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Predictors of Group Leaders' Perceptions of Parents' Initial and Dynamic Engagement in a Family Preventive Intervention

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Abstract Attendance and participant engagement are two consistent predictors of the efficacy of preventive interventions. Although both are typically measured and analyzed as static factors, evidence indicates patterns of attendance and participant engagement change over the course of intervention. Understanding parent characteristics that predict engagement may inform strategies to maximize parents' involvement thereby increasing intervention uptake and improving effects. This study examined whether parents' baseline characteristics predicted their engagement in a family-based intervention. The study was conducted with 515 caregivers participating in a randomized comparative trial testing the efficacy of The Mindfulness-Enhanced Strengthening Families Program 10-14 (MSFP 10-14) and The Strengthening Families Program: For Parents and Youth 10-14 (SFP 10-14). Facilitator ratings were used to measure parent engagement. Results indicated generally high levels of initial engagement with small, but a significant linear increase across the intervention. Parental education level and involvement with their youth predicted engagement in the first session, while parents' marital/relationship status, avoidance of conflict with their youth, involvement with their youth, and perceived parent-youth relationship quality at baseline predicted change in engagement. Results highlight engagement as a dynamic construct that changes over time and indicates potential variables that may help identify parents that may need support engaging in this intervention.

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Predictors of Parents' Initial and Dynamic Engagement in a Family Preventive Intervention

Family-based preventive interventions show promise for improving population-level parenting practices and child well-being (Spoth 2008). To achieve this widespread result, programs must be implemented effectively (Durlak and DuPre 2008). Heuristic frameworks have been developed to focus on central constructs and guide translational research (Spoth et al. 2013). Berkel et al. (2011) proposed a model of program implementation in which facilitator behaviors (fidelity, adaptation, and quality) and participant behaviors (responsiveness) contribute to program outcomes. Comparably, the Translation Science to Population Impact Framework (TSci Impact; Spoth et al. 2013) highlights participant characteristics and fidelity/adaptation as important factors to investigate when researching implementation and effectiveness of evidence-based interventions. Key questions raised by the TSci framework include what factors influence participation and what strategies facilitate engagement (Spoth et al. 2013). One limitation is that engagement is typically conceptualized as a static characteristic rather than a dynamic process that changes across an intervention (Bamberger et al. 2014). In this study, we model participant engagement across an intervention and test which participant characteristics predict initial levels or change in engagement.

Intervention Participation and Engagement

Intervention participation should lead to better intervention outcomes (Glasgow et al. 2004). Multiple definitions of

participation, or engagement, however, has created confusion in understanding its associations with outcomes (Mauricio et al. 2014). Distinct definitions may be capturing interrelated aspects of a dynamic process (Bamberger and Coatsworth 2013) and suggest it may be as important to continue to explore these different dimensions as it is to attempt to gain consensus on a definition.

Participation is often operationalized simply as attendance (e.g., Prado et al. 2006), but this strategy misgauges changes in attendance during and intervention (Coatsworth et al. 2006) and how attendance patterns relate to intervention outcomes (Mauricio et al. 2014). Attendance patterns capture changes in attendance, but not other important dimensions of "participation" which more strongly predict program outcomes (Nix et al. 2009). For example, "participant responsiveness," defined as attendance, satisfaction, completion of home practice assignments, and active participation in the sessions (Berkel et al. 2011), mediate program effects on positive parenting and caregiver depression (Schoenfelder et al. 2013). Most studies model engagement as the average level of engagement across the entire intervention, yet, like attendance, engagement may show different initial levels and patterns over time (Bamberger et al. 2014).

Engagement as a Dynamic Process

We conceptualize engagement as a dynamic process that includes participant cognitions, affect and behavior, both within and outside of the intervention session (see Fig. 1; Bamberger and Coatsworth 2013). In-session participant engagement is reflected in participants' interest in understanding the intervention content, willingness to reflect on how the skills taught in the program will work in their own lives, and motives to practice those skills. It is also reflected in the quality of relationships and the nature of interactions (e.g., open, non-defensive, supportive) that participants have with interventionists and group members. Outside the intervention, for example at home, engagement is reflected in participants' motivation to use new skills, the extent to which they practice the skills, and their emotional and cognitive reactions to how those skills are working. These hypothesized transactional processes influence change in the specific parenting strategies and child behaviors targeted by the intervention. These indicators of engagement within and outside of the intervention are similar to other models (e.g., Berkel et al. 2011; Schoenfelder et al. 2013) and we propose this general model is applicable to many different parenting and family-skills interventions. In this study, we explore one aspect of the general model represented in Fig. 1: within-session participant engagement applied to data from a specific family-strengthening intervention trial (Coatsworth et al. 2015).

We suggest engagement can be modeled as a dynamic interactive process in which in-session engagement, associated with attendance, influences motivation, reflection, and practice outside the session, which in turn affects the likelihood of attending and engaging in future sessions. We also propose this process is influenced by life circumstances or events (Spoth and Redmond 2000) and background factors such as quality of parenting and parent well-being (Schoenfelder et al. 2013). In this study, we test which background factors predict engagement.

