

Using Fidelity Measures to Support the Training of Graduate Students

Working in School Settings

Partnerships established between school districts and universities have the potential to provide guidance departments with much needed support in implementing school-based social development programs. Given their professional training, school counselors are ideally suited to design and implement high quality social development programs (Mason, 2010; Scarborough & Luke, 2008), yet counselors working in under-resourced urban school districts often struggle to manage caseloads where counselor-to-student ratios far exceed the national standard. In these instances, university collaborations can assist counseling departments in: a) recruiting lay facilitators (i.e. individuals who have not obtained degrees in school counseling) and b) leveraging evaluation methodologies to assess program impact on student outcomes. With regard to evaluation methodologies, current school-based intervention literature rarely addresses the topic of program fidelity in supporting the training and professional development needs of lay facilitators who assist professional school counselors in implementing school-based social development programs. Previous studies have found that fidelity assessments can be a valuable tool for school counselors to use in supervising and evaluating the performance of students enrolled in graduate-level counseling and or counselor education training programs as well as for lay facilitators who assist counselors in implementing programs in schools (Astramovich, Coker & Hoskins, 2005; Simon & Ward, 2014).

School-based social development programs have been shown to promote student competence and reduce student engagement in problem behaviors (Catalano, Bergland, Ryan, Lonczak, & Hawkins, 2002; Durlak, Weissberg, Dymnicki, Taylor, & Schellinger, 2011). However, replication of these preventive interventions in effectiveness studies have produced inconsistent results across sites (Durlak, Weissberg, Dymnicki, Taylor, & Schellinger, 2011; Mihalic & Irwin, 2003). The considerable variability in observed intervention outcomes is often

attributed to program failure, when in fact non-significant results may be due to poor program implementation (Korda, 2013; Durlak & DuPre, 2008; O'Donnell, 2008). Quality implementation of these programs in schools is often hampered by lack of a clearly defined implementation strategy. Successful implementation of school-based prevention programs is often impeded by vague articulation of theoretical frameworks and active ingredients purported to achieve results. Additionally, insufficient training and experience of program staff, as well as limited opportunities for ongoing supervision, can negatively influence staff adherence to intervention protocols and competence in delivering curriculum content (Fixsen, Blasé & Van Dyke, 2011). Another neglected aspect of quality program implementation is the lack of program monitoring assessments to improve and enhance the quality of program implementation toward examination of program outcomes (Elias, Zins, Graczyk, & Weissberg, 2003; Leff, Hoffman, Lakin Gullan, 2009; McMahon, Ward, Kline-Prutt, Davidson, & Griffith, 2000; O'Donnell, 2008).

While the focus of program evaluation research is often on outcomes, understanding how to implement interventions effectively and with rigor is necessary for program refinement and improving outcomes (Abry, Hulleman, & Rimm-Kaufman, 2015; Thaker, Steckler, Sanchez, Khatapoush, Rose & Hallfors, 2007). Researchers recognizing the need for more rigorous evaluation of school-based prevention programs, have written extensively about how to design program monitoring instruments to ensure intervention fidelity and improve program outcomes (Bishop, Pankratz, Hansen, Albritton, Albritton, & Strack, 2014; Dunsenbury et al., 2003; Gearing, El-Bassal, Ghesquiere, Baldwin, Gillies, & Ngeow, 2011; Leff, Hoffman, Lakin Gullan, 2009). However, far less is reported on the translation of these methodologies to schools in order

to support counselors in their work to train and supervise counselors in training or lay facilitators implementing social development programs in schools.

Significance of Fidelity of Intervention in School-Based Programs

Significant intervention effects or outcomes are improved when key components of the intervention can be identified and measured (Abry, Hulleman, & Rimm-Kaufman, 2015).

Operationalizing key components of fidelity helps to define the specific behaviors necessary for high quality program implementation. Adherence and competence are of particular importance for curriculum-based interventions because of the critical role of the facilitator in creating an atmosphere conducive to learning and sharing among peers (Ward, Woods, Crusto, Strambler & Linke, 2011).

The framework developed to improve implementation fidelity for the current study consists of four primary phases: 1) theoretically-informed development of fidelity components; 2) specification of implementation standards (e.g., logic model); 3) assessment development (which includes psychometric property analysis and piloting of measures); and 4) utilization of assessment results (or data-driven program improvement, including evaluation of outcomes). These phases are described in greater detail in the Methods section.

