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Emily B. Winslow
Arizona State University, emily.winslow@asu.edu

Sanford Braver
Arizona State University, sanford.braver@asu.edu

Robert Cialdini
Arizona State University, Robert.Cialdini@asu.edu

Irwin Sandler
Arizona State University, Irwin.sandler@asu.edu

Jennifer Betkowski
Children's Hospital of Philadelphia

See next page for additional authors

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Video-Based Approach to Engaging Parents into a Preventive Parenting Intervention for Divorcing Families: Results of a Randomized Controlled Trial

Emily B. Winslow,[1,2] Sanford Braver,[1] Robert Cialdini,[1] Irwin Sandler,[1,2] Jennifer Betkowski,[3] Jenn-Yun Tein,[1,2] Liza Hita,[4] Mona Bapat,[5] Lorey Wