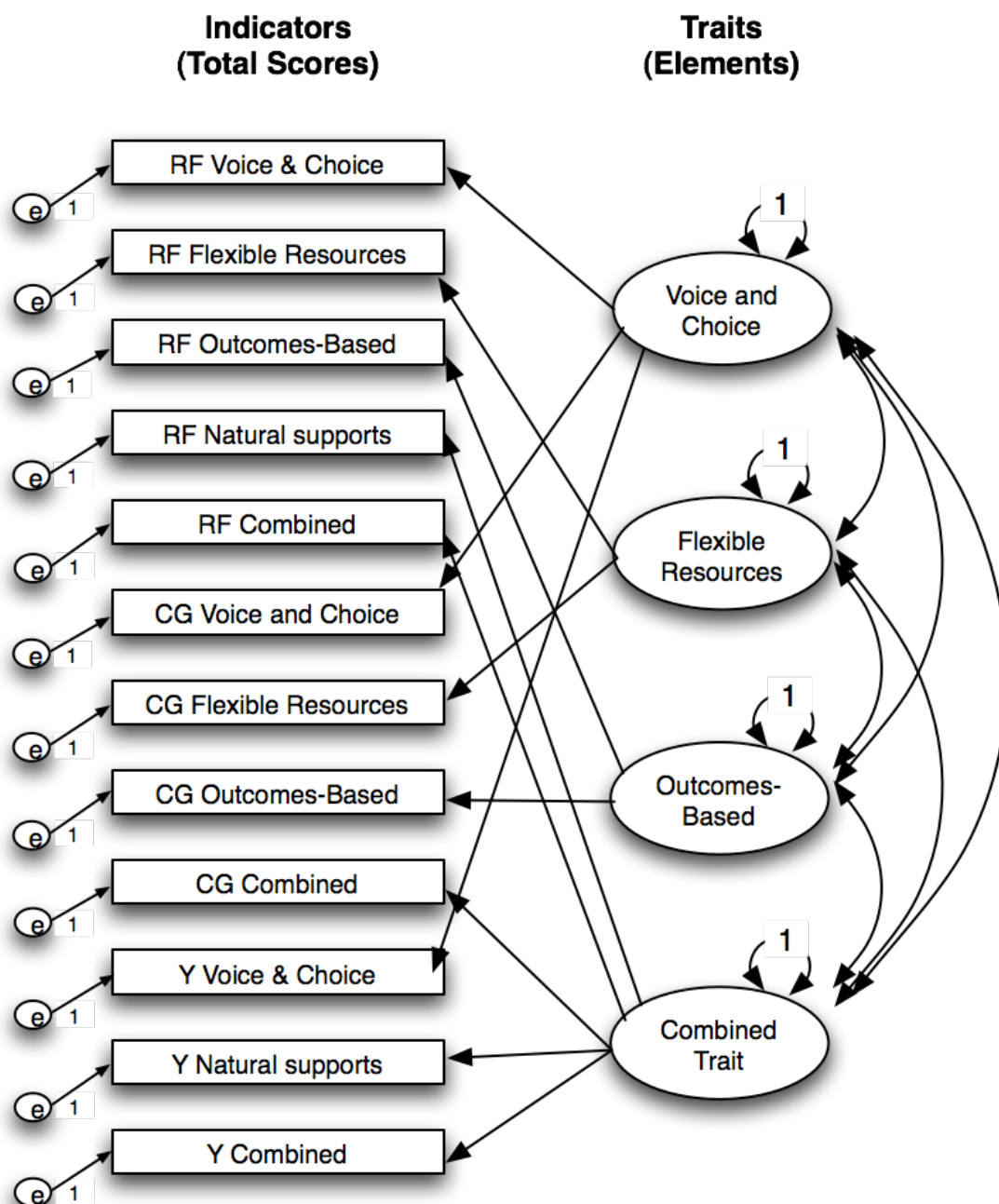


Figure 6.

