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## Adapting COMPASS for Youth with ASD to Improve Transition Outcomes Using Implementation Science

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### Abstract

Implementation science provides guidance on *adapting* existing evidence based practices (EBP) by incorporating implementation concerns from the start. Focus group methodology was used to understand barriers and facilitators of transition planning and implementation for students with autism spectrum disorder (ASD). Results were used to modify an evidence-based consultation intervention originally applied to young students with ASD called the Collaborative Model for Promoting Competence and Success (COMPASS; Ruble, Dalrymple, & McGrew, 2012). Because consultation is a multilevel EBP, two existing implementation science frameworks were used to guide adaptation: the Framework for Evidence Based Implementation and Intervention Practices (FEBIIP; Dunst & Trivette, 2012) and the Consolidated Framework for Implementation Research (Damschroder et al., 2009). The purpose of this paper is to describe a process of adaptation that may be useful for other implementation science studies of consultation interventions, teacher acceptability, feasibility, and burden, and parent/student satisfaction with the adapted intervention.

The study advances implementation science approaches for adapting evidence-based interventions. Offered is a hybrid model to guide researchers in the study of adapting consultation interventions. Teachers found the adaptations acceptable and feasible; parents and students reported high satisfaction.

### Keywords

autism; implementation science; transition; youth; COMPASS

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Implementation science is the study of procedures designed to enable the use of evidence-based practices (EBP) in community settings, thereby addressing the gap between research and practice (Brownson, Colditz, & Proctor, 2012). One particular implementation practice, consultation, is especially well-suited for bridging this gap. Parent-teacher consultation is an evidence-based practice (EBP) that allows for opportunities for enhancing collaborative educational planning and problem solving with the people who have the most direct and frequent contact with the student. As a result, consultation impacts student outcomes

indirectly through the direct work of the consultant with the teacher and parent (Wong, Ruble, McGrew, & Yu, 2017).

We were interested in using an implementation science framework to guide our modification of a parent-teacher consultation intervention originally developed for young children with autism spectrum disorder (ASD) called the Collaborative Model for Promoting Competence and Success (COMPASS) and apply it to the transition planning process for high school students with ASD (Ruble, Dalrymple, & McGrew, 2012; Ruble & McGrew, 2015). COMPASS was tested successfully in two randomized controlled trials ((Ruble, McGrew, & Dalrymple, 2010; Ruble, McGrew, Toland, Dalrymple, & Jung, 2013) and is manualized (Ruble, Dalrymple, & McGrew, 2012) with detailed protocols, forms, and case study examples. Incorporating research-supported practices for high quality consultation, COMPASS provides an implementation structure and process for infusing EBPs into the classroom based on an Evidence Based Practice in Psychology (EBPP) approach (McGrew, Ruble, & Smith, 2016). EBPP both acknowledges the complexity of intervention decision making at multiple levels and accounts for the needs and preferences of the student and family as well as the resources, skills, and knowledge of the teacher, in addition to the therapeutic indications of the focused EBP. COMPASS begins with a 3-hr parent-teacher consultation that includes assessment of a child's personal and environmental challenges and identifies supports that guide goal development and personalized intervention planning and selection. Following this initial consultation are four, 1-hr teacher coaching sessions. Both the initial and follow-up sessions are conducted by a consultant/coach. Figure 1 details the intervention's steps. The coaching sessions include evidence based consulting activities of performance feedback and progress monitoring (Dunst & Trivette, 2012; Easton & Erchul, 2011; Noell et al., 2005) and serve to monitor and modify the intervention plans as needed to maintain or achieve student goal attainment progress. In total, the consultant spends less than 10-hrs with the teacher over the school year. Comparisons of blinded ratings of individual education program (IEP) outcomes between control and COMPASS groups when implemented face-to-face revealed very large effect sizes ( $E.S. > 1.4$ ) for both the first (Ruble, Dalrymple, & McGrew, 2010) and second RCT (Ruble, et al., 2013) and large effect sizes when implemented using web-based videoconferencing in the second RCT ( $E.S. = 1.1$ ). Table 3 provides an example of a COMPASS teaching plan for IEP goals and for post-secondary goals.

One limitation of COMPASS is that it has been tested in the education setting only for children aged 3 to 8 and has not been adapted for other age groups. Yet transition age youth with ASD are in critical need, experiencing disproportionately poor outcomes compared to peers with other disabilities (Burgess & Cimera, 2014; Friedman, Warfield, & Parish, 2013; Liptak, Kennedy, & Dosa, 2011; Roux et al., 2013; Sanford et al., 2011; Shattuck et al., 2012). For example, compared to other students with speech and language, learning, and intellectual disabilities, students with ASD have the highest rates of unemployment and the lowest rates of involvement in outside-the-home activities (Shattuck et al., 2012). Lipscomb and colleagues (2017) found that transition-age students with ASD are less likely to have participated in the development of their Individualized Education Programs (IEPs) than students with other disabilities, are rated as less likely to be able to perform activities of daily living well (17%) in comparison to all students with disabilities (46%), and experience

lower parental expectations for post-secondary education than do other students with disabilities. Compounding this problem, a recent congressional report concluded that only 2% of ASD research focused on transition and adult issues (U.S. Department of Health and Human Services, 2017). Moreover, according to Wehman et al. (2014), there is no transition planning *practice* with empirical support. Thus, studies of empirically-supported approaches for improving transition planning and outcomes for students with ASD are critically needed (Autism Interagency Coordinating Committee, 2012). Our goal was to adapt COMPASS to be a transition planning intervention for improved educational outcomes for youth with ASD.

To guide our adaptation process, we applied an implementation science framework. However, because consultation interventions are multilevel, with potential adaptations at the policy/organization, consultant, teacher, and student/parent levels, identifying a single framework to account for such complexity is challenging. To guide adaptation, we considered two existing frameworks for identifying the critical factors impacting quality transition implementation and intervention effectiveness: (a) Dunst's and Trivette's (2012) Framework for Evidence Based Implementation and Intervention Practices (FEBIIP) developed as a model for professional development; and (b) the Consolidated Framework for Implementation Science (CFIR; Damschroder et al., 2009). The FEBIIP framework includes three levels of assessment that differentiate between the three critical actors in consultation: the consultant, the consultee (teacher), and the client (student). The first level is quality assessment of the implementation practice, or what the consultant does to impact the second level of the intervention practice or what the teacher does as a result of the consultant. This second level, teaching quality, impacts the practice outcome, or what the student does as a result of the intervention delivered by the teacher. These multilevel aspects account for the complexity within a consulting intervention such as COMPASS. We have empirical evidence of the relationships between consultation quality, teaching quality, and practice outcome (Wong, Ruble, McGrew, & Yu, 2017). Using serial mediation, we demonstrated that fidelity of consultation indirectly predicted student IEP outcomes via teaching quality and child engagement. Although FEBIIP provides a framework for modeling the interacting levels of consultation, it does not fully account for the complex contextual factors impacting adaptation.

CFIR provides a comprehensive approach integrating elements of existing implementation theories to identify potential barriers to implementation resulting from multiple contextual sources, including outer setting features. CFIR identifies five critical domains, each composed of several sub-domains. (1) Characteristics of the intervention refers to the strength of the evidence for its effectiveness and how much it can be adapted to fit the circumstances in which it is to be implemented. (2) Outer setting refers to the economic, political, and social environment surrounding and influencing the organization undertaking the implementation, including national political drivers, availability of funding, the demand from parents, and the degree to which the broader society is receptive to the intervention's philosophy. (3) Inner setting refers to the features of the implementing organization including the degree to which its structures, internal communication mechanisms, resources, leadership, and culture facilitate the adoption of the particular intervention. (4) Characteristics of the individuals conducting the intervention include attitudes about the

intervention, enthusiasm toward the intervention, and readiness to implement the intervention. (5) The process of implementation includes the extent and quality of the implementation effort, including the degree to which intervention agents (e.g., teachers) are actively engaged, the efficiency with which the implementation is carried out, and the extent to which progress is appropriately monitored against specific goals, used as feedback to participants, and used to adapt and promote implementation.