We also propose it may be useful to model different elements of this process. Because attendance, and by association engagement, may decrease across parent training (Baker et al. 2011) and early engagement may be more predictive of intervention outcome than later engagement (Clarke et al. 2015), it may be informative to distinguish timing of participant engagement in interventions. Engagement in early sessions may represent either excitement about learning new parenting skills or apprehension about sharing private information with others in a multi-family group. This study examines engagement in the first session as one indicator of the engagement process.

Engagement may improve across an intervention as parents learn and apply new skills and also as they connect emotionally with the intervention facilitator and with other parents (Clarke et al. 2015; Coatsworth et al. 2006). Engagement may decrease if parents are not interested or inspired by the intervention content, do not believe it will be useful, or have negative interactions with group members or the facilitator. This kind of conceptual model aligns with therapy process research examining how variables such as "resistance" and "alliance" change over the course of therapy and are associated with outcomes (Patterson and Chamberlain 1994; Robbins et al. 2006).

Predictors of Attendance and Engagement in Family Interventions

An informative first step in applying the TSci Impact framework is studying predictors of attendance and engagement (Spoth et al. 2013). Attendance has been associated with demographic factors such as parental education (Haggerty et al. 2006), income (Spoth and Redmond 2000), race/ethnicity (Coatsworth et al. 2006), two-parent families (Dumas et al. 2007), and family size (Brody et al. 2006). Parenting quality is inconsistently associated with attendance, showing no relation (Winslow et al. 2009), that parents needing more help are more likely to attend (Gorman-Smith et al. 2002) or that parents using fewer adverse parenting strategies are more likely to attend (Kazdin et al. 1993). Parents' well-being has shown no relation (Gross et al. 2001) and a positive relation (Baydar et al. 2003) to attendance.

Although fewer studies have examined predictors of engagement, they have examined similar sets of variables: child factors, parent or family factors, provider factors, and service

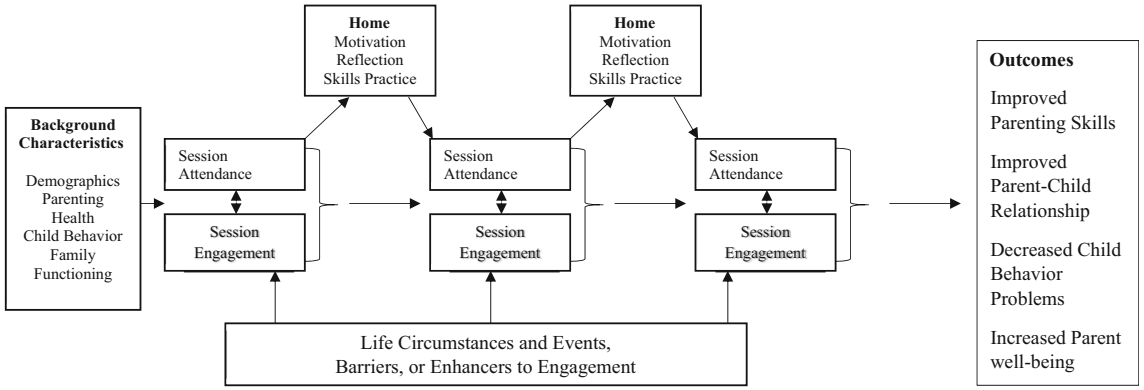

Fig. 1 Conceptualization of parent engagement in interventions as a dynamic interactive process

factors (Haine-Schlagel and Walsh 2015). One dimension of engagement, parents' quality of participation, was associated with lower education level (Dumas et al. 2007) and higher education (Nix et al. 2009). Dumas and colleagues suggested their counter-intuitive finding was due to a global rating of participation that did not capture the complex ways parents participate in groups. Nix and colleagues' ratings do seem to capture a more nuanced version of participation including ratings of the degree of comprehension and acceptance of concepts communicated in the sessions. Maternal mental health problems such as pre-intervention levels of depression and anxiety was not associated with mothers' attendance or retention in parenting groups (Gross et al. 2001), but was associated with the quality of their engagement (i.e., attendance, homework completion, group participation; Baydar et al. 2003) and use of skills at home (Schoenfelder et al. 2013). Parents demonstrating more positive parenting practices (e.g., support, acceptance, positive affect) showed higher levels of engagement in one parenting intervention (Baydar et al. 2003; Schoenfelder et al. 2013), but so did those who showed more negative/harsh parenting and inconsistent parenting (Baydar et al. 2003). Parents who reported higher levels of pre-intervention child behavior problems (i.e., internalizing and externalizing symptoms) showed more engagement (Schoenfelder et al. 2013). With one exception (Nix et al. 2009), these studies have examined these predictors in isolation, so their unique contributions have not been tested. These studies have also relied on static measures of engagement rather than investigating changes in engagement.