Trait-only model with resource facilitators, caregivers, and youths (Step 3)



Appendix A: Wraparound Fidelity Index, Third Version, Demographics Form

# WFI-3 Demographics Form

Youth's name: \_\_\_\_\_

Caregiver's name: \_\_\_\_\_

Resource facilitator's name: \_\_\_\_\_

Interviewer's name: \_\_\_\_\_

Today's date: Month \_\_\_\_\_ Day \_\_\_\_\_  
Year \_\_\_\_\_

Administration method:  Face-to-face (1)  Phone (2)

Length of interview \_\_\_\_\_ minutes

1. Youth's DOB \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
Month Day Year

2. What is the youth's gender?  Male (1)  Female (2)

3. Is the youth of Hispanic race/ethnicity?  No (1)  Yes (2)

*If No, go to question #4.*

*If Yes, Please check all that apply.*

- Mexican/Mexican-American/Chicano (1)
- Puerto Rican (2)
- Cuban (3)
- Dominican (4)
- Central American (5)
- South American (6)
- Other Hispanic Origin (7) \_\_\_\_\_ *(Please specify)*

4. What is the youth's race? *(Check all that apply)*

- American Indian or Alaska Native (1)
- Black or African American (3)
- Pacific Islander (4)
- White (5)
- Other (6) \_\_\_\_\_ *(Please specify)*
- Asian (2)
- Native Hawaiian / Other

Youth ID:	
Caregiver ID:	
Resource facilitator ID:	
Interviewer ID:	
Project ID:	
Family ID:	
Timeframe:	

5. Has the youth been in school anytime during the last 30 days?

- No (1)       Yes (2)

*If Yes, go to question #6.*

*If No, Why was the youth not in school?*

- Dropped out of school before legal age (1)  
 Dropped out after legal age (2)  
 Expelled/Suspended (3)  
 Too young to go to school (4)  
 Graduated from high school or GED (5)  
 Taught at home (home-schooled) (6)  
 Physical illness (7)  
 Refused to go to school (8)  
 In juvenile detention or jail (9)  
 Ward of the State (10)  
 Summer vacation (11)  
 Other (12) \_\_\_\_\_ (Please specify)

6. Which grade is the youth in now or will be in for the new school year?

- |  |   |
|--|---|
| <input type="checkbox"/> Preschool (1)       | <input type="checkbox"/> Kindergarten (2)                       |
| <input type="checkbox"/> First Grade (3)     | <input type="checkbox"/> Second Grade (4)                       |
| <input type="checkbox"/> Third Grade (5)     | <input type="checkbox"/> Fourth Grade (6)                       |
| <input type="checkbox"/> Fifth Grade (7)     | <input type="checkbox"/> Sixth Grade (8)                        |
| <input type="checkbox"/> Seventh Grade (9)   | <input type="checkbox"/> Eighth Grade (10)                      |
| <input type="checkbox"/> Ninth Grade (11)    | <input type="checkbox"/> Tenth Grade (12)                       |
| <input type="checkbox"/> Eleventh Grade (13) | <input type="checkbox"/> Twelfth Grade (14)                     |
| <input type="checkbox"/> Post-secondary (15) | <input type="checkbox"/> No grade levels in child's school (16) |

7. What are the youth's DSM-IV Axis I and Axis II diagnoses?

Axis 1a. \_\_\_\_\_

Axis 1b. \_\_\_\_\_

Axis 1c. \_\_\_\_\_

Axis 2a. \_\_\_\_\_

Axis 2b. \_\_\_\_\_

Axis 2c. \_\_\_\_\_

Appendix B: Wraparound Fidelity Index, Third Version, Resource Facilitator Form

## WFI-3 Resource Facilitator Form

Youth's name: \_\_\_\_\_

Caregiver's name: \_\_\_\_\_

Resource facilitator's name: \_\_\_\_\_

Interviewer's name: \_\_\_\_\_

Today's date: Month \_\_\_\_\_ Day \_\_\_\_\_  
Year \_\_\_\_\_

Administration method:  Face-to-face (1)  Phone (2)

Length of interview \_\_\_\_\_ minutes

Youth ID:	
Caregiver ID:	
Resource facilitator ID:	
Interviewer ID:	
Project ID:	
Family ID:	
Timeframe:	