Because neither framework alone was sufficient for guiding adaptation of a consulting intervention, we chose to use both (see Figure 1). Using our hybrid model as our guide, we investigated the following research questions: (a) What specific alterations, adaptations, or additions are needed to implement COMPASS for transition age youth with ASD? (b) How do the factors critical for adapting COMPASS fit within the hybrid model that includes the three FEBIIP levels of implementation practice, intervention practice and practice outcomes and the CFIR features of characteristics of the intervention, inner and outer settings, characteristics of the individuals, and the implementation process? (c) Are teachers, parents, and students satisfied with the COMPASS adaptations derived from our focus group results as organized within our hybrid model? In answering these questions, we recognized that different aspects of each framework overlap. For example, characteristics of the intervention in CFIR have overlapping elements with both the implementation practice and intervention practice variables in FEBIIP. Thus, we report in our results the areas of crossover for elements that fall within the two frameworks.

## Methods

### Design

Our parent study examined the effectiveness of COMPASS for transition-aged students using a mixed method design, which is well suited to identify the complex facilitators, barriers, and processes of implementation (Palinkas et al., 2011; Waitzkin, Schillaci, & Willging, 2008). To answer the first two research questions, we employed qualitative methods to identify the multi-level factors needed to adapt COMPASS to meet the specific needs of transition age youth, their parents and providers, and to accommodate relevant policies by conducting a series of focus groups, which are ideal for generating ideas through interaction and exploring complex issues (Carey & Asbury, 2012) among diverse stakeholders. To answer the third research question, we used quantitative methods, specifically a self-report measure of teacher, parent, and student satisfaction with COMPASS.

### Qualitative Substudy

**Participants**—Ten separate focus groups were conducted. In total, 40 individuals participated, including individuals with ASD, parents, school service providers (e.g., classroom teachers; job coaches), school administrators (e.g., special education directors; transition services administrators), adult service providers (e.g., Medicaid Waiver case manager; Vocational Rehabilitation counselor; community agency director), and state policy makers from Vocational Rehabilitation, Special Education, Medicaid, and Developmental Disabilities. Purposive sampling (Bernard, 2011) was conducted to obtain input from

stakeholder groups representing both the inner and outer settings identified by the implementation model and to include a diverse group of parents based on race and income by recruiting parents whose children attended a Title 1 designated high school that had a free/reduced lunch rate greater than 60% (group 10). Table 1 provides detailed information about focus group makeup. Of the parent participants, 82% were White and 18% were Black. Of the individuals with ASD, 75% were White and 25% were Latino. All participants represented in the professional groups were White, representative of the racial-ethnic makeup of providers and policy-makers in this region.

**Focus Group Procedures**—All sessions were recorded and transcribed. The mean duration of the focus groups was 67.8 minutes (range = 55–94 minutes). The focus group discussion leader used a semi-structured interview that included several open-ended questions: (a) What are the critical elements of good transition planning? (critical players, services, processes, results); (b) What are the challenges that make it difficult to achieve good transition planning?; (c) What are the critical elements of a good transition intervention?; (d) What are the services, agencies, organizations, federal, state and school, local that could/should be accessed and included?; and (e) What should be measured so that we know the outcomes of young adults have improved? These open-ended questions were informed by the implementation model and designed to understand the multi-level factors shaping the current implementation of transition planning and services and to identify the domains and specific elements needed to adapt COMPASS as a planning and implementation consultation intervention for the transition age. We purposely chose to tap into the wider perspectives of transition instead of COMPASS specifically because we wanted to identify innovations or issues that could be considered for COMPASS adaptation. A prior paper reports on the focus group responses to the first question (Snell-Rood, et al., 2018).

With the exception of a state policy group comprised of a mixture of individuals, each focus group consisted of individuals from similar roles such as self-advocates, families, school administrators, policy makers, classroom teachers, and service providers. This was done to encourage discussion of common experiences and to foster open sharing of concerns (Carey & Asbury, 2012). Two research assistants attended all groups and assisted with greeting members, collecting a questionnaire on members' backgrounds, and notetaking during the discussion. Participants were compensated \$50 for their time, with the exception of policy maker participants, all of whom declined. After analysis and coding (see below), a summary of the proposed adaptations was presented to a 5-member check-in group representing individuals from key inner and outer setting constituencies. These group members represented vocational rehabilitation, developmental disabilities services, parents/caregivers, and schools. Additional modifications were made based on their feedback.

## Data Analysis

Focus group discussions were transcribed verbatim and entered into the software program MAXQDA (Verbi Software, 2017) to enable team analysis. A second research assistant reviewed each transcript for completeness and accuracy. We analyzed the focus group transcripts using qualitative thematic analysis, a systematic process to identify and interpret

themes within qualitative data (Clarke & Braun, 2013). In a first cycle of coding, team members read all transcripts to identify preliminary inductive themes about transition planning in the data and the presence of pertinent themes derived from the literature on transition (Miles, Huberman, & Saldana, 2013) and from our implementation model. Once codes were discussed and refined within the team, a codebook was finalized that included the definition of the category, a short description, and exemplars. Six team members worked in pairs. Each pair was uniquely assigned to a specific set of codes. During this intensive coding process, coders met weekly to compare coding of the transcripts, testing the assigned codes until reaching 80% inter-rater reliability, and refining the codebook during the process. Discrepancies were resolved through consensus. Once reliability was established, each pair of coders applied their assigned codes line by line to all transcripts.

### Intervention Adaptation

The focus-group-identified characteristics of good transition planning and implementation were applied to the COMPASS process and procedures within each of the domains in our hybrid model—the implementation practice, the intervention practice, the practice outcomes, the characteristics of intervention, inner and outer setting barriers, characteristics of the individuals, and the implementation process. Following coding, we reviewed the coded content code-by-code to identify specific aspects of COMPASS to be adapted and revised for transition-age youth with ASD. We identified how each issue or suggestion could be integrated into COMPASS. After reviewing the coded content, we developed a list of the proposed changes focusing the revisions on COMPASS materials, process, and procedures. Policy related issues were identified but were not included in the list of intervention adaptations as they fell beyond the scope of COMPASS. As mentioned, as a final step we reviewed our proposed changes with the workgroup from our original focus groups.

### Quantitative Substudy

**Participants**—Teacher participants from our parent study who were randomly assigned to and received the modified version of COMPASS (n=11) completed a questionnaire (described below) at the end of the school year concerning the acceptability, usability, feasibility, and burden of COMPASS. To be included, participants needed to be teacher of record for a student with ASD randomly selected from their caseload, who was within one year of high school completion and who also participated in COMPASS. Teachers were 9 females and 2 males. On average, teachers reported working in their current position for 7.9 yrs (SD = 4.5) and teaching students with ASD for a mean number of 13.9 years (SD = 8.0). Eight of the teachers taught full-time in self-contained, special education classrooms, and the remaining three were resource room teachers. Their average caseload/class size was 15.5 students (SD = 10.0). Seven of the 11 students attended the initial consultation; however, only two remained for the entire 3 hours. More details on the randomized controlled study is available from the first author (Ruble, McGrew, Toland, Adams, & Snell-Rood, 2018).

**Procedures and Measures**—To answer our questions about general satisfaction with the initial consultation and the follow-up coaching sessions, teachers, parents, and students completed a satisfaction questionnaire for the initial consultation and the follow-up coaching sessions. For satisfaction with the initial consultation, teachers and parents completed 15

Likert type items with ratings from 1 “strongly disagree” to 4 “strongly agree.” Example items were “The consultant’s communication skills were effective” and “I learned a useful way to problem-solve as a team on behalf of my child/student.” The internal consistency (alpha) ranged from .70 (parent) to .93 (teacher). A 4-item questionnaire was used to assess student satisfaction. The same response scale described above for the parent/teacher questionnaire was applied. Example items were “I felt involved during the consultation and able to express my views” and “I gained a better understanding about what is needed in my educational plan.” The internal consistency (alpha) was .98.

For satisfaction with the coaching sessions, teachers, parents, and students were asked to complete the *Session Rating Scale (SRS; Duncan & Miller, 2007)* following coaching sessions 2, 3, and 4. The SRS is a four-item visual analogue scale, designed to be a brief clinical tool to measure therapeutic alliance. The items are presented as bipolar anchors requiring a response on the ten-centimeter line. Adult items assess the relationship (e.g., ‘I felt heard, understood, respected’), goals and topics (e.g., ‘We worked on and talked about what I wanted to work on and talk about’), acceptability of the approach (e.g., ‘The consultant’s approach is a good fit for me’), and overall satisfaction (e.g., ‘Overall, today’s session was right for me’). For the student, items assessed quality of listening (e.g., ‘listened to me’), session importance, (e.g., ‘what we did and talked about were important to me’), liking, (e.g., ‘I liked what we did today’), and overall satisfaction (e.g., ‘I hope we do the same kind of things next time’). Scores are summed out of a total possible score of 40. The internal consistency, Cronbach alphas, ranged from .92 to .97 for teacher ratings, .77 to .92 for parent ratings, and .64 to .96 for student ratings.