The Present Study: An Applied School-Based Program

The present study describes the design and implementation of fidelity assessment instruments designed to evaluate intervention integrity of the Maximizing Adolescent Academic eXcellence (MAAX) program. MAAX is a classroom-tested, social development program designed to promote competence in academic, social, and college/career domains for urban youth while fostering educational aspirations (Ward, Strambler & Linke, 2013). The curriculum consists of seven modules that highlight early college awareness and preparation within the

context of a social development framework (see Table 1). Module sessions comprise an opening, a proverb related to the topic of focus, an interactive activity, group discussion, and wrap-up with time for questions and answers. Students learn to develop, apply, and practice important social skills to novel situations in a way that anchors them toward the goal of successful high school completion and matriculation into the postsecondary option of their choice. The program draws upon ecological and social-cognitive theoretical frameworks focused on behavior change and learning that underscore the interactive role of the environment with the individual in positively or negatively shaping social development and one's sense of competence to influence behavior and self-identity (Bandura, 1994; Bronfenbrenner, 1986; Fishbein & Ajzen, 1975).

Insert Table 1 Here

The program is implemented at the classroom level as a universal intervention for 7th and 8th grade students. MAAX is comprised of 24 sessions (45 minutes per session) and utilizes interactive and engaging didactic sessions that include role plays, video illustrations, games and group activities. The curriculum is aligned with national and state school counseling standards (Bowers & Hatch, 2005; Connecticut School Counselor Association; CSCA, 2000). Participatory action research methodologies were employed by involving school counselors, teachers, and students in the development and refinement of the curriculum (Nastasi, 2000; Lakin Gulan et al., 2009). Graduate students and lay facilitators deliver the curriculum. All facilitators participate in two days of training in August prior to the start of the school year. Once the program begins, facilitators participate in two-hour weekly supervision. Periodic classroom observations are conducted over the course of the 24-week period. Classroom sessions are also videotaped and

presented during supervision where facilitators discuss strengths and weaknesses of their sessions and strategies to address challenges to delivering the curriculum. These assessments are part of an ongoing quality improvement that enables graduate students and facilitators to make adjustments in their implementation of the curriculum and to refine curriculum content.

Methods

Research Context

The current study was embedded in a six-year urban school reform effort implemented in a mid-sized low-income and urban public school district in New England that enrolls 22,000 students from pre-kindergarten through 12. The district's demographic was diverse with the racial and ethnic composition of the student body being represented as follows: 47% Latino/Hispanic, 43% Black, 7% White and 3% other. The proposed intervention was implemented in 19 of the district's K-8 middle schools and served an entire cohort of 1,447 seventh grade students. These students were followed through middle and high school and into their first year of college.

Study Participants

A total of ten lay facilitators were hired to deliver the MAAX curriculum. Facilitators were primarily graduate students pursuing degrees in counseling (and related human service fields); all facilitators demonstrated relevant experience in working with youth as evidenced by their resume and an in-person interview. All facilitators were diverse in racial and ethnic composition and reflected the students served by project. Additionally, facilitators represented academic programs and departments from local colleges and universities from which students were recruited. All facilitators (graduate students and lay facilitators) worked 25 hours per week and were compensated \$17 per hour.

Procedures

Step one: Theoretical development of fidelity components.

The development of the adherence and competence fidelity measures followed three steps. First, the team identified the components and subcomponents of adherence and competence for implementing MAAX. These components were informed by literature in the area of social development, classroom behavior management (Wang, Haertel, and Walberg, 1997), and positive youth development (Durlak, et al., 2011; Search Institute, 2015). In addition, the research team consulted external licensed school counselors, psychologists, and program evaluators to refine the instrument. Second, items were developed to correspond to each of the subcomponents of adherence and competence. Finally, the research team trained raters to reliably use the measures and pilot tested the measures.

To identify requisite skills for effective program implementation (Ruiz-Primo, 2006), the team examined curriculum content, program activities, and key concepts that are to be conveyed to students in each MAAX session. Team members identified critical program components individually and thereafter collectively obtained consensus and operationalized each construct. This detailed and collaborative approach contributed to the creation of relevant and accessible scoring rubrics and thereby increased rating consistency. Two videotaped sessions were used to test the utility of the instruments and identify overlapping or ambiguous constructs. The instruments were subsequently modified and retested using five practice tapes. For each tape, team members provided rationales construct ratings. Group consensus determined final ratings.