1. What is the primary caregiver's relationship to \_\_\_\_\_ (*child's name*)?  
(*Check one*)

- |   |  |
|---|--|
| <input type="checkbox"/> Biological parent (1)                      | <input type="checkbox"/> Adoptive/Stepparent (2)       |
| <input type="checkbox"/> Foster parent (3)                          | <input type="checkbox"/> Live-in partner of parent (4) |
| <input type="checkbox"/> Sibling (5)                                | <input type="checkbox"/> Aunt or uncle (6)             |
| <input type="checkbox"/> Grandparent (7)                            | <input type="checkbox"/> Cousin (8)                    |
| <input type="checkbox"/> Other family relative (9)                  | <input type="checkbox"/> Friend (adult friend) (10)    |
| <input type="checkbox"/> Other (11) _____ ( <i>please specify</i> ) |  |

2. Who has legal custody of \_\_\_\_\_ (*child's name*)? (*Check one*)

- |   |   |
|---|---|
| <input type="checkbox"/> Two biological parents OR one biological parent and one stepparent (1) | <input type="checkbox"/> Biological mother only (2) |
| <input type="checkbox"/> Biological father only (3)   | <input type="checkbox"/> Adoptive parent(s) (4)     |
| <input type="checkbox"/> Foster parent(s) (5)   | <input type="checkbox"/> Sibling(s) (6)             |
| <input type="checkbox"/> Aunt and/or uncle (7)  | <input type="checkbox"/> Grandparent(s) (8)         |
| <input type="checkbox"/> Friend(s) (9)  | <input type="checkbox"/> Ward of the State (10)     |
| <input type="checkbox"/> Other (11) _____ ( <i>please specify</i> )                             |   |



I am going to ask you some questions about the services and supports the family is receiving now and for the past 30 days. For each question you can answer “Yes,” “Sometimes” or “Somewhat,” or “No.” Please answer all questions as well as you can.

**Missing Data Codes: 666 Not Applicable; 777 Refused; 888 Don’t Know; 999 Missing/Question Was Not Asked**

Element 1: Caregiver Voice and Choice		Yes	Sometimes Somewhat	No	Missing
A.	Does the caregiver feel comfortable expressing her or his opinions even if they are different from the rest of the team?	2	1	0	666 777 888 999
B.	Are important discussions or decisions about the youth or family made when the caregiver is not there?	0	1	2	666 777 888 999
C.	Do team members “override” the caregiver’s wishes regarding her or his child?	0	1	2	666 777 888 999
D.	Is the primary caregiver given highest priority when making major decisions?	2	1	0	666 777 888 999
Element 2: Youth and Family Team		Yes	Sometimes Somewhat	No	Missing
A.	<p><i>If caregiver is NOT youth’s biological parent, but the biological parent has custody OR will be reunited with youth, ask:</i></p> <p>Do the youth and one of her or his biological parents actively participate on the team?</p> <p><i>Otherwise ask:</i></p> <p>Do the primary caregiver and the youth actively participate on the team?</p> <p><i>*Follow scoring rules.</i></p>	<p>2</p> <p>Both participate on team.</p> <p>Only bio. parent/caregiver participate <u>AND</u> youth younger than 11.</p>	<p>1</p> <p>Only bio. parent/caregiver participates <u>AND</u> youth older than 11.</p> <p>Only youth participates.</p>	<p>0</p> <p>Neither participates.</p>	666 777 888 999
B.	Is there a friend or advocate of the family who actively participates on the team?	2	1	0	666 777 888 999
C.	<p>Is there a representative from the school (or childcare provider) who actively participates on the team?</p> <p><i>*If youth is not supposed to be in school choose N/A or 666.</i></p>	2	1	0	666 777 888 999
D.	Does the team consist of people the caregiver wants on the team?	2	1	0	666 777 888 999