Teachers rated acceptability, usability, feasibility, and burden of COMPASS using a 24-item scale. For acceptability, teachers completed 5 items using a 4-point Likert scale (1 ‘not at all likely’ to 4 ‘very likely’ or “1 ‘strongly disagree’ to 4 ‘strongly agree’). Example items were “How likely would you be to use COMPASS for all your students” and “How likely would you be to recommend use of COMPASS for all teachers of special education students.” For usability, teachers completed 11 items using a 4-point Likert scale (1 ‘strongly disagree’ to 4 ‘strongly agree’). Example items were “The COMPASS assessment forms used for the initial planning were very useful” and “Teaching plans were understandable.” For feasibility, teachers completed 5 items using a 4-point Likert scale (1 ‘not at all hard’ to 4 ‘very hard’). Example items were “How hard was it to make time for the initial consultation” and “How hard was it to implement the teaching plans.” For burden, teachers rated the time and effort costs of the initial consultation, the coaching sessions, and the data collection activities using the same Likert scale described above for feasibility. The internal consistency (alpha) was .99 for acceptability, .94 for usability, .39 for feasibility, and .33 for burden. Because the internal consistency estimates for the feasibility and burden subscales indicated that items do not scale together, results for those subscales are presented at the item level. We used descriptive statistics to analyze the data.

## Results

### Qualitative Substudy

**Factors Impacting High Quality Transition Planning and Implementation**—We identified a total of 13 themes or factors impacting high quality transition planning and implementation for young adults with ASD. Table 2 provides a list of the themes and percent interrater agreement in coding the themes between independent rater pairs. A brief description of each theme is provided. The last two columns include the specific COMPASS adaptation or addition associated with each theme.

Five factors/themes impacting outcomes that ideally should be addressed by an intervention were identified within the first CFIR domain, characteristics of a transition intervention. (1) Need for a navigator/coordinator—many parents reported that the service system was confusing with multiple gaps. A potential solution would be to have a centralized individual or resource that helped them navigate the system and understand the transition process. Moreover, in contrast to the unclear way that information about transition was typically presented by educators and providers, information needed to be shared in small pieces and reviewed repeatedly. (2) Need to account for the heterogeneity/continuum of autism—parents reported that transition planning, and the varying interventions required for diverse students, should be individualized. This individualization should take into account the person's interests and skills. Planning and training should address needs at all levels of ASD, including individuals from the lower functioning end of the continuum as well as those from the higher end, who also need instruction on daily living skills, not only academics. (3) Addressing problems that youth with ASD face when obtaining employment—similar to the need for individualized planning and training, employment settings needed to be matched to individuals, reflecting both their interests, hopes and dreams as well as their skills and abilities. Ideally, individuals would learn specific job skills in school that represent real experiences in the workplace. (4) Mismatch between educational goals and needed practical skills in current transition implementation—outcomes must include assessment of practical skills, not just academic abilities, as well as consideration of various individualized needs and goals. (5) The need to look beyond employment as the primary transition outcome—transition should be broadened beyond employment alone to consider what the individual will do with his/her days, how to obtain money, the student's living arrangements, and peer friendships after school.

Two themes were identified within the second CFIR domain, settings, with respect to outer setting barriers—that is, those beyond the organizations conducting transition practices. (1) There is a need to address barriers in accessing key services [e.g., Vocational Rehabilitation (VR) and public benefits] to meet the needs of each person. These services include public benefits provided and / or funded by agencies such as vocational rehabilitation, state developmental disabilities services, Medicaid and post-secondary education as well as services funded by private pay or insurance. Parents/individuals with ASD need help both in identifying and accessing these key services. Vocational rehabilitation was mentioned frequently by parents and school providers as a key player that requires better partnerships with schools. Many reported that VR counselors did not understand ASD, did not attend

meetings despite attempts to invite them, and were often inaccessible due to long waiting lists, large caseloads, and a lack of awareness among parents about VR. Further, stakeholders reported that there is a complicated array of entities that can help with transition, including community behavioral health, vocational rehabilitation, developmental disabilities, social security disability income, and Medicaid waivers. Each has their own limitations on availability, eligibility, access, scope of service, and when they can get involved. Specific concern was expressed for a need for education concerning Social Security Disability/Supplemental Security Income planning and information on exclusions such as salary caps, because of fear of losing benefits once the person starts working. (2) The need to employ appropriate timing in the sequencing and provision of transition services. This concerns the need for early involvement of educators with families on transition planning and priority setting. Concern was expressed that starting too young (6 yrs. of age for example) was overwhelming, whereas more proximal discussion (such as at age 15) may be helpful for making global decisions.

For inner setting, three themes were identified. (1) There is a need for increased involvement of key players. Stakeholders reported that those who have the most direct interactions are critical (e.g., parents, teachers). However, they also identified employers, vocational rehabilitation, and other service providers. (2) There is a need for high levels of effort by students, parents, and families. Concerns were raised about the need to be diligent and persistent. Parents reported that pushing through transition is tiring and “gets old.” (3) There is a need for improved communication among stakeholders within the setting and their communication to those outside the setting. Parents noted the challenges of negotiating the educational and adult service systems. For the educational setting, parents also identified a desire for opportunities to provide input and evaluation of how well the student is meeting benchmarks. Stakeholders reported that communication and monitoring could be improved across agencies, and that individuals tend to work in silos in absence of a shared understanding of who takes primary responsibility for ensuring communication across agencies.

One theme was identified within the fourth CFIR domain, characteristics of the individuals implementing the intervention. Though those implementing the intervention often had experience with a range of disabilities, stakeholders reported that specific training on ASD was essential. There is a need for education of the team, community providers, and others on the impact of ASD on the student. This concern also extended to outer settings such as VR and community providers beyond the school system who were reported to lack adequate training on ASD and its heterogeneous presentation.

For the fifth and final CFIR domain, process of implementation, two themes were identified: (1) need for improved goal setting and (2) need for monitoring and assessment. For goal setting, stakeholders reported a need for school supports to include structured goal setting activities. For monitoring and assessment, stakeholders voiced a need for assessment of progress on short- and long-term goals and outcomes that include satisfaction, student quality of life, and self-determination. Moreover, stakeholders voiced a need to make use of the collected data to innovate and improve services.

**COMPASS Adaptations and Additions—**Based on the themes discussed above, we made changes and additions to COMPASS procedures, products and processes to make them appropriate for transition-age students in the following four areas: (a) assessment; (b) key players; (c) consultation; and (d) handouts. Table 2 summarizes the specific changes made to COMPASS for each of the fifteen themes identified by the focus groups and shows the link between the stakeholder recommendations and the COMPASS adaptations. Figure 1 also shows specific changes to the original version of COMPASS. Below we describe these adaptations in more detail, broadly organized within CFIR domains. Focus group themes are shown in parentheses when describing the adaptation. Note that although all possible adaptations were made to COMPASS to address stakeholders' concerns, some additional areas for change lay beyond the scope of the intervention that will require further policy and intervention work.

**Characteristics of the Intervention.:** The original version of COMPASS includes an initial session that generates a profile of the student's strengths and challenges across developmental skills, i.e., social, communication, and learning, as well as preferences and frustrations from the teacher and parent viewpoints (Figure 1). We made adaptations to the COMPASS profile assessment completed by the parent, teacher, and student team to be consistent with the needs of transition. First, we added new items to the COMPASS profile to reflect post-secondary goals (Employment; Educational Outcomes & Practical Skills; Transition) that are now discussed during the initial consultation. This modification framed the team discussion of the COMPASS profile around the need to prioritize social, communication, and learning/work behavior goals that were linked to post-secondary outcomes. In contrast to our work with very young children with ASD, we also created a version of the profile assessment that reflected a first-person perspective to obtain input directly from the student when possible (Continuum of Autism). In addition, to help understand their needs, we developed a questionnaire asking about current services received, desired, or for which they wanted more information (Navigator/Coordinator). Based on their responses, we provided information on the services identified at the start of the consultation and referred back to the services that were relevant when developing the plans for achieving the post-secondary goals. This additional new material originated from a community employment manual co-authored by the first author (Suomi, Ruble, & Dalrymple, 1991). We also revised a more general handout for parents on the Top 10 list of helpful services, originally developed for newly diagnosed and young children (Table 5), and a transition resource guide (Navigator/Coordinator). The handouts also were relevant for other areas described within the additional CFIR domains.

**Outer setting.:** Stakeholders identified several system-level outer setting issues that were independent of COMPASS, such as access to needed services (e.g., long wait lists for services or a lack of employment opportunities) (Snell-Rood, et al., 2018). COMPASS adaptations were made to those aspects under our control to the fullest extent possible. For example, as noted above, we developed the Top 10 list and adapted and added the Transition Resource Guide to help parents in their understanding of the outer setting service system and provide information on how to initiate services in order to avoid encountering waitlists at the time that services were needed. In planning the initial consultation, we added guidelines to

help identify and encourage parents and teachers to invite outer setting members that they felt were essential to the team for planning at the initial consultation (Key Services). Further, timing was often mentioned as a frustration because transition planning was often initiated the last semester of school (Snell-Rood, et al., 2018). Although we could not change this directly, we did provide a transition process resource guide, and included a suggested timeline for schools of when transition should begin and the roles of the key players in transition (Timing).

**Inner Setting.:** Inner setting adaptations reflected a need to invite members to the consultation that have information relevant for the development or implementation of the teaching plans (Key Players). For example, key players might involve members of the school who were not part of the primary transition team, such as the school-based job coach who provided community-based training but did not meet regularly with the team, or the school counselor who had information on resources for post-school goals of learning to drive or taking community college classes. Further, to address the need to create clear post-secondary goals and how to achieve them, because transition goals often require participation of non-school personnel, we added to COMPASS the development of specific plans for achieving the post-school goals that identified the specific person (e.g., parent or student) responsible for implementation of the plans (Student, Parent, and Family). Further, to ensure that there was good communication across the team for goal setting and progress monitoring and follow-up of the implementation of the plans to achieve the goals (Communication), we altered the consultation by instituting phone calls when parents could not attend to obtain information on the implementation of the post-school plans to achieve the goals.

**Characteristics of the Individuals Implementing the Intervention.:** The primary modification for this domain concerned altering COMPASS to have a primary focus on understanding transition needs within an ecological model that identifies student strengths, challenges and specific characteristics related to ASD (Specific Training on ASD). The original version of COMPASS includes information sharing on the student's characteristics of autism and who is responsible for the implementation of the personalized teaching plans. We kept the same information sharing activity, but extended it to provide more detailed information about transition needs and planning.

**Process of Implementation.:** Changes made to the process of the implementation of COMPASS concerned the role of the parent and student and how progress was monitored. In the original version of COMPASS, the teacher was the primary person responsible for implementing the teaching plans. But for the adapted version of COMPASS, goals that reflected activities following high school fell within the realm of parent and student responsibility (Goal Setting). Further, the altered COMPASS profile and handouts also reflected and reinforced the roles of parents and student in setting their goals and implementing the plans to achieve them. Also, because it was common for students served primarily or exclusively in general education classrooms to have no direct instruction or contact with the special education teacher, it was necessary to reconsider how we conducted our monitoring activities (Monitoring and Assessment). In the original version of COMPASS, we asked teachers to provide live demonstration or provide a videotape of their

implementation of the teaching plans with the student. However, we learned that we had to relax this requirement with high school students because videotaping was not feasible in general education or community settings. Instead, we expanded progress monitoring to include teacher self-report data, student self-monitoring data, work samples, and computer-tracked data, such as homework completion.

**Hybrid Model**—As stated, the CFIR framework did not account for the additional levels of implementation and intervention associated with a consultation intervention. However, the FEBIIP framework was sensitive to specific adaptations that needed to occur at the implementation, intervention, and practice outcome levels. Table 3 summarizes the changes to COMPASS as organized within our hybrid CFIR/FEBIIP implementation model provided in Table 4. In general and perhaps unsurprisingly given that our implementation model informed our participant sampling, focus group questions and coding, our findings necessitated changes consistent with and impacting all three FEBIIP levels: implementation, intervention, and practice outcome. However, not every theme entailed changes at every level. For example, with respect to the Characteristics of the Intervention domain of CFIR, the need for a navigator coordinator primarily impacted changes for the consultant and parent/student, as the consultant took on the role of navigator to support the parent and student in obtaining services associated with the post-secondary outcomes from the IEP. Similarly, changes associated with the educational outcomes and practical skills theme fell within the practice outcome level and were limited to parent and student long-term education and skills necessary for positive post-school outcomes. With respect to Inner and Outer Settings domain of CFIR, only two of the themes (Key Services and Communication) were consistent across the different levels of the FEBIIP model; indeed, the most variability across FEBIIP domains fell within this CFIR domain. For example, timing and key players impacted both the implementation and intervention practice levels, but not the practice outcome level. Thus, the onset of when the consultation for transition planning should begin and assuring that key players were involved fell primarily within the roles of the consultant and teacher. Further, educational outcomes and practical skills fell within the practice outcome domain rather than the implementation or intervention practice domains. For the last two CFIR domains, characteristics of the individuals, and the implementation process, all levels of FEBIIP were impacted similarly.

### Quantitative Substudy

**Initial Consultation.:** Teachers, parents, and students were satisfied with the initial consultation and its modifications. Mean satisfaction scores on the 4 point scale were good for teachers ( $M=3.85$ ,  $SD=.25$ ), parents ( $M=3.82$ ,  $SD=.18$ ), and students ( $M=3.4$ ,  $SD = .58$ ). As noted earlier, only two of the seven students who attended some part of the 3-hr consultation stayed for its entirety. This suggests that splitting the consultation into two, 1.5-hr sessions might be important to facilitate student full attendance. The other students left early because they did not want to miss class or after-school activities such as theatre.

**Coaching Sessions.:** Teachers, parents, and students were satisfied with the coaching sessions. Out of a possible rating of 10, mean SRS scores for teachers ranged from 9.42 to 9.75. For parents, scores ranged from 9.79 to 9.9; and for students, scores ranged from 7.7 to

8.0. Between four and six parents were able to attend each coaching session; and between six and nine students attended each coaching session.

Teachers agreed to strongly agreed that the modified version of COMPASS was acceptable ( $M=3.00$ ,  $SD = .84$ ) and usable ( $M=3.29$ ,  $SD = .47$ ). Teachers also rated the items measuring feasibility and burden as between not at all hard (score=1.27) and slightly hard (score = 1.9) (item means ranged from 1.27 to 1.91 for feasibility and from 1.36 to 1.72 for burden).

## Discussion

In the current study, we employed a hybrid implementation science framework that holds great relevance for other adaptation studies in school settings. Our qualitative design enabled us to capture not only the broad issues of transition planning and implementation associated with the inner setting but also those issues related to the outer setting. Further, we conducted our focus groups with stakeholders representative of both inner and outer settings, such as direct school personnel and public policy makers. The broad selection of stakeholders helped inform the range of issues associated with transition planning and implementation. Moreover, themes representative of both implementation frameworks informed the focus group coding. With respect to CFIR, coding attended to aspects of both inner and outer setting impacts on transition, as well as identifying specific individual level factors and the processes involved in transition planning and implementation. The FEBIIP framework helpfully delineated the multilevel features involved in a consultation intervention that occurs at the consultant level, teacher level, and student level.

The results led to adaptations of the COMPASS intervention for transition age youth. Changes were made to our assessment process, the consultation itself, additional informational handouts, and identification of critical members of the team. The use of such a qualitative, stakeholder-centered process is helpful when applying implementation science methods to adapt interventions to fit specific contexts.

One of the key challenges to adaptation is the tradeoff between addressing contextual concerns while still remaining faithful to key principles driving an evidence-based practice. That is, when is too much adaptation a violation of fidelity, and when is too much rigidity/inflexibility with respect to fidelity a violation of the need to individualize and be sensitive to local realities? Striking this balance is essential if the benefits of the EBP are to be realized in the novel context, while simultaneously ensuring that the EBP is feasible within the constraints and resource limitations of the new context.

At least some of our adaptations reported in this study are wholly consistent with/and complementary to best practices for youth with disabilities, and for students with ASD specifically, such as the inclusion of students in all aspects of planning, assessment, goal-setting, data collection and monitoring - all essential elements of the principle of self-determination (see Shogren, Wehmeyer, Palmer, Rifenbark., & Little, 2015; Wehmeyer, Palmer, Shogren, Williams-Diehm, & Soukup, 2013). Our adaptations further reflect the recommendations by other researchers (Kucharczyk et al., 2015) to address the heterogeneity of individuals with ASD (and enable individuals with ASD to contribute as

much about themselves as they would like to do so in the process), and the need to integrate the contributions of a broad array of stakeholders. Interagency collaboration, including the active participation of VR and local developmental disability provider agencies, has itself been identified as a best practice within transition (Test, 2012; Winsor, Butterworth, & Boone, 2011). Still, the ongoing challenges consistently identified by our stakeholder focus group participants demonstrate the persistent gap between recommended practices and the implementation of those practices. Importantly, our work illustrates the potential contribution of implementation science methods to identify the multilevel changes required to make best practices a reality in a complex transition landscape. Moreover, COMPASS is well suited in this regard because it already incorporates an EBPP structure (McGrew, Ruble, & Smith, 2016) that is readily adaptable to differing context/setting demands (inclusion of additional key persons) and consultee/student needs (continuum of ASD). Further, analysis of quantitative feedback from teachers on their perceptions of the acceptability, usability, feasibility, and burden of COMPASS suggested that overall teachers generally found COMPASS to be acceptable and usable. In addition, they reported that it was feasible to implement.

Several of our adaptations to COMPASS directly reflect the complexities of the high school setting and of the transition process (the inclusion of other teachers, related service personnel, guidance counselors, and VR and adult service providers) and at times were at odds with faithfulness to ideal EBP principles of COMPASS. For example, adaptations addressed the flexibility needed to coordinate the engagement of a larger, more diverse group (e.g., allowing for telephone participation in coaching sessions, or partial attendance at meetings). Also, although the rigorous collection of progress and outcome data is a hallmark of evaluation and fidelity for any EBP, we needed to broaden our progress measures from a strict reliance on researcher collected and objectively scored videotaped classrooms observations of academic and social engagement from our earlier studies, to include both teacher- and student-collected data. However, this latter modification also reflects the important role of students in taking increasingly greater ownership for their own learning as they approach adulthood. We believe these changes strike an appropriate balance between adherence to best practice principles and the practical realities of school based transition planning and intervention; however, rigorous empirical evaluation is needed to more fully evaluate the potential impact of these changes.

Finally, some of the themes identified in our focus group were not possible to fully implement in the context of the present study. For example, we certainly recognize the importance of ensuring that transition planning starts early and is comprehensive across life domains. However, the modifications that we made to COMPASS were designed to highlight the most important transition needs of youth in their final year of school, since that was the population targeted in our research study. Secondly, we recognize the importance of a designated transition navigator for youth and their families suggested by a number of our participants. Although we were not able to create such a role, we attempted to provide a similar function by expanding the consultative/coaching role within COMPASS to include additional information on adult services in a way that was accessible to practitioners, families and youth, including the creation of a Transition Process Resource Guide and a “Top Ten List” of key transition elements (Table 5).

## Limitations

There are several limitations to our study. First, we conducted our focus groups in just one state, and one focus group had only two participants. While we were very careful to ensure broad representation of policy makers, youth, families, teachers and providers, we cannot assume that we would have found similar themes had we conducted our groups in other states or parts of the country. Indeed, we know that adult service systems and employment outcomes vary by state (Butterworth, Smith, Winsor, Ciulla, Timmons, Migliore, & Domin, 2016).

Secondly, we relied on self-report data from our stakeholders to create the modifications to COMPASS. While focus groups provided the best mechanism for collecting the kinds of systems data needed to consider each of the five areas within the CFIR framework, we did not actually observe the experiences of youth in transition (e.g., IEP transition meetings, secondary classrooms and vocational experiences) in making our modifications. Direct observations may have resulted in additional modifications to COMPASS.

Third and most importantly, we propose this paper as an example of how researchers can systemically modify an EBP through a careful examination of each of the areas identified in the CFIR and FEBIIP frameworks. However, within a novel context, fidelity to the intent of an EBP does not necessarily result in the expected outcomes, or the attainment of outcomes similar to those obtained in the original use of the EBP. The effectiveness of our approach can only be measured by comparing the application of COMPASS to actual post-school outcomes for transition-age youth with ASD.

## Conclusion

We are presently engaged in a multi-year, randomized control study of the effectiveness of the adapted COMPASS for transition age youth. While we have structured this multi-year study to reflect the design of our earlier effectiveness studies with elementary-age children with ASD (Ruble, Dalrymple, & McGrew, 2010; Ruble, McGrew, Toland, Dalrymple, & Jung, 2013), we are finding that the complexities of the high school setting, and broad outer (policy) and inner setting characteristics make this research considerably more difficult than in the more “controlled” world of elementary school. As we obtain effectiveness data on our adapted COMPASS model for transition-age youth, we will be in a better position to judge whether we have attained the correct balance: adherence to the essential principals of the COMPASS model that has yielded very promising results for younger children with ASD, while ensuring the flexibility that makes this model feasible in the complex world of interagency transition for older students and their families. As an essential first step, the intent of this article was to illustrate how our hybrid model provides a comprehensive framework for adapting an EBP to a novel context, in an approach that integrates the essential elements of that EBP within the intervention, setting, practitioner, and process variables presented by that new context.

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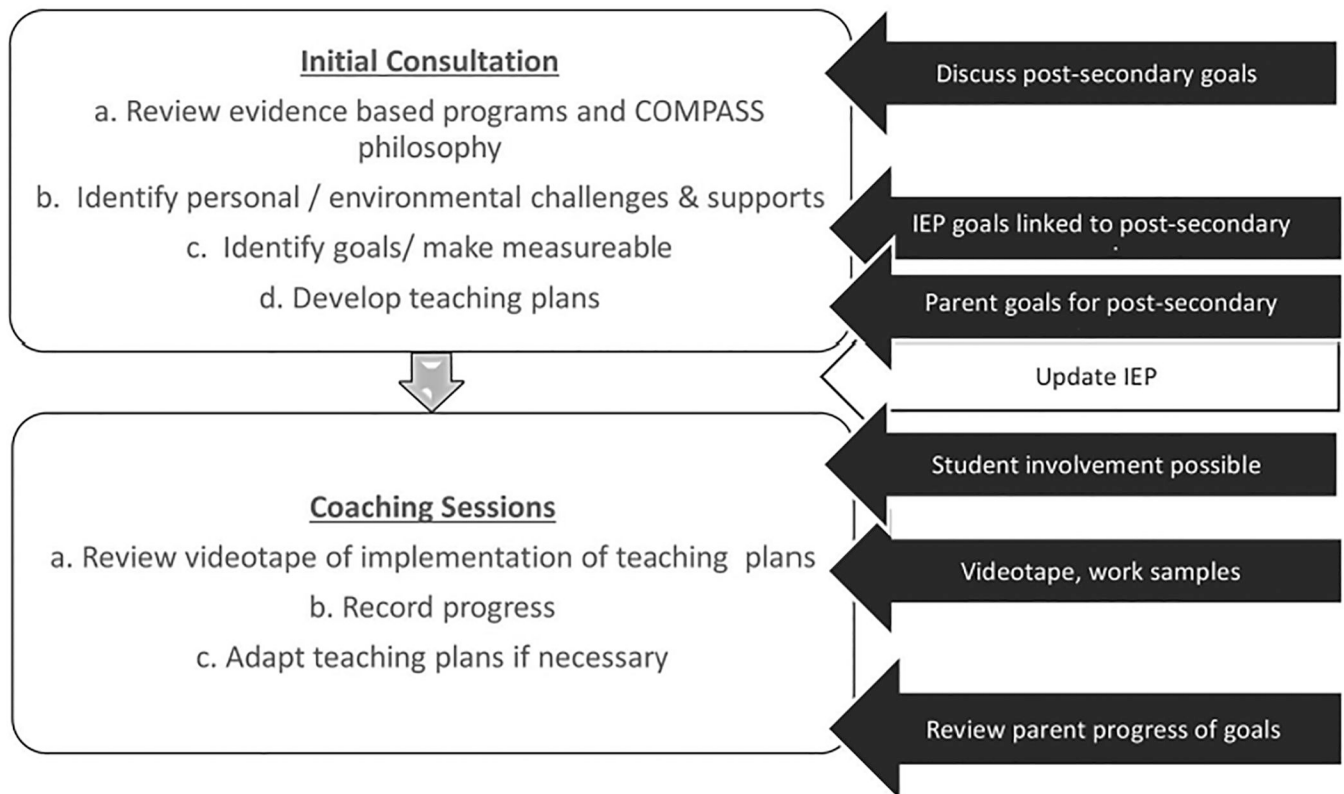
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**Figure 1.**

Adaptations and Additions to COMPASS for Transition

Note: Nonshaded boxes represent the original COMPASS protocol. Shaded arrows represent the adaptations and additions to COMPASS for transition.