The degree to which a skill or activity was observed was indicated with a five-point Likert scale. The team developed detailed descriptions of behaviors and tasks to further operationalize response choices.

Step two: Specification of implementation standards and development of fidelity scales.

Fidelity Assessment Scale – Adherence (FAS-A). The FAS-A assesses facilitators' delivery of sessions as outlined in the curriculum. By consensus the team identified five essential transition points for each session: (1) session opening, (2) reading and processing of the proverb, (3) guided activity, (4) group discussion, and (5) wrap-up. To aid in the rating of each of these content components, the instrument provided a description of the activity to be rated. Adherence to the curriculum was gauged by a five-point Likert scale rating of each component, ranging from 1 (not implemented at all) to 5 (completely implemented). Alternative activities, such as session icebreakers, could similarly be rated using this instrument. For these activities, an initial dichotomous rating was used to indicate whether the activity was an "alternate activity" and then the implementation of the activity was rated on the same continuous scale.

Fidelity Assessment Scale – Competence (FAS-C). The FAS-C assesses the quality of the MAAX program delivery. Through consensus, three overarching constructs for program quality were identified: (1) Effective Management of Group Process; (2) Organization, Preparedness, & Curriculum Familiarity; and (3) Youth Orientation. The Effective Management of Group Process construct consists of two subcategories that assess: (a) Student Engagement & Facilitation and (b) Classroom Management. The overall Effective Management of Group Process construct assessed facilitators' ability to engage students, facilitate group cohesion and participation, and manage classroom behavior.

The second overarching construct is Organization, Preparedness, & Curriculum Familiarity. This construct consists of three subcategories that assess: (a) Organization and efficiency, (b) Curriculum preparation and familiarity, and (c) Pacing and effective use of time.

This construct assesses facilitator organization and the efficiency with which facilitators pace themselves through the session. In addition, facilitator preparedness was assessed by the degree to which facilitators utilize session materials in a way that encourages student participation. Facilitator familiarity with the curriculum was gauged by the degree to which the facilitator is able to convey the session objectives and key content.

The third overarching construct is Youth Orientation, which is made up of three subcategories: (a) Teaching style, (b) Valuing youth, and (c) Knowledge of adolescent development. This construct examines the extent to which facilitators' content delivery is developmentally appropriate and student-focused. Specifically, the construct assesses facilitators' ability to augment student learning through guided discovery vis-à-vis group discussions and positive facilitator-student interactions.

Each of the items on the FAS-C are rated on a Likert scale ranging from 1 (poor) to 5 (excellent) using a scoring rationale form that allows raters to comment on their observation of the session and provide an explanation for their rating accompanies the instrument.

Step three: Piloting of instruments.

Live and video recorded observations are valuable sources of data to analyze for intervention fidelity (Ruiz-Primo, 2006). One week prior to a scheduled recording, facilitators were informed that they would be recorded, but they were not informed of the specific day, time or session that the observation would occur. After developing an observation schedule that ensured the diverse representation of MAAX sessions, a member of the research team videotaped the relevant sessions. Video recording was conducted from the back of the classroom to ensure minimal disruption to the group process. A total of twenty sessions (two separate classes for each of ten facilitators) were videotaped and subsequently reviewed for the pilot fidelity study. Three

research assistants were trained to rate the tapes. Psychotherapy outcome research rater training procedures (Fixsen, Blasé, & Van Dyke 2011; Sanetti & Kratochwill, 2009) guided the structure and content of the training. Raters participated in a total of ten hours of mandatory didactic training. The training included an overview of the MAAX program and a review of the outline from the curriculum for each MAAX session that was rated. Raters also reviewed each of the constructs and rating scales in detail to ensure deep understanding of the fidelity measures.

Raters participated in 20 additional hours of training to learn how to review and score videotaped MAAX sessions. The researchers compiled video segments illustrating high quality examples of program facilitation. Using these segments, the team trained raters to calculate a score for each item by checking the portions of the operational definitions that they observed. Raters' scores on additional practice tapes were examined against consensus ratings developed by the trainers. When discordant ratings occurred, the team discussed their rationales for the ratings and came to consensus. The raters practiced scoring tapes for approximately 1 week after training, at which point excellent interrater reliability ($\alpha = .80$; Cicchetti, 1994) was achieved. The raters then viewed and scored each of the practice tapes individually. Recalibration of interrater reliability was checked twice during the review of videotapes included in the pilot to prevent rater drift.

Step four: Utilization of assessment results.

During this step, the researchers' objective was to use fidelity data to provide targeted feedback to facilitators on specific subcategories for both adherence and competence constructs. Facilitators received individualized feedback based on their ratings. Additionally, mean scores on indices of adherence and competence were used to gauge areas of strength and weakness for the group.

Results

Descriptive statistics

Pearson correlations were conducted to determine the relationship between competence and adherence items (see Table 2). Competence items correlated strongly with each other. The highest correlations occurred among factors that speak to the facilitator's interpersonal skills: student engagement, teaching style and youth orientation. Factors such as organization and efficiency, curriculum preparation and familiarity, and pacing also correlated highly and reflect the facilitator's competence in efficiently mastering the delivery of session content. Overall competence correlated positively with overall adherence ($r = .82, p < .05$). Key adherence items included opening the session, reading the proverb and wrapping up the session. Additionally, practical competence items correlated positively with adherence to the curriculum.

Insert Table 2 Here

Psychometric analysis

Cronbach's alpha was used to assess the reliability of the measures. The FAS-A and FAS-C had overall internal consistencies of .86 and .95, respectively. The FAS-C overarching constructs were internally consistent, with $\alpha = .92$ for Effective Management of Group Process; $\alpha = .89$ for Organization, Preparedness, and Curriculum Familiarity; and $\alpha = .93$ for Youth Orientation.

Kappa's alpha assessed inter-rater reliability. Inter-rater reliability of the FAS-A was higher than the FAS-C ($\kappa = .94$ and $.82$, respectively). Raters most reliably scored the guided

activity ($\kappa = .95$), processing of the proverb ($\kappa = .92$), and the wrap up ($\kappa = .90$) and least consistent in scoring the session opening ($\kappa = .58$). Items most reliably scored on the competence measure were valuing youth ($\kappa = .90$) and organization and efficiency ($\kappa = .89$). Raters were least consistent in scoring student engagement and knowledge of youth development ($\kappa = .68$). Table 2 displays the inter-rater reliabilities for the FAS-A and FAS-C.

Insert Table 3 Here

Facilitators' scores on dimensions of adherence and competence were averaged and plotted to determine the extent to which they adhered to implementing the curriculum with fidelity and were competent in doing so. Average facilitator ratings on the five adherence transition points (e.g., Opening, Proverb, Activity, Discussion, Wrap Up) ranged from 2.8 (moderately implemented) to 5.0 (completely implemented), with lowest ratings observed for the Discussion and Wrap Up. Regarding competence, facilitator's ratings ranged from good ($M = 4.0$) to excellent ($M = 5.0$), with the lowest rating observed for pacing and effective use of time. This data suggests that lay facilitators could benefit from focused training on how to process the Discussion and Wrap Up and how to pace themselves more effectively in each session. See Figures 1 and 2.

Insert Figure 1 Here

Insert Figure 2 Here

Discussion

Increasingly, university partnerships have provided guidance departments with support in implementing school-based social development programs. While school counselors are ideally suited to design and implement high quality social development programs, universities may assist guidance departments in using state-of-the-art evaluation methodologies to train graduate students and lay facilitators who fill an important gap by assisting counselors in implementing school-based social development programs. Assessments of fidelity of implementation are important for training and providing ongoing supervision to help graduate students and lay facilitators develop the requisite skills for high quality program implementation. Therefore, this study sought to build upon the school-based prevention literature by establishing a framework and tool for assessing intervention fidelity within the context of the school setting. The framework draws upon fidelity of implementation research that assesses the degree to which staff adhere to programmatic goals and their level of competency in delivering the intervention. The study's researchers described the development and validation of the Fidelity Assessment Scales for adherence and competence used to assess program fidelity for a school-based social development program. These measures were developed to improve upon traditional process methodologies used to assess quality program implementation (e.g., checklists) that lack the rigor required to formatively assess the specifics of what makes a program efficacious. The development of the FAS-A & FAS-C proved to be useful for articulating and operationalizing core constructs that define essential program components necessary for evaluating the integrity of the MAAX intervention with precision.

Overall, the ability to achieve reliability in assessing facilitator competence in this study is noteworthy and supports what the field asserts to be critical to intervention efficacy (Fixsen, Blasé, Van Dyke, 2011; Leff et al., 2011). These crucial aspects include the process of refining an intervention manual, conducting in-depth training and supervision, regularly monitoring program delivery, and rigorously evaluating intervention fidelity. Implementation of these processes stands to improve the internal validity of the intervention and increase the likelihood of attributing significant effects to the intervention.

Study limitations & implications for School Counselors

Isolating factors that define adherence and competence help to shape the training and ongoing supervision of facilitators. Given that the program model relies heavily on the training of graduate students and lay facilitators in delivering the curriculum to middle school students, there is a vested interest in understanding how best to foster facilitators' acquisition of critical skill sets in delivering curriculum content. Regular monitoring of facilitator ratings on dimensions of adherence and competence can focus training and ongoing supervision of facilitators in areas that require particular attention. For example, new facilitators often have difficulty pacing themselves through the class period in their attempt to cover all of the session content. This critical aspect of the process has important implications for program outcomes. Monitoring classroom performance can inform facilitator training and supervision by offering pointed suggestions and strategies that support facilitators in their ability to deliver key content that is engaging and well- paced. Formative feedback is also valuable for facilitators' session planning and delivery so that students experience a session that has a clear beginning, middle, and end.

This study also has important implications for the recruitment and hiring of quality professionals that provide direct service to youth. An advantage of the fidelity research model is that it can inform recruitment strategies employed in the hiring of prospective graduate level and lay facilitators and ongoing training and support; the essential ‘competency’ drivers in quality program implementation (Fixsen, Blasé, & Van Dyke, 2011). Through the process of curriculum refinement, quality program implementation, and ongoing training and supervision, the research team developed a rigorous interview process that gauges the skill level of prospective applicants along identified components of competency. This information guides the training and supervision of graduate trainees and or new lay facilitators. Thus, the varying backgrounds of graduate students (i.e., counseling and related disciplines) provides a general framework upon which the training in social and emotional learning can be applied without negatively impacting of program fidelity.

Videotaping each facilitator two times (two ratings for 10 facilitators) during the pilot posed a unique opportunity to observe the program *in vivo*. Despite what may be considered a relatively small number of recorded sessions external raters were employed to provide scores on fourteen variables for each tape reviewed. Another factor that influenced the design of this study was cost. Collecting observational data presents real world challenges in conducting research on intervention fidelity. The cost associated with the recruitment and training of external raters and the time required to observe classrooms, each posed considerable financial challenges. Although there is agreement in the field about the merits of rigorous process evaluation, it is often an under-funded aspect of the work.

Conclusion

Without being certain of what takes place in the classrooms, it is impossible to link significant outcomes to interventions delivered in school. Studying program fidelity allows for more conclusive statements to be made about the role that interventions play in producing behavior change in students. Furthermore, examination of program implementation can guard against the possibility of a program producing ineffectual results due to improper implementation.

The proposed framework and fidelity assessment tools offer school counselors a useful model for the rigorous assessment of intervention integrity of social development programs like the MAAX that are implemented in schools. The iterative process of specifying core components of the intervention and evaluating program quality with greater precision increases the likelihood of achieving desired program outcomes. Moreover, examining program implementation with observational measures enables school counselors to enhance the training and supervision experience of graduate students and lay facilitators. University partnerships working in collaboration with school counseling departments can: a) support the vetting of social development programs that are being considered for implementation in school- or district wide initiatives, and b) support the development and implementation of high quality programs that are accompanied by sound fidelity instruments. Such a focus on fidelity of school-based intervention models can improve the manner in which graduate students and lay facilitators implement social development programs that support youth.

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Table 1

Description of MAAX Curriculum Content

Module	Curriculum Content
1. Managing the Middle School Transition	Encourages students to explore challenges they experienced in transitioning to middle school. Offers practical suggestions to support students in how to successfully negotiate the school setting.
2. Keys to Academic Success	Emphasizes assessing, monitoring and evaluating students' commitment to learning throughout the school year. Students learn to set appropriate goals, utilize their time effectively and hone important study skills.
3. Exploring College	Leads students through a process of understanding the benefit of a college education, exploring college options, experiencing college through tours and envisioning their future. Students are introduced to college and career planning resources and are invited to speak to professionals in careers of interest to them.
4. Who Am I?	Celebrates ethnic diversity and challenges misconceptions that often interfere with students' engagement in the learning process. Features proverbs, literary works and interactive activities to encourage youth to explore contributions from prominent leaders from their respective cultures.
5. How Values Shape My Life	Encourages students to think about what is important to them and how values influence important life decisions. Attention is also paid to the influence popular culture has on values held by youth.
6. Getting along with Others	Offers a cognitive-behavioral approach to effective communication, problem solving and decision making. Students are taught key concepts and strategies for effective interpersonal communication among their peers and with adults.
7. Managing the High School Transition	Provides students with strategies to successfully prepare for their transition to high school. Topics include selecting the right high school, surviving freshman year, managing peer group affiliations, and understanding how to navigate the comprehensive high school.

Running Head: TRAINING GRADUATE STUDENTS TO WORK IN SCHOOLS

Table 2

Correlations among competence and adherence variables

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Competence																
1. Engagement	-	.88**	.11	.80**	.53	.88**	.90**	.86**	.66 ⁺	.93**	.82*	.58	.12	.62 ⁺	-	.72
2. Management		-	.42	.78**	.59 ⁺	.91**	.79**	.79**	.51	.71 ⁺	.50	.39	.22	.56	-	.51
3. Organize			-	.54	.80**	.38	.36	.30	.64	.13	.04	-.06	.20	.52	-	.53
4. Prep. & Famil.				-	.85**	.83**	.90**	.77**	.86**	.78*	.75*	.55	.29	.77*	-	.93**
5. Pacing					-	.64*	.78**	.63	.83*	.51	.51	.34	.08	.79*	-	.90*
6. Teaching						-	.82**	.91**	.59	.86**	.66	.65 ⁺	-.02	.55	-	.63
7. Youth Orient.							-	.87**	.81*	.72 ⁺	.81*	.51	.18	.76*	-	.85*
8. Know Devel.								-	.74*	.82*	.78*	.57	.05	.69*	-	.74 ⁺
Adherence																
9. Opening									-	.65	.74 ⁺	.47	.36	.81*	.78*	-
10.Prov. Read										-	.82*	.86*	-.11	.45	.80*	-
11.Prov.											-	.79 ⁺	.08	.41	.71	-
Process																
12.Activity												-	-.07	.00	.55	-
13.Discuss													-	.22	.14	-
14.Wrap-Up														-	.75*	-
15.Competence															-	.82*
16.Adherence																-

Note: Alternate activity is not included because facilitators used an alternate activity in only 2 sessions. ⁺ $p < .10$, * $p < .05$, ** $p < .0$

Table 3

Interrater Reliabilities of the Fidelity Assessment Scales for Adherence and Competence

Item	K
Adherence	.94
Opening	.58
Proverb Read	.89
Proverb Processed	.92
Guided Activity	.95
Discussion	.84
Wrap-Up	.90
Competence	.82
Effective Management of Group Process	.73
Student Engagement	.64
Classroom Management	.80
Organization, Preparedness, and Curriculum Familiarity	.85
Organization and Efficiency	.89
Curriculum Preparation and Familiarity	.81
Pacing and Effective Use of Time	.80
Youth Orientation	.83
Teaching Style	.80
Valuing Youth	.90
Knowledge of Youth Development	.68

Note: K=Kappa's alpha

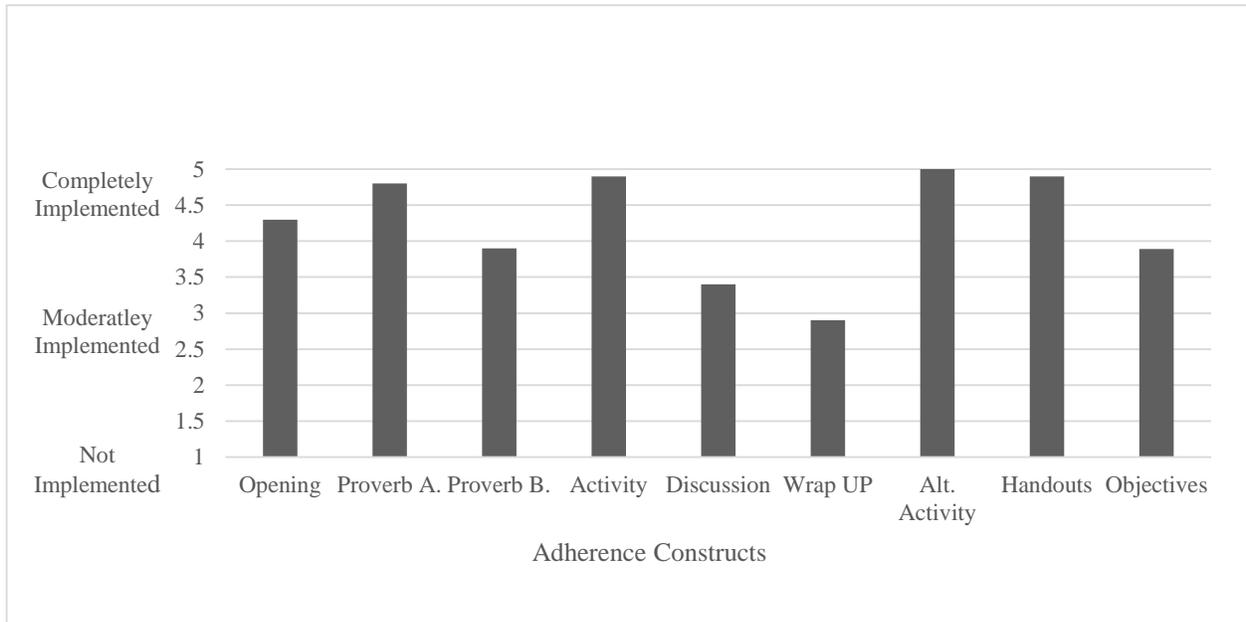


Figure 1. Facilitator Ratings on the Fidelity Assessment Scale – Adherence. Mean facilitator ratings on adherence constructs. $n=10$, two observations per facilitator for a total of 20 observations.

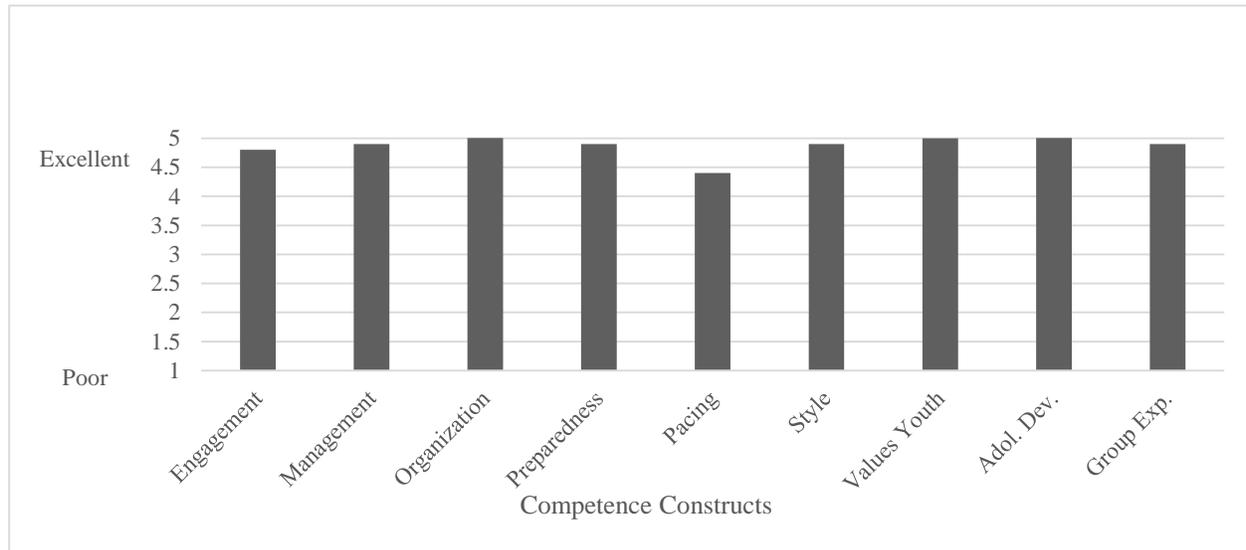


Figure 2. Facilitator Ratings for the Fidelity Assessment Scale – Competence. Mean facilitator ratings on competence constructs. $n=10$, two observations per facilitator for a total of 20 observations.