Element 3: Community-Based Services and Supports		Yes	Sometimes Somewhat	No	Missing																								
A.	How many hours a week does the youth spend...	2	1	0	666 777																								
	<p style="text-align: right;"><i>Hours week</i></p> <table border="1" style="margin-left: auto;"> <tr><td>1. at a regular community school?</td><td></td></tr> <tr><td>2. working at a paying job?</td><td></td></tr> <tr><td>3. in a job training program?</td><td></td></tr> <tr><td>TOTAL =</td><td></td></tr> </table> <p><i>*Total number of hours per week then score.</i></p>	1. at a regular community school?		2. working at a paying job?		3. in a job training program?		TOTAL =		More than 20 total hours per week	10-20 total hours per week	Less than 10 total hours per week	888 999																
1. at a regular community school?																													
2. working at a paying job?																													
3. in a job training program?																													
TOTAL =																													
B.	Are the services and supports that the family needs hard to reach because they are far away?	0	1	2	666 777 888 999																								
C.	Does the team help the youth get involved with activities in her or his community?	2	1	0	666 777 888 999																								
	<p>Please give two examples of those activities:</p> <table border="1" style="width: 100%;"> <tr><td>1.</td></tr> <tr><td>2.</td></tr> </table> <p><i>*Follow scoring rules.</i></p>	1.	2.	Two examples of community activities.	One example of a community activity.	No examples of community activities.																							
1.																													
2.																													
D.	<p>Please tell me all the different places the youth has lived in the past 30 days. Write down each living situation then ask: How many days did the youth live in each situation? Write down the number of days for each living situation.</p> <table border="1" style="width: 100%;"> <thead> <tr> <th style="text-align: left;"><i>Living Situation</i></th> <th style="text-align: center;"><i># Days</i></th> <th style="text-align: center;"><i>Code</i></th> </tr> </thead> <tbody> <tr><td>1.</td><td></td><td></td></tr> <tr><td>2.</td><td></td><td></td></tr> <tr><td>3.</td><td></td><td></td></tr> <tr><td>4.</td><td></td><td></td></tr> <tr><td>5.</td><td></td><td></td></tr> <tr><td>6.</td><td></td><td></td></tr> <tr><td>TOTAL =</td><td></td><td></td></tr> </tbody> </table>	<i>Living Situation</i>	<i># Days</i>	<i>Code</i>	1.			2.			3.			4.			5.			6.			TOTAL =			<p><i>Do not score this item until you have coded each living situation from the WFI User's Manual. This should be done after the interview is complete.</i></p>			666 777
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TOTAL =																													
		2	1	0	888 999																								
		All 30 days in community living situations.	15-29 days in community living situations.	Less than 15 days in community living situations																									

Element 4: Cultural Competence		Yes	Sometimes Somewhat	No	Missing
A.	Does the family have frequent opportunities to tell the team about their beliefs and traditions?	2	1	0	666 777 888 999
B.	Do all members of the team respect and abide by the family's beliefs and traditions?	2	1	0	666 777 888 999
C.	Does the team help other people understand any ways that the youth is different or unique from her or his peers?	2	1	0	666 777 888 999
D.	Does anyone on the team act like she or he could be a better caregiver than the primary caregiver is for the youth?	0	1	2	666 777 888 999

Element 5: Individual Services and Supports		Yes	Sometimes Somewhat	No	Missing
A.	Does the team understand the youth and family well enough to effectively plan services and supports with them?	2	1	0	666 777 888 999
B.	<p>Did the caregiver take part in creating a written plan that identifies supports and services that meet the youth's needs at home, at school, and in the community?</p> <p><i>If yes or sometimes/somewhat, ask: Does the caregiver have a copy of the written plan? YES NO</i></p> <p><i>* Follow scoring rules.</i></p>	<p>2</p> <p>Took part in creating plan AND has a copy.</p>	<p>1</p> <p>Took part in plan but does NOT have a copy.</p>	<p>0</p> <p>Did not take part in creating plan.</p>	666 777 888 999
C.	Do the youth and family receive the supports and services stated in the plan?	2	1	0	666 777 888 999
D.	Is there a crisis or safety plan that specifies what everyone must do?	2	1	0	666 777 888 999