The Current Study

The current study investigated which pre-intervention participant characteristics from three classes of variables, demographics, parenting, and child behaviors, most strongly and uniquely predicted initial engagement and change in engagement in an intervention. Our review of empirical studies of both attendance and engagement (e.g., Mauricio et al. 2014; Schoenfelder et al. 2013) indicated they are associated with different variables across these classes, although sometimes in contrary ways. When possible, we have proposed directional hypotheses based on the empirical literature. First, we predicted that parent demographics, specifically parent educational attainment and being in a stable partnership, would be positively associated with engagement. Similar to Nix et al. (2009), our conceptualization of engagement includes aspects of understanding and interest and verbal engagement that are more likely to be expressed by parents with more education. Being partnered was also positively associated with engagement (Dumas et al. 2007), and we predicted a similar association. In addition, based on results from other studies (Baydar et al. 2003; Schoenfelder et al. 2013), we expected engagement to be positively associated with positive parenting (i.e., support; involvement; positive affective quality), positively associated with youth behavior problems, and negatively associated with parent depressive symptoms. An initial step in this study involved modeling change in engagement over time. Given our conceptual model posits that attendance is associated with engagement proximally and over time, we also included attendance as a predictor of change in engagement.

Methods

Procedures

This study uses data from a randomized clinical trial (Strengthening Families in Pennsylvania; Coatsworth et al. 2015) that included two active intervention groups: The Strengthening Families Program for Parents and Youth 10-14 (SFP10-14; Molgaard et al. 2001) and the Mindfulness Based Strengthening Families Program 10-14 (MSFP 10-14; Coatsworth et al. 2015). Procedures were approved by The Pennsylvania State University Institutional Review Board. Families of 6th and 7th grade students from four school districts in rural and urban areas of central Pennsylvania were invited to participate. Families were recruited by mailing

letters to all parents of students in the target grades, presentations at school functions and presentations to classrooms. Interested parents were contacted by project staff to verify eligibility and schedule a baseline assessment. In-home assessments of youth and parents were conducted at baseline, post-intervention, and 12-month follow-up. Only data from baseline assessment are used in this study. Families received $75 compensation for completing the baseline assessment. Families completing baseline assessments were stratified by school district and randomly assigned to MSFP 10-14, SFP 10-14, or a home study control condition.

The Strengthening Families Program: for Parents and Youth 10-14 SFP 10-14 is an evidence-based, universal, family-focused intervention designed to prevent the onset and escalation of adolescent substance use and problem behavior. The intervention consists of seven 2-h sessions delivered in a multi-family group format. During each weekly session, parents and youth meet in separately for the first hour and conjointly for the second. The program has been shown to improve positive parenting practices and youth behavior management skills, improve the quality of the parent-youth relationship, and reduce rates of adolescent conduct problems and substance use (Spoth et al. 2015).

The Mindfulness-Enhanced Strengthening Families Program 10-14 MSFP 10-14 is an adapted version of SFP 10-14 in which activities to train mindfulness in parenting are integrated into the parent sessions of the curriculum. About 20% of the content in the MSFP 10-14 parenting sessions is distinct from SFP 10-14 and is designed to help parents build mindfulness in parenting skills including the following: listening with full attention, greater awareness of their own and their child's emotions, regulating their own emotions in the parenting context, adopting an accepting and non-judgmental attitude about their child and themselves, and fostering compassion about their child's experiences and their own parenting experiences (Duncan et al. 2009). Other than the content changes to the parent sessions, the format is identical to SFP 10-14.

Because of the similarity in intervention conditions and the lack of theoretical or empirical rationale for differences in engagement across conditions, we included data from all available participants across conditions and included condition as a covariate in analyses.

Participants

Participants were 515 parents, mostly mothers (n = 313, 60.78%), whose families were assigned to MSFP 10-14 or SFP 10-14. Participants were parents of youth (n = 276, 53.74% females, M age = 12.15 years; SD = .68) from the recruitment-targeted grades (n = 368, 71% in 6th grade). The sample reflects the demographics of the region, with the majority identifying as White (n = 421, 82%; n = 55, 11% Black/African American, n = 22, 4% Asian; n = 1, .21% Native American/American Indian; n = 16; 3% reported not identifying with one of these groups), but the sample showing more diversity in terms of income (Median = $57,500.00, M = $66,857, SD = $45,118), education ($n$ = 21, 4% did not graduate high school; n = 116, 22% graduated high school only; n = 142, 28% had some postsecondary training; n = 137, 27% graduated college; and n = 99, 19% had some level of graduate education), and marital status (n = 347, 67% married; n = 47, 9% in a marital-like relationship; n = 85, 17% separated or divorced; n = 33, 6% single/never married, and n = 3, .68% widowed). The distribution of participants was relatively equal between the MSFP (n = 256, 49.71%) and SFP (n = 259, 50.29%) conditions, and on average parents attended 4.51 sessions (SD = 2.42).

Measures

Engagement The facilitator leading the weekly parent session rated each participant on five dimensions of behavioral engagement: involvement ("Parent was actively engaged and readily participated in parent session group discussion/activities"), interest ("Parent seemed to understand and be interested in material presented in group", resistance ("Parent seemed resistant to new ideas and reluctant to try new ways of doing things"), positive affect toward leaders ("Parent appeared positive and warm in interactions with group leader"), and positive affect toward other parents/group members ("Parent appeared positive and warm in interactions with other parents"). All ratings used a four-point Likert scale ["Rarely or never (1)" to "Always or almost always (4)"]. Principal Components Analysis revealed a low communality for the resistance item (.06) on a one-factor model. Including the item on this scale reduced the alpha coefficient from .89 to .73. So the resistance item was eliminated from the engagement composite. Composite, mean scores of the remaining four items were calculated for each participant at each session he/she attended (M = 3.45, SD = .52; α = .89). Due to positive skew, scores were transformed into a standardized score to approximate a normal distribution, with higher scores representing more engagement.

Facilitators were trained to observe and rate specific aspects of family members' behavior reflected in the engagement rating scales. Facilitators discussed the ratings with supervisors during weekly meetings. In addition, supervisors observed the first session and at least one additional sessions for each group and discussed ratings with the facilitator. Because parent groups were led by only one facilitator, that rater's scores were used to index engagement.

Attendance Attendance was based on a triangulation of official records—parents signed in on attendance sheets, and site coordinators checked these attendance records for accuracy at each session; in addition, group leaders marked the attendance of each parent at each session. The attendance score is the total number of sessions that a parent attended (M = 4.51, SD = 2.42).

Demographic Characteristics Parents reported on partner status (yes (1) or no (0) to whether there is someone in the home they are married to or living within a "marital-like relationship") and highest level of educational attainment (less than 7th grade, 7th–9th grade, partial high school, high school graduate or GED, partial college/specialized training, college graduate, or graduate training). Education was recoded as 1 = college graduate and graduate training vs. 0 = all other levels of education.

Depression Symptoms Parents completed the Center for Epidemiologic Studies Depression scale (CES-D; Radloff 1977). Their reports on 20 symptoms ["rarely (0)" to "almost all the time (3)"] yielded a summed score ranging from 0 to 60. For this sample, parents averaged below the clinical cutoff (16) for depression (M = 12.42, SD = 9.47, α = .92).

Parenting Characteristics Parents self-report of pre-intervention parenting was gathered using several scales ["Strongly Disagree (0) to "Strongly Agree (4), unless noted otherwise] typically used in SFP 10-14 evaluations (Redmond et al. 2009). Scores for each of the following aspects of parenting were calculated by summing the items representing that dimension: perceived parenting competence (8 items; α = .78), perceived parenting hassles (12 items; α = .80), perceived parenting avoidance (3 items; α = .78), positive parenting support (5 items; α = .69), positive parenting involvement (2 items; r = .72), perceived parent-youth positive affective relationship quality (4 items; "Never (0) to "Always (6); α = .82), and perceived parent-youth negative affective relationship quality (5 items; "Never (0) to "Always (6); α = .80).

Youth Behavior Problems Parents reported ["Not True" (0) to "Very True" (3)] on their perceptions of youth internalizing (32 items; α = .87) and externalizing problems (36 items; α = .91) using the *Child Behavior Checklist* (CBCL; Achenbach 1994).

Analytic Plan

To address the study's research questions, we used latent growth modeling (LGM; Muthén 2001), a flexible and efficient strategy for analyzing longitudinal outcomes such as parent engagement across intervention sessions. Mplus software version 7.4 (Muthén and Muthén 2015) was used to conduct the two-step LGM procedure which uses full information maximum likelihood to account for missing data in the LGM models.

First, model testing to identify the unconditional functional form of the growth in engagement across time was conducted. The functional form of engagement across sessions was assessed through comparison of intercept (reflecting engagement at session 1) only, linear growth, and quadratic growth models. These models included parent engagement variables for session 1–7 and varied the factor loading of the paths to the latent intercept and latent slope to reflect the shape of the change (intercept only or no change: 1, 1, 1, 1, 1, 1, 1; linear change: 0, 1, 2, 3, 4, 5, 6; and quadratic change: 0, 1, 4, 9, 16, 25, 36). We examined chi square difference tests, comparative fit index (CFI: Bentler 1990), the Tucker-Lewis fit index (TLI: Tucker and Lewis 1973), root mean square error of approximation (RMSEA; Browne and Cudeck 1993), and the standardized root mean square residual (SRMR; Hu and Bentler 1999).

The second step added demographic variables (educational attainment and partnered), parenting variables (parenting competence, parenting hassles, parenting avoidance, positive parenting support, positive parenting involvement, parent-youth positive affective relationship quality, parent-youth negative affective relationship quality), parent depressive symptoms, and youth internalizing and externalizing problems to predict initial engagement and change in engagement. We examined model fit indices for parental demographics only versus parent demographics and parenting characteristics in selecting the appropriate model. All models included intervention condition and attendance as covariates.

Results

Table 1 presents descriptive statistics and correlations among study variables. Parenting variables were significantly associated with each other in expected directions ranging in magnitude from r = .13 to r = .49. The association between perceived positive affective quality in the parent-youth relationship and parental depressive symptoms was an exception (r = −.08, p < .10). Parent educational attainment and being partnered in a relationship were also associated with some parenting characteristics as expected.

Change in Parent Engagement

Model fit indices and chi square difference tests compared across intercept only, linear change, and quadratic change models supported the selection of the linear change model. The linear change model yielded higher CFI and TLI values (.938 and .943, respectively), lower RMSEA and SRMR values (.065 and .058, respectively) which were in ranges

Table 1 Descriptive statistics and correlations among study variables predicting initial engagement and change in engagement

Study variable	*SD*	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Intervention condition	.516	1.00	–	–	–	–	–	–	–	–	–	–	–	–
2. Attendance	2.417	−.02	1.00	–	–	–	–	–	–	–	–	–	–	–
3. College graduate	.498	−.01	.10*	1.00	–	–	–	–	–	–	—	–	–	–
4. Partnered	.401	−.04	−.01	.10*	1.00	–	–	–	–	–	–	–	–	–
5. Parent competence	.608	−.03	−.06	.13**	.06	1.00	–	–	–	–	–	–	–	–
6. Parent hassles	.630	−.02	−.02	−.05	−.08^{t}	−.34**	1.00	–	–	–	–	—	–	–
7. Parent avoidance	.781	−.03	−.05	−.17**	.00	−.40**	.18**	1.00	–	–	–	–	–	–
8. Parent support	.551	.05	.08^{t}	.14**	−.02	.37**	−.25**	−.18**	1.00	–	–	–	–	–
9. Parent involvement	.760	.00	.15**	.14**	.02	.26**	−.15**	−.20**	.43**	1.00	–	–	–	–
10. Positive affect qual.	1.279	−.07	.00	−.02	−.05	.35**	.32**	−.14*	.46**	.35**	1.00	–	—	–
11. Negative affect qual.	1.012	.06	.06	.00	−.14*	−.40**	−.16**	.41**	−.22**	−.16**	−.35**	1.00	–	–
12. Depressive symptoms	9.464	−.04	−.07	−.22**	−.11	−.35**	.25**	.22**	−.24**	−.13**	−.08^{t}	.16**	1.00	–
13. Youth internalizing	7.085	−.01	.01	−.14**	.06	−.30**	.23*	.26**	−.18**	−.18**	−.18**	.23**	.36**	1.00
14. Youth externalizing	8.017	−.04	−.01	−.15**	−.11*	−.44**	.29*	.33**	−.31**	−.20**	−.31**	.53**	.31**	.49**

Means of variables 1–14 are zero because study variables were centered for analysis. Intervention condition is a dummy variable for treatment condition MSFP, SFP 10-14 is the comparison condition: MSFP $M = .503$

$^{t}p < .10$; $*p < .05$; $**p < .01$

indicating the model was a good fit for the data; and there was a significant chi square different test value ($\chi^2 = 31.41$, $df = 3$, $p < .000$) suggesting the linear model was a better fit than the intercept only model. Model fit indices for the quadratic change model were similar to the linear model (CFI .934, TLI .927, RMSEA = .074, SRMR = .057); however, the chi square difference test was not significant ($\chi^2 = 1.17$, $df = 4$, p = ns) so the linear growth model was retained.

Results of the linear growth model for engagement showed that on average, there was a significant increase across the seven sessions ($\beta = .196$, SE = .048, $p < .001$); so we refer to this as increase in engagement. Initial engagement and increase in engagement were not significantly related ($r = -.018$, SE = .011, p = ns). Significant variation in both the intercept for engagement (i.e., individual heterogeneity around mean level engagement in the first session; $\sigma^2 = .37$, SE = .05) and the increase or slope for engagement (i.e., individual heterogeneity in linear growth across sessions; $\sigma^2 = .01$, SE = .00) were evident.

Demographic and Parenting Predictors of the Initial Level and Change in Engagement

Next, initial level of engagement and increase in engagement were regressed on hypothesized predictors (demographics, parenting, parent depression, youth internalizing and externalizing) with intervention condition and attendance included as covariates. Attendance across the intervention was not included as a predictor of the initial level of engagement. The model provided an adequate fit for the data ($\chi^2/df = 1.687$, CFI = .920, TLI = .899, RMSEA = .037, SRMR = .036). Note the unconditional model indicated that the change in engagement is represented by a linear increase in engagement scores on average across the seven sessions. The initial level of engagement was not associated with the increase in engagement across sessions ($r = -.014$, SE = .011, p = ns). Parameter estimates and standard errors for predictors in the model can be seen in Table 2 and Fig. 2. Higher levels of initial engagement was significantly associated with being in the MSFP 10-14 intervention ($\beta = .251$, SE = .085, $p < .01$). Consistent with hypotheses, higher initial engagement was associated with higher levels of education (being a college graduate) ($\beta = .256$, SE = .094, $p < .01$). The increase in engagement was significantly associated with being in the SFP 10-14 intervention ($\beta = -.103$, SE = .017, $p < .001$) and having higher levels of attendance ($\beta = .022$, SE = .068, $p < .001$). Being partnered was associated with greater increases in engagement across sessions ($\beta = .056$, SE = .024, $p < .05$), supporting our hypothesis. Increase in engagement was also positively associated with one aspect of positive parenting, lower baseline levels of parenting avoidance ($\beta = .196$, SE = .048, $p < .001$), and positively with one aspect of negative parenting, higher baseline levels of perceived negative affective quality in the parent-youth relationship ($\beta = .024$, SE = .012, $p < .05$).

Discussion

This study investigated whether family demographics, parent well-being, parenting quality, and youth behavior problems predicted initial levels and change in engagement in two family-based interventions. Findings indicate that facilitator

Table 2 Parameter estimates and standard errors for predictors in the conditional latent growth model

	Initial engagement intercept		Increase in engagement slope	
	Estimate	SE	Estimate	SE
Intervention condition	.251**	.085	−.103***	.017
Attendance	—	–	.022***	.006
College graduate	.256**	.094	−.022	.019
Partnered	−.194	.122	.056*	.024
Parent competence	.077	.099	−.013	.020
Parent hassles	.015	.084	−.013	.017
Parent avoidance	.031	.073	−.048***	.015
Parent support	−.055	.108	.025	.021
Parent involvement	.130^{t}	.070	−.027^{t}	.014
Positive affect qual.	.066	.046	.002	.009
Negative affect qual.	.050	.060	.024*	.012
Depressive symptoms	−.005	.006	−.001	.002
Youth internalizing	−.000	−.008	.000	.002
Youth externalizing	−.002	.008	−.001	.002

Intervention condition is a dummy variable for treatment condition MSFP, SFP 10-14 is the comparison condition.
^{t}<.10; *p < .05; **p < .01; ***p < .001

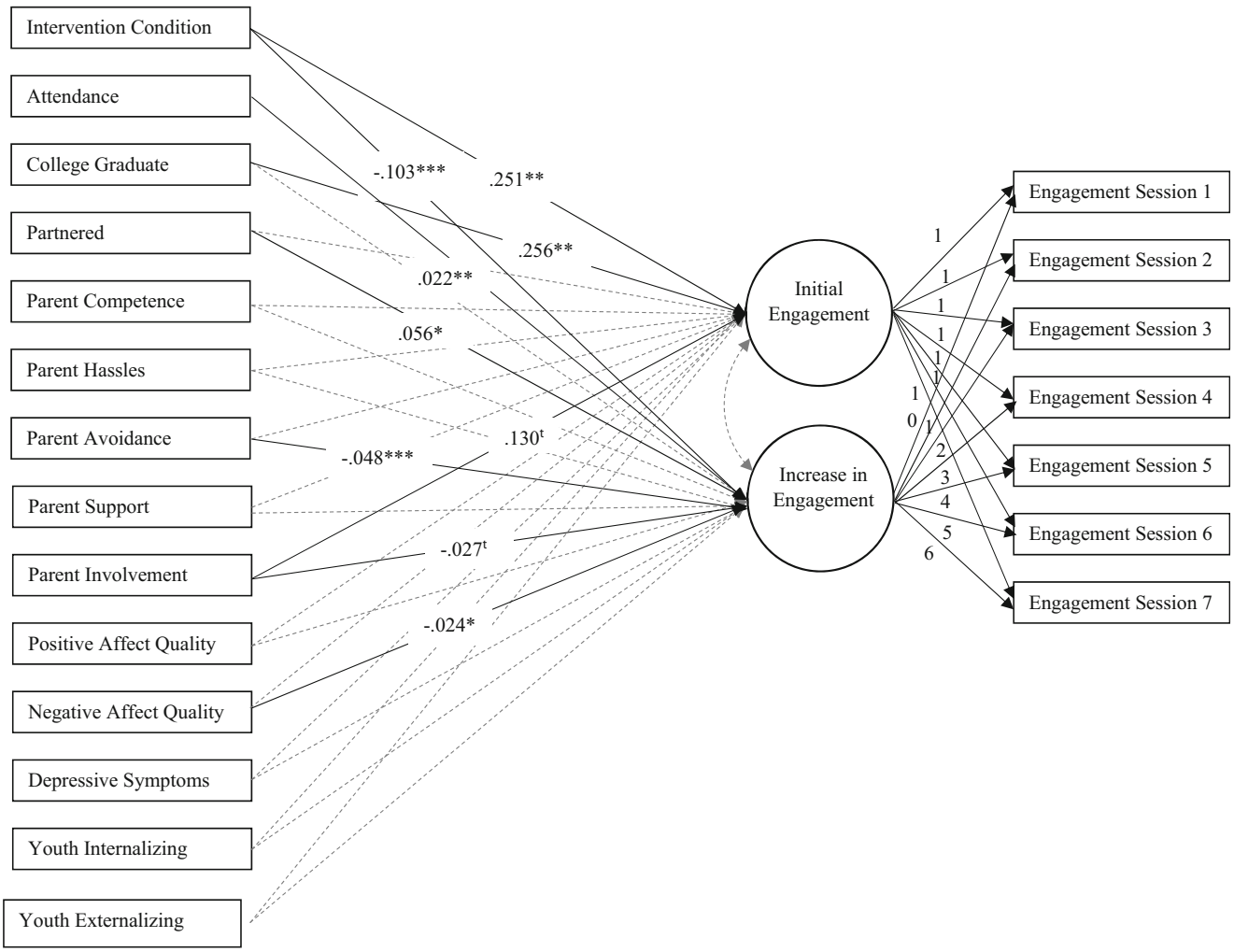

Fig. 2 Parameter estimates for the conditional latent growth model of parents' engagement. Note. Although not depicted, all predictor variables were allowed to correlate with each other, and variances are also not depicted

ratings showed variation in both participants' initial levels and increases in engagement, and that pre-intervention characteristics (parent demographics, parenting practices, and perceived parent-youth relationship quality) predicted these two indicators of engagement. In addition, different variables predicted initial levels and increase in engagement.

The finding that engagement changed over the course of the intervention supports our contention that engagement may be characterized as a dynamic process (Bamberger et al. 2014). Even with initial levels reflecting high enthusiasm for the content and positive facilitator and group dynamics, small but positive growth in engagement was evident. We anticipated high initial levels of engagement because participants self-select into universal preventive interventions. Mandated interventions would likely have lower levels of initial engagement. Although our analytic strategy indicated a positive mean-level increase in engagement, alternative analytic methods might describe both positive and negative within-person change (Bamberger et al. 2014). Our results also suggest that analyses could identify ways that changes in engagement cluster into distinct patterns, similar to how Mauricio et al. (2014) have investigated attendance. That analytic strategy would allow for refined analyses of which characteristics distinguish groups of people at risk for declining engagement.

Our findings support the argument that engagement can be characterized by elements other than attendance. Although other studies have combined attendance and engagement as indicators of a latent construct (Berkel et al. 2011), our conceptualization and measurement strategy suggests these are separate, but related, phenomena. Although we found that attendance was associated with increases in engagement, we were not able to test this dynamically, meaning that we could not model how what happens at one intervention session, or what happens in the intervening week, influences the likelihood of attendance at the next or subsequent sessions. Because we included attendance in our modeling, our results indicate that the significant prediction of change was not due to the association between engagement and attendance.

Parents' levels of engagement at the first session were predicted by their education level and by the level of involvement they had with their child. Parents with college degrees or higher showed higher levels of initial engagement in the intervention. This finding is consistent with other research indicating that higher education is associated with attendance (Coatsworth et al. 2006; Haggerty et al. 2006) and engagement in (Nix et al. 2009) family-based interventions. With regard to education predicting engagement, it is possible that those with higher education levels are more familiar with this kind of interactive, small-group learning context, are more comfortable answering facilitator questions and contributing to the group discussion, and therefore are rated as more highly engaged. Parents' with higher levels of involvement with their youth, meaning they keep their child involved in the family through both fun and work activities, also showed higher levels of engagement at the first session. This may mean that parents who are connected to their youth in important ways and are already have some strategies in place to keep their youth connected to the family are able to get their child to this family-focused intervention and more fully-engage in the first session. Parents often note that it is a challenge getting their 12- or 13-year-old child to attend these kinds of programs, but it may be an easier task for parents with greater involvement with their youth making it easier for parents to engage with the content of the intervention.

In contrast, level of involvement was negatively associated with the increase in engagement across sessions, suggesting that parents with lower levels of involvement with their youth showed more change over time. In this intervention, parents learn how to involve youth in family life through activities such as "family fun time" and strategies for including youth in regular work chores of the family. It may be that parents who do these kinds of things less frequently at baseline are learning them in session and are more likely to increase their engagement in the intervention as they learn. Increase in engagement across sessions was also predicted by the parent's status of being partnered. This finding is consistent with past research indicating that partnered parents how higher ratings of engagement in a family-focused intervention (Dumas et al. 2007). Both caregivers are invited to attend these interventions, but the reality for families is that it is often difficult for both to attend. It is our observation that parents may organize their families such that one parent takes care of other child care tasks that conflict with attending the session (e.g., transportation of other siblings to other activities), while one parent if "free" to attend the intervention. It is also possible that partners attend the intervention together, are learning together and this contributes to greater engagement over time.

Two additional variables, parents' perceived negative affective quality with their youth and parental avoidance, predicted change in engagement. Parents who perceived that their youth expressed more negative affect (e.g., anger and criticism) toward them showed greater increase in engagement. Parents who attend these voluntary interventions are motivated in part by an interest to strengthen their relationship with their youth. A primary focus of these interventions is to help parents develop strategies to enhance that relationship and parents who are experiencing negative early adolescent emotions directed toward them, but learn new parenting skills to shift or cope more effectively with those interaction may be inclined to increase in engagement over the course of the intervention. Parental avoidance of setting limits or addressing conflict because of concerns about how the child will react was negatively associated with change in engagement, meaning parents with higher avoidance showed less change. Parents who avoid setting clear limits or using appropriate discipline because of potential child emotional reactions are

at risk for escalating to a more serious coercive relationship that can contribute to more serious child behavior problems (Dishion and Snyder 2015). This finding is important because the kinds of parenting interventions in this study can help parents develop the skills to change these patterns of behavior, so finding ways for parents showing higher reluctance to engage more with the intervention content may also help improve parenting and youth behavior outcomes.

It was surprising that neither youth behavior problems nor parent depressive symptoms predicted either indicator of engagement. We anticipated that parent report of youth behavior problems would be a good indicator of parent expressed need for the intervention and would be associated with higher engagement (Gorman-Smith et al. 2002). However, because universal family-based programs recruit all interested parents, families likely come for many different reasons and youth problems may not be a primary reason parents engage. This may be a positive finding for prevention programs designed to influence families before the onset or escalation of problem behaviors. We also expected parent depressive symptoms to influence engagement (Baydar et al. 2003), but it was not a significant predictor in our models. In this sample, depressive symptoms were relatively low and might not have an influenced parental engagement.

We did not expect differences across the two intervention conditions, but controlled for it in analyses. Results, however, showed that it was a significant predictor of both initial engagement and the increase in engagement, although in opposite ways. Being in the MSFP 10-14 condition was associated with higher initial engagement, but being in SFP 10-14 was associated with greater change in engagement. The MSFP 10-14 curriculum did include modifications to the first session in order to emphasize participants' personal experiences with parenting and to connect them more directly with how they, as individuals, would benefit from the intervention. These changes may have had an effect on parent interest, involvement reflected in their higher levels of engagement. Being in SFP 10-14 was associated with greater change in engagement. It may be that the original content of the intervention was more interesting and appealing than the modified intervention. Alternatively, it may be partially a ceiling effect in that the relatively lower levels of initial engagement in SFP 10-14 allowed for more change.

Baseline data and demographic data may not be ideal for studying processes that occur over the course of an intervention, yet identification of parents using baseline characteristics can be leveraged to boost initial engagement and increases in engagement before low engagement is observed, maximizing parents' benefit from interventions. Motivational Interviewing strategies (Miller and Rollnick 1991) could be useful in this regard similar to their effective use in select family-based interventions such as the Family Check-Up (Dishion and Kavanagh 2003). Low initial engagement might be due in part to some apprehension or lack of readiness for participating. Engagement data identify who might need extra encouragement, such as a home visit, a strategy which can substantially increase participation rates (Dishion and Kavanagh 2003). Baseline data can be used as content for exploring parents' goals, current family functioning and motivations could encourage greater engagement in any family-based intervention.

Limitations and Future Directions

This study adds to the emerging literature examining the processes of engagement in preventive interventions, but has several limitations. The sample size is relatively modest, which limits the ability to find significant effects, especially with complex models and multiple predictors. Additional studies will be necessary to examine the stability and replicability of the findings. The majority of measures were completed by parents and could reflect reporter bias. In addition, the calibration of facilitator ratings of engagement was conducted through a supervisory method rather than a structured method in which multiple ratings from the same session were collected and compared. Although in this study we elected the supervisory method for logistics reasons, it may be feasible to collect multiple ratings at select sessions to empirically evaluate reliability of engagement ratings. Additional levels of variables were not addressed in our analyses. For example, within-group group processes such as overall group cohesion may be important factors influencing participant engagement. This study examined engagement in two similar interventions and testing whether these findings replicate in other interventions will be important. Until similar models are tested with different interventions and samples, researchers and practitioners should use caution in extending this study's specific results. That is because depending on program factors such as curriculum content and structure, venue of delivery, experience of practitioner, mode of delivery, and composition of parent group, parents' baseline characteristics may impact parents' engagement differently by intervention program.

This study examined one portion of our conceptual model, but the data did not include indicators that would sufficiently test some aspects of the model. In future studies, for example, it would be useful to incorporate intensive longitudinal methods to capture parents' do, think, and feel outside of the intervention to further test and inform our hypotheses about the dynamic process of engagement that unfolds during an intervention (Bamberger 2016).

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Ethics Approval and Consent to Participate Pennsylvania State University's IRB approved this study. All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed consent was obtained from all individual participants included in the study.

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