**Table 1.**

## Focus Group Descriptions

| Focus | Group Name              | Gender             | Race                  |
|-------|-------------------------|--------------------|-----------------------|
| 1.    | State Autism Committee  | 2 males; 8 females | 100% White            |
| 2.    | Policymakers Group 1    | 1 male; 1 female   | 100% White            |
| 3.    | Parent Group 1          | 4 females          | 100% White            |
| 4.    | Policymakers Group 2    | 1 male; 3 females  | 75% White; 25% Latino |
| 5.    | School Providers        | 4 females          | 100% White            |
| 6.    | Parent Group 2          | 1 male; 3 females  | 100% White            |
| 7.    | School Administrators   | 4 females          | 100% White            |
| 8.    | Adult Service Providers | 3 females          | 100% White            |
| 9.    | Individuals with ASD    | 3 males; 1 female  | 75% White; 25% Latino |
| 10.   | Parent Group 3          | 3 females          | 67% Black; 33% White  |

Table. 2

Theme, percent coding agreement, definitions, and implications for COMPASS Adaptation

| Theme (Agreement)                                         | Brief Definition                                                                                                                                                                                                                                                                                                                                                   | COMPASS Adaptations / Additions                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                           |
|-----------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Characteristics of intervention                           |                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                           |
| Navigator/Coordinator <sup>2</sup> (100)                  | A person (or layperson) who navigates and educates the professional, parent, or individual with ASD through different services and options.                                                                                                                                                                                                                        | Facilitate navigation through expanded consultant role; provide information on adult services                                                                                                                                                                                 | <ul style="list-style-type: none"><li>• <i>Added handouts:</i> Top 10 List; Transition Process Resource Guide</li></ul>                                                                                                                                                                   |
| Continuum of ASD (100) <sup>3</sup>                       | Different outcomes and degrees of services based on where the person with ASD falls on the continuum.                                                                                                                                                                                                                                                              | Revised COMPASS profile to be include first-person perspective to allow direct student input                                                                                                                                                                                  | <ul style="list-style-type: none"><li>• <i>Altered assessment:</i> COMPASS Profile Assessment for Middle / High School Youth with ASD</li><li>• <i>Changes to consultation:</i> Consultation Process Changes</li></ul>                                                                    |
| Employment (100) <sup>3</sup>                             | What individuals with ASD need to secure and keep a job, including what employers should do and what special skills/training are needed (e.g., customized employment).                                                                                                                                                                                             | Expand COMPASS focus to include post-secondary goals of employment                                                                                                                                                                                                            | <ul style="list-style-type: none"><li>• <i>Added handouts:</i> Transition Process Resource Guide</li><li>• <i>Altered assessment:</i> COMPASS Profile Assessment for Middle / High School Youth with ASD</li><li>• <i>Changes to consultation:</i> Consultation Process Changes</li></ul> |
| Educational Outcomes & Practical Skills (80) <sup>3</sup> | Outcomes students need from their school education, e.g., degree (for long-term job placement) and specific skills, including alternatives to the diploma, modifications to the curriculum, continuing education, or extended formal education, and assessment of outcomes.                                                                                        | Additional focus on parent and student as change agent                                                                                                                                                                                                                        | <ul style="list-style-type: none"><li>• <i>Added handouts:</i> Transition Process Resource Guide</li><li>• <i>Altered assessment:</i> COMPASS Profile Assessment for Middle / High School Youth with ASD</li></ul>                                                                        |
| Transition (87) <sup>3</sup>                              | The actual transition between school and outside school described as a gap in services or a continuity in services                                                                                                                                                                                                                                                 | Broadened focus to encompass post-secondary goals and plans focusing on transition (housing, finances, occupational, vocational)                                                                                                                                              | <ul style="list-style-type: none"><li>• <i>Added handouts:</i> Transition Process Resource Guide; COMPASS Training Packet Middle / High School Youth with ASD</li><li>• <i>Altered assessment:</i> COMPASS Profile Assessment for Middle / High School Youth with ASD;</li></ul>          |
| Outer setting barriers                                    |                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                           |
| Key Services (91) <sup>3</sup>                            | The primary services, including post-secondary education and state services that can be purchased, rather than support that families might receive from church, etc. Would include any type of public benefits - social security income and Medicaid waiver services that people with ASD can access, includes limitations of or lack of awareness about services. | Developed new information sources and plans to assess services; adapted assessment procedures to identify gaps in services and provided handouts to fill the gaps; identified parent plans as the change agent to execute goals to obtain services; Invite VR to consultation | <ul style="list-style-type: none"><li>• <i>Added handouts:</i> Top 10 List; Transition Process Resource Guide</li><li>• <i>Changes to consultation:</i> Consultation Process Changes</li><li>• Altered Key Players</li></ul>                                                              |

| Theme (Agreement)                                   | Brief Definition                                                                                                                                | COMPASS Adaptations / Additions                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                              |
|-----------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Timing (100) <sup>2</sup>                           | Timing of transition planning, frustrations and limitations of associated with it.                                                              | Developed resource handout on best timing; testing or forcing timing changes not possible because of limitations of the study design and funding                                                                 | <ul style="list-style-type: none"> <li>Added handouts: Transition Process Resource Guide</li> </ul>                                                                                                                                                                                                                                                          |
| Inner setting barriers                              |                                                                                                                                                 |                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                              |
| Key Players (100) <sup>3</sup>                      | The key players who should be in the room together at the planning meeting.                                                                     | Prior to scheduling COMPASS, identify student- specific key players (Medicaid waiver providers; VR)                                                                                                              | <ul style="list-style-type: none"> <li>Added handouts: Transition Process Resource Guide; COMPASS Training Packet Middle / High School Youth with ASD</li> <li>Altered assessment: COMPASS Profile Assessment for Middle / High School Youth with ASD</li> <li>Changes to consultation: Consultation Process Changes</li> <li>Altered Key Players</li> </ul> |
| Student, Parent, and Family (100) <sup>3</sup>      | Role and nature of the student and family/parents in the transition planning process.                                                           | Change COMPASS profile to first person; adapt COMPASS process to accommodate student needs; more intentional with including student and parent in all aspects of COMPASS                                         | <ul style="list-style-type: none"> <li>Added handouts: Transition Process Resource Guide</li> </ul>                                                                                                                                                                                                                                                          |
| Communication (100) <sup>3</sup>                    | Communication about other players involved in process and how information is shared between the different people                                | Additional assessment before the consultation on who should be at the consultation; input from student and parents on progress implementing plans for IEP goals and postsecondary goals at each coaching session | <ul style="list-style-type: none"> <li>Added handouts: Transition Process Resource Guide</li> <li>Changes to consultation: Consultation Process Changes</li> </ul>                                                                                                                                                                                           |
| Characteristics of individuals implementing COMPASS |                                                                                                                                                 |                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                              |
| Specific Training on ASD (82) <sup>3</sup>          | Training on/education about ASD and who should be responsible for the training/education.                                                       | For teachers and parents, basically the same as regular COMPASS but with added elements of transition needs; Unable to implement for other key players                                                           | <ul style="list-style-type: none"> <li>Changes to consultation: Consultation Process Changes</li> </ul>                                                                                                                                                                                                                                                      |
| Process of implementation                           |                                                                                                                                                 |                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                              |
| Goal Setting (84) <sup>3</sup>                      | Parents' and students' goals and expectations and how school supports goal-planning and assessment for goal attainment.                         | Included parent and student goals and progress monitoring of the goals; expanded focus to include post-secondary goals                                                                                           | <ul style="list-style-type: none"> <li>Altered assessment: COMPASS Profile Assessment for Middle / High School Youth with ASD</li> <li>Added handouts: COMPASS Training Packet Middle / High School Youth with ASD</li> </ul>                                                                                                                                |
| Monitoring & Assessment (86) <sup>3</sup>           | Assessment of progress toward educational outcomes, short term and long term outcomes, including satisfaction, student QOL, self-determination. | Adapted and relaxed COMPASS progress monitoring to include teacher data, student self-monitoring data based on feasibility                                                                                       | <ul style="list-style-type: none"> <li>Altered assessment: COMPASS Profile Assessment for Middle / High School Youth with ASD</li> </ul>                                                                                                                                                                                                                     |

| Theme (Agreement) | Brief Definition | COMPASS Adaptations / Additions                                                                                             |  |
|-------------------|------------------|-----------------------------------------------------------------------------------------------------------------------------|--|
|                   |                  | <ul style="list-style-type: none"><li>Added handouts: COMPASS Training Packet Middle / High School Youth with ASD</li></ul> |  |

- <sup>1</sup> Not at all implemented;
- <sup>2</sup> Partially implemented;
- <sup>3</sup> Fully implemented

Note: See Snell-Rood et al., (2018) for more information on qualitative results.

**Table 3.**

Example of IEP Goal and Teaching Plan and Post-secondary Goals and Plans

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                     |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>IEP Goal: When assigned an activity, Student will start and complete the task independently within the required timeframe with at least 80% accuracy.</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                     |
| Personal Challenges to learning are:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Loses track of time, zones out, may not tell time well on certain clocks                                                                                                            |
| Environmental Challenges to learning are:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Unstructured or open-ended tasks; distractions in the environment                                                                                                                   |
| Personal supports for learning are:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Can tell time using five-minute increments                                                                                                                                          |
| Environmental supports for learning are:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Timers, digital clocks, Strategies class                                                                                                                                            |
| <b>Teaching Plan Strategies:</b> Teach self-monitoring skills <ul style="list-style-type: none"> <li>Refer to the AFIRM module on teaching self-management skills (<a href="http://afirm.fpg.unc.edu/afirm-modules">http://afirm.fpg.unc.edu/afirm-modules</a>)</li> <li>Explore options for keeping time and what is easiest for the student (e.g. wristwatch, stopwatch, timer)</li> <li>Learn and practice a strategy for managing time (how to decide how much work has to be done by a certain amount of time)</li> <li>Start in the classroom; when he receives direction of what to do, let him know by what time, how much work should be done. Then review his progress afterwards. Perhaps have some kind of visual that shows what percentage of the work he completed within a certain time period.</li> </ul> |                                                                                                                                                                                     |
| <b>Implementers:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Mr. Smith, community living support worker, mom, student, Ms. Black                                                                                                                 |
| <b>Data:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Teacher observation                                                                                                                                                                 |
| <b>Post-secondary Goals and Plans for Student</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                     |
| <b>Goal</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <b>Plan</b>                                                                                                                                                                         |
| 1. After high school, Student will work and/or take classes.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Student's mother will work to get VR involved to provide any job or educational supports.                                                                                           |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | His teacher will ask the vocational rehabilitation counselor to come to the coaching session.                                                                                       |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Student will contact personal from the Supported Higher Education Project to learn about the supports he can receive if he decides to take college classes.                         |
| 2. After high school, Student will live at home until he transitions to a more independent living placement that provides community supports                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | The student currently has a community living support (CLS) worker through the Michelle P. Waiver. He is currently on the waiting list for the Supports for Community Living waiver. |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Student's mother will talk with student's CLS case manager about how much CLS can help provide supports for independent living.                                                     |
| 3. After high school, Student will use public transportation i.e. city bus or Wheels.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Mr. Smith will talk with Ms. Black about teaching and practicing with student on how to use public transportation or Wheels.                                                        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Student's mother will talk with student's CLS worker about practicing how to use public transportation with Student out in the community.                                           |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Student's mother is his financial guardian.                                                                                                                                         |
| 4. After high school, Student will make financial decisions with help from his mother – work with teacher (Ms. B) at school about using money.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Mr. Smith will talk with Ms. Black about teaching and practicing money management skills with student.                                                                              |

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| 5. After high school, for leisure Student will go to the movies and continue to participate in several sports teams. | Student enjoys many different sports and currently plays on different Special Olympics sports team. Student will continue to participate in sports teams. |
|                                                                                                                      | Student's CLS worker will take him to the movies and sporting events.                                                                                     |
|                                                                                                                      | The University has a peer buddy program that might be a resource.                                                                                         |
|                                                                                                                      | Student will try to make friends with his co-workers and others on his sports teams, co-workers.                                                          |
| 6. After high school, Student will have friends through a variety of activities.                                     | Student may join a peer buddy program through the Supported Higher Education Project or go to the local YMCA and find friends through these activities.   |

**Table 4.**

Hybrid Model

|        | CFIR                                          |                                                                                                                                                                                                      |                                                                                                                                                                     |                                                                                                                                                                                 |
|--------|-----------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|        | Characteristics of the Intervention           | Settings: Outer & Inner                                                                                                                                                                              | Characteristics of the Individuals                                                                                                                                  | Implementation Process                                                                                                                                                          |
| FEBIIP | <b>Implementation Practice (COMPASS)</b>      | <ul style="list-style-type: none"><li>• Navigator / Coordinator</li><li>• Continuum of ASD</li><li>• Employment</li><li>• Transition</li></ul>                                                       | <ul style="list-style-type: none"><li>• Key Services</li><li>• Timing</li><li>• Key Players</li><li>• Student, Parent, and Family</li><li>• Communication</li></ul> | <ul style="list-style-type: none"><li>• Specific Training on ASD</li></ul> <ul style="list-style-type: none"><li>• Goal Setting</li><li>• Monitoring &amp; Assessment</li></ul> |
|        | <b>Intervention Practice (Teacher/School)</b> | <ul style="list-style-type: none"><li>• Continuum of ASD</li><li>• Employment</li><li>• Transition</li></ul>                                                                                         | <ul style="list-style-type: none"><li>• Key Services</li><li>• Timing</li><li>• Key Players</li><li>• Communication</li></ul>                                       | <ul style="list-style-type: none"><li>• Specific Training on ASD</li></ul> <ul style="list-style-type: none"><li>• Goal Setting</li><li>• Monitoring &amp; Assessment</li></ul> |
|        | <b>Practice Outcome (Student/Parent)</b>      | <ul style="list-style-type: none"><li>• Navigator / Coordinator</li><li>• Continuum of ASD</li><li>• Employment</li><li>• Educational Outcomes &amp; Practical Skills</li><li>• Transition</li></ul> | <ul style="list-style-type: none"><li>• Key Services</li><li>• Student, Parent, and Family</li><li>• Communication</li></ul>                                        | <ul style="list-style-type: none"><li>• Specific Training on ASD</li></ul> <ul style="list-style-type: none"><li>• Goal Setting</li><li>• Monitoring &amp; Assessment</li></ul> |

Table 5.

“Top Ten List” of Key Transition Elements

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
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| <p><b>1. How can my son/daughter get help with preparing for, obtaining, and being successful in a job?</b></p> <ul style="list-style-type: none"> <li>• EMPLOYMENT – He/she may become employed. If so, there are several agencies which can assist you in identifying employment. The Kentucky Office of Vocational Rehabilitation provides services to consumers with disabilities in order to reach their employment outcomes. To get in contact with Vocational Rehabilitation, call (502) 564-4440, find your district office at <a href="http://ovr.ky.gov/programs/services/district.htm">http://ovr.ky.gov/programs/services/district.htm</a>, or refer to the Kentucky Office of Vocational Rehabilitation District Offices handout to locate your district office. You may also contact the Kentucky Career Center. Find the office nearest you at <a href="http://kentuckycareercenter.ky.gov/Office/Locations.aspx">http://kentuckycareercenter.ky.gov/Office/Locations.aspx</a>.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <p><b>2. How can my son/daughter get help and support for additional education?</b></p> <ul style="list-style-type: none"> <li>• EDUCATION – He/she may attend college or technical school. If you need help in identifying an appropriate program, your son/daughter may receive guidance from the Kentucky Office of Vocational Rehabilitation; call (502) 564-4440, find your district office at <a href="http://ovr.ky.gov/programs/services/district.htm">http://ovr.ky.gov/programs/services/district.htm</a>, or refer to the Kentucky Office of Vocational Rehabilitation District Offices handout to locate your district office. Also, ensure that once your son/daughter arrives on campus, he/she gets connected with the disability resource center.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <p><b>3. What can my son/daughter do during the day if they are not a candidate for employment or further education? *(individuals may be employed AND also attend a day program)</b></p> <ul style="list-style-type: none"> <li>• DAY PROGRAMS – If he/she will not be working or attending school, a day program may be another option. In order to obtain information about local day programs, contact the Division of Developmental and Intellectual Disabilities (DDID) for more information. DDID's phone number is (502) 564-7700 and the website is <a href="http://dbhddid.ky.gov/ddid/">http://dbhddid.ky.gov/ddid/</a>.</li> <li>• VOLUNTEERING – Your son/daughter may also be interested in volunteering in the community. The Kentucky Commission on Community Volunteerism and Service is committed to disability inclusion, and you can locate your nearest volunteer center by visiting <a href="http://chfs.ky.gov/dfrcv/kccvs/volunteer.htm">http://chfs.ky.gov/dfrcv/kccvs/volunteer.htm</a> or calling 1-800-239-7404.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <p><b>4. How will he/she pay for supports to support him/her to live and go out into the community?</b></p> <ul style="list-style-type: none"> <li>• Enroll your son/daughter for Medicaid waivers (currently there are waiting lists). These provide a variety of services in your home or in the community to help your son/daughter with autism. See <a href="http://chfs.ky.gov/dms/mws.htm">http://chfs.ky.gov/dms/mws.htm</a> or call (502) 564-5560 for descriptions. See the Kentucky Medicaid Waivers handout for more information.</li> <li>• You may also contact your local community mental health center and the Division of Developmental and Intellectual Disabilities (DDID) for more information. Community mental health center points of contact are listed on the Directory of Community Mental Health Agencies handout, whereas the phone number for DDID is (502) 564-7700 and the website is <a href="http://dbhddid.ky.gov/ddid/">http://dbhddid.ky.gov/ddid/</a>.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <p><b>5. How will my son or daughter with a severe disability who is unable to earn an income obtain money?</b></p> <ul style="list-style-type: none"> <li>• Your son or daughter may be eligible for Supplemental Security Income (SSI). SSI provides help for people with disabilities and limited income, and provides money for basic needs. Amounts vary by individual but the maximum monthly amount for 2015 was \$733. Visit the website at <a href="http://www.ssa.gov/pgm/ssi.htm">http://www.ssa.gov/pgm/ssi.htm</a> for more information. To begin an application call 1-800-772-1213 between 7am-7pm, Monday-Friday (you can also identify your local Social Security Administration office from this phone number).</li> <li>• Social Security also offers a Representative Payment Program, which provides financial management for the SSI payments of beneficiaries who may have difficulty managing their own SSI payments. You may contact your local Social Security Administration office. Find your local office at <a href="https://secure.ssa.gov/ICON/main.jsp">https://secure.ssa.gov/ICON/main.jsp</a> or call 1-800-772-1213.</li> <li>• Your son or daughter may be able to receive additional income if you or your spouse have a disability and receive Social Security Disability Insurance. SSDI is the federal social insurance program that provides monthly cash benefits to workers with disabilities and their families. To qualify, you must have a recent work history that meets Social Security's requirements. To learn more about whether you might be eligible to apply, see <a href="http://www.ssa.gov/planners/disability/">http://www.ssa.gov/planners/disability/</a> or call 1-800-772-1213 to ask questions or schedule an appointment at your local Social Security Administration office.</li> <li>• The Kentucky Office of Vocational Rehabilitation can provide benefits counseling to help your family navigate the process of applying for and using SSI. Call (502) 564-4440 or find your district office at <a href="http://ovr.ky.gov/programs/services/district.htm">http://ovr.ky.gov/programs/services/district.htm</a>.</li> </ul> |
| <p><b>6. How can I ensure that my son/daughter has health insurance coverage?</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

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| Author Manuscript                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Author Manuscript | Author Manuscript | Author Manuscript |
| <ul style="list-style-type: none"> <li>• EMPLOYER BASED – If your son/daughter will have employment after transitioning from high school, he/she may be able to obtain insurance from his/her employer.</li> <li>• OBAMACARE – If your son/daughter will not obtain employment after high school, he/she can apply for health insurance coverage under the Affordable Care Act (ObamaCare). Kynect: Kentucky's Healthcare Connection is Kentucky's official ObamaCare marketplace. Visit Kynect at <a href="https://kynect.ky.gov/">https://kynect.ky.gov/</a> or call 1-855-459-6328 for details about how to apply for health insurance coverage. You may also find the handout "How to Kynect" beneficial for navigating health insurance questions and options.</li> <li>• MEDICAID – Your son/daughter may qualify for Medicaid to assist in paying for his/her healthcare costs. Visit <a href="http://www.chfs.ky.gov/dms/mcolinks.htm">http://www.chfs.ky.gov/dms/mcolinks.htm</a> or call 1-855-459-6328. See Kentucky Medicaid Waivers handout for more information.</li> <li>• COVERAGE THROUGH PARENTS – If you and/or your spouse are employed and your son/daughter is not, your employer may continue to cover your son/daughter as a dependent under your insurance coverage. Check with your employer to inquire.</li> <li>• You can talk with someone at your local Arc for more information. Visit <a href="http://www.arcofky.org/contact-us/">http://www.arcofky.org/contact-us/</a>, call The Arc of Kentucky at (502) 875-5225, or use The Arc of Kentucky Chapters map handout to find the Arc closest to you. Additionally, if you have concerns about your son/daughter's rights with regards to his/her insurance services, you may contact your local Arc or the Kentucky Department of Insurance to file a complaint at 1-800-595-6053 or <a href="http://insurance.ky.gov/">http://insurance.ky.gov/</a>.</li> </ul> |                   |                   |                   |
| <b>7. How can my son/daughter live independently?</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                   |                   |                   |
| <ul style="list-style-type: none"> <li>• HOUSING – The U.S. Department of Housing and Urban Development (HUD) offers subsidized housing for individuals with disabilities. For more information about homeownership/rental help and counseling, call HUD's Louisville field office at (502) 582-5251 or visit <a href="http://portal.hud.gov/hudportal/HUD?src=/states/kentucky">http://portal.hud.gov/hudportal/HUD?src=/states/kentucky</a>. SSI also provides monthly income that can be used to pay for housing (see number 3 above).</li> <li>• FOOD – The Supplemental Nutrition Assistance Program (SNAP) helps people with limited financial resources purchase their groceries. Contact SNAP at 1-855-306-8959 or <a href="https://prtd.chfs.ky.gov/SNAPPrescreen/SNAPLanding.aspx">https://prtd.chfs.ky.gov/SNAPPrescreen/SNAPLanding.aspx</a> to learn whether your son/daughter may be eligible for benefits.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                   |                   |                   |
| <b>8. What should I do if my son/daughter continues to require assistance with making decisions as an adult, and how can I understand my son/daughter's rights and advocate for his/her services?</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                   |                   |                   |
| <ul style="list-style-type: none"> <li>• You will need to consider different options such as guardianship and power of attorney.</li> <li>• You can consult Kentucky Protection and Advocacy at 1-800-372-2988 or online at <a href="http://www.kypa.net">http://www.kypa.net</a> and/or The Arc of Kentucky at (502) 875-5225 regarding guardianship/power of attorney issues and advocating for services. Refer to P&amp;A's handout, "Thinking about Guardianship?" as well as The Arc of Kentucky Chapters map handout to find the Arc closest to you.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                   |                   |                   |
| <b>9. What if my son/daughter needs or wants somebody to talk to with regard to transition issues or other issues he/she may be dealing with?</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                   |                   |                   |
| <ul style="list-style-type: none"> <li>• Publicly-funded community services are provided for Kentuckians who have developmental and intellectual disabilities through community mental health centers. To locate your local community mental health center, visit <a href="https://dbhid.ky.gov/cmhc/">https://dbhid.ky.gov/cmhc/</a>, call (502) 564-4527 (press 1 to continue listening in English and then press 3 to reach someone from the Department of Behavioral Health), or see the Directory of Community Mental Health Agencies handout which lists all community mental health centers by county.</li> <li>• If you need support for yourself throughout this process, there are ASD-related parent support groups located throughout the state. You may locate your closest group on the Autism Spectrum Disorders Related Support Groups in Kentucky handout, or by visiting <a href="https://louisville.edu/education/kyautismtraining/families/February2015SupportGroupList.pdf/view">https://louisville.edu/education/kyautismtraining/families/February2015SupportGroupList.pdf/view</a>.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                   |                   |                   |
| <b>10. What should I do if I plan to leave my son/daughter any financial assets?</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                   |                   |                   |
| <ul style="list-style-type: none"> <li>• Consult with an attorney who is knowledgeable in estate planning and special needs trusts. A special needs trust is a federally mandated way to protect and maintain your son/daughter's benefits.</li> <li>• Your local Arc can assist you with this, as well. You may contact The Arc of Kentucky at (502) 875-5225, visit their website at <a href="http://www.arcofky.org/contact-us/">http://www.arcofky.org/contact-us/</a>, or use The Arc of Kentucky Chapters map handout for more information.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                   |                   |                   |