Element 6: Strengths-Based Services and Supports		Yes	Sometimes Somewhat	No	Missing
A.	Are the strengths and abilities of the youth and family used in choosing supports and services?	2	1	0	666 777 888 999
B.	Do people on the team help the youth solve her or his own problems?	2	1	0	666 777 888 999
C.	Does the team get the youth involved with activities she or he likes and does well?  Please give two examples of those activities.	2	1	0	666 777 888 999
	1.	Two examples of activities youth likes and does well.	One example of an activity youth likes and does well.	No examples of activities youth likes and does well.	
	2.				
	<i>*Follow scoring rules.</i>				
D.	Does the team spend too much time on the negative things that are happening with the youth and family?	0	1	2	666 777 888 999

Element 7: Natural Supports		Yes	Sometimes Somewhat	No	Missing
A.	Does the team help the caregiver receive support from her or his friends and family?	2	1	0	666 777 888 999
B.	Does the team help the youth develop friendships with other youth who will have a good influence on her or his behavior?	2	1	0	666 777 888 999
C.	Does the team rely mostly on professional services?	0	1	2	666 777 888 999
D.	How many members of the team are professionals? <input type="checkbox"/> More than half? <input type="checkbox"/> Half? <input type="checkbox"/> Less than half?	0 More than half.	1 Half.	2 Less than half.	666 777 888 999

<b>Element 8: Continuation of Services and Supports</b>		<b>Yes</b>	<b>Sometimes Somewhat</b>	<b>No</b>	<b>Missing</b>
A.	Does the team help the family develop or strengthen relationships that will support them when the team is discontinued?	2	1	0	666 777 888 999
B.	Do the youth and caregiver think that in the future services will be there when they need them?	2	1	0	666 777 888 999
C.	Does the team change the plan every time the family's goals and needs change?	2	1	0	666 777 888 999
D.	Is it possible for the youth or family to get "kicked out" of services?	0	1	2	666 777 888 999
<b>Element 9: Collaboration</b>		<b>Yes</b>	<b>Sometimes Somewhat</b>	<b>No</b>	<b>Missing</b>
A.	Is it difficult to get different service providers (or agencies) to attend team meetings when they are needed?	0	1	2	666 777 888 999
B.	Are all the possible sources of funding for the youth's services explained to the caregiver in a way she or he can understand?  <i>If answered "Somewhat" or "No," ask: Are the sources of funding explained to the caregiver at all?</i>	2  Explained AND understood	1  Explained but NOT understood.	0  Not explained	666 777 888 999
C.	Do the professionals and non-professionals on the team work together and hold one another responsible for specific tasks?	2	1	0	666 777 888 999
D.	Do the youth and caregiver feel there is unresolved tension or conflict on the team?	0	1	2	666 777 888 999
<b>Element 10: Flexible Resources and Funding</b>		<b>Yes</b>	<b>Sometimes Somewhat</b>	<b>No</b>	<b>Missing</b>
A.	Does the team use non-traditional services or even create new services for the youth and family?	2	1	0	666 777 888 999
B.	If the family needs a specific service or support would it be provided within an hour?	2	1	0	666 777 888 999
C.	When the team has a good idea for a support or service for the youth is money easily available to fund it?	2	1	0	666 777 888 999
D.	Are the team meetings at a time or place that is not convenient for the youth or caregiver?	0	1	2	666 777 888 999

Element 11: Outcome-Based Services and Supports		Yes	Sometimes Somewhat	No	Missing
A.	Does the team measure the caregiver's satisfaction and the youth's satisfaction with services?	2	1	0	666 777 888 999
B.	Does the team discuss the youth's school attendance (or job/job training attendance if youth is not enrolled in school) at every team meeting?	2	1	0	666 777 888 999
C.	Does the team review the youth's progress toward specific goals at every team meeting?	2	1	0	666 777 888 999
D.	Does the team use data such as that described above to make decisions at team meetings?	2	1	0	666 777 888 999

Appendix C: Wraparound Fidelity Index, Third Version Youth Form

## WFI-3 Youth Form

Youth's name: \_\_\_\_\_

Caregiver's name: \_\_\_\_\_

Resource facilitator's name: \_\_\_\_\_

Interviewer's name: \_\_\_\_\_

Today's date: Month \_\_\_\_\_ Day \_\_\_\_\_  
Year \_\_\_\_\_

Administration method:  Face-to-face (1)  Phone (2)

Length of interview \_\_\_\_\_ minutes

Youth ID:	
Caregiver ID:	
Resource facilitator ID:	
Interviewer ID:	
Project ID:	
Family ID:	
Timeframe:	

1. Do you have a youth and family team?  No (1)  Yes (2)

*If No,* For the purposes of this interview, when we ask you about the team please consider the people that work with you and your family to provide services and supports.

*If Yes,* We will be asking questions about the team so keep those people in mind as you answer the following questions.

*I am going to ask you some questions about the services and supports your family is receiving now and for the past 30 days. For each question you can answer “Yes,” “Sometimes” or “Somewhat,” or “No.” Please answer all questions as well as you can.*

**Missing Data Codes: 666 Not Applicable; 777 Refused; 888 Don’t Know; 999 Missing/Question Was Not Asked**

<b>Element 1: Youth Voice and Choice</b>		<b>Yes</b>	<b>Sometimes Somewhat</b>	<b>No</b>	<b>Missing</b>
A.	Do you feel comfortable expressing your opinions even if they are different from the rest of the team?	2	1	0	666 777 888 999
B.	Are important discussions or decisions about you or family made when you are not there?	0	1	2	666 777 888 999
C.	Do you feel comfortable telling the team what you think about the people trying to help you?	2	1	0	666 777 888 999
D.	How many members of your team can you talk to about things that are important to you?  <i>*Follow scoring rules.</i>	2  Two or more team members.	1  One team member.	0  No team members.	666 777 888 999
<b>Element 2: Youth and Family Team</b>		<b>Yes</b>	<b>Sometimes Somewhat</b>	<b>No</b>	<b>Missing</b>
A.	<i>If caregiver is NOT youth’s biological parent, but the biological parent has custody OR will be reunited with youth, ask:</i> Do you and one of your biological parents actively participate on the team?  <i>Otherwise ask:</i> Do you and your parent actively participate on the team?  <i>*Follow scoring rules.</i>	2  Both participate on team.	1  Only one participates on team.	0  Neither participates.	666 777 888 999
B.	Do you have a friend or advocate who actively participates on the team?	2	1	0	666 777 888 999
C.	Is there someone from your school (or childcare provider) who actively participates on the team?  <i>*If youth is not supposed to be in school choose N/A or 666.</i>	2	1	0	666 777 888 999
D.	Would you pick out a different team if you could?	0	1	2	666 777 888 999

Element 3: Community-Based Services and Supports		Yes	Sometimes Somewhat	No	Missing																								
A.	How many hours a week do you spend... <i>Hours week</i>	2	1	0	666 777																								
	1. at a regular community school? <input type="text"/> 2. working at a paying job? <input type="text"/> 3. in a job training program? <input type="text"/> TOTAL = <input type="text"/> <i>*Total number of hours per week then score.</i>	More than 20 total hours per week	10-20 total hours per week	Less than 10 total hours per week	888 999																								
B.	Are the services and supports that the you need hard to reach because they are far away?	0	1	2	666 777 888 999																								
C.	Does the team help you get involved with activities in your community?	2	1	0	666 777																								
	Please give two examples of those activities: 1. <input type="text"/> 2. <input type="text"/> <i>*Follow scoring rules.</i>	Two examples of community activities.	One example of a community activity.	No examples of community activities.	888 999																								
D.	Please tell me all the different places the you have lived in the past 30 days. <i>Write down each living situation then ask: How many days did you live in each situation? Write down the number of days for each living situation.</i>  <table border="1"> <thead> <tr> <th><i>Living Situation</i></th> <th><i># Days</i></th> <th><i>Code</i></th> </tr> </thead> <tbody> <tr><td>1.</td><td></td><td></td></tr> <tr><td>2.</td><td></td><td></td></tr> <tr><td>3.</td><td></td><td></td></tr> <tr><td>4.</td><td></td><td></td></tr> <tr><td>5.</td><td></td><td></td></tr> <tr><td>6.</td><td></td><td></td></tr> <tr><td>TOTAL =</td><td></td><td></td></tr> </tbody> </table>	<i>Living Situation</i>	<i># Days</i>	<i>Code</i>	1.			2.			3.			4.			5.			6.			TOTAL =			<i>Do not score this item until you have coded each living situation from the WFI User's Manual. This should be done after the interview is complete.</i>			666 777
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TOTAL =																													
		2	1	0	888 999																								
		All 30 days in community living situations.	15-29 days in community living situations.	Less than 15 days in community living situations.																									

Element 4: Cultural Competence		Yes	Sometimes Somewhat	No	Missing
A.	Do you and your family have many chances to tell the team about your beliefs and traditions?	2	1	0	666 777 888 999
B.	Do all members of the team respect your family's beliefs and traditions?	2	1	0	666 777 888 999
C.	Does the team help other people understand any ways that you are different or unique from your peers?	2	1	0	666 777 888 999
D.	Does it ever seem like someone on the team does not respect who you are and the things that you believe in?	0	1	2	666 777 888 999

Element 5: Individual Services and Supports		Yes	Sometimes Somewhat	No	Missing
A.	Does the team understand you and your family well enough to help you?	2	1	0	666 777 888 999
B.	<p>Did you help make a written plan to get you the supports and services you need at home, at school, and in the community?</p> <p><i>If yes or sometimes/somewhat, ask: Does your family have a copy of the written plan? YES NO</i></p> <p><i>* Follow scoring rules.</i></p>	<p>2</p> <p>Took part in creating plan AND has a copy.</p>	<p>1</p> <p>Took part in plan but does NOT have a copy.</p>	<p>0</p> <p>Did not take part in creating plan.</p>	666 777 888 999
C.	Do you and your family get the help you need?	2	1	0	666 777 888 999
D.	If things go wrong or get bad is there a plan that says what everyone must do?	2	1	0	666 777 888 999

Element 6: Strengths-Based Services and Supports		Yes	Sometimes Somewhat	No	Missing		
A.	Does the team know what you like and the things you do well?	2	1	0	666 777 888 999		
B.	Do people on the team help you solve your own problems?	2	1	0	666 777 888 999		
C.	Does the team get you involved with activities you like and do well?  Please give two examples of those activities: <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;">1.</td> </tr> <tr> <td style="padding: 2px;">2.</td> </tr> </table>	1.	2.	2  Two examples of activities youth likes and does well.	1  One example of an activity youth likes and does well.	0  No examples of activities youth likes and does well.	666 777 888 999
1.							
2.							
D.	Does the team spend too much time on the bad things that are happening with you and your family?	0	1	2	666 777 888 999		

Element 7: Natural Supports		Yes	Sometimes Somewhat	No	Missing
A.	Do people on the team help you do things with your friends and family?	2	1	0	666 777 888 999
B.	Does the team help you become friends with other youth in the community?	2	1	0	666 777 888 999
C.	When things are not going right, does the team help you talk with friends and other people you like to talk to?	2	1	0	666 777 888 999
D.	Does the team help you get support from people who are not on the team?	2	1	0	666 777 888 999

Element 8: Continuation of Services and Supports	Yes	Sometimes Somewhat	No	Missing
<p>A. How many people on the team will be there to help you in the future?</p> <p><input type="checkbox"/> Everyone?  <input type="checkbox"/> Half?  <input type="checkbox"/> Less than half?</p> <p><i>*Follow scoring rules.</i></p>	<p>2</p> <p>Everyone.</p>	<p>1</p> <p>Half.</p>	<p>0</p> <p>Less than half.</p>	<p>666 777 888 999</p>
<p>B. If you got into big trouble, how many people on the team would give up on you and not be there to help you out?</p> <p><input type="checkbox"/> None  <input type="checkbox"/> One?  <input type="checkbox"/> More than one?</p> <p><i>*Follow scoring rules.</i></p>	<p>2</p> <p>None</p>	<p>1</p> <p>One.</p>	<p>0</p> <p>More than one.</p>	<p>666 777 888 999</p>
<p>C. If things were not going well, do you think your team would come up with a brand new plan?</p>	<p>2</p>	<p>1</p>	<p>0</p>	<p>666 777 888 999</p>
<p>D. Is it possible for you or your family to get “kicked out” of services?</p>	<p>0</p>	<p>1</p>	<p>2</p>	<p>666 777 888 999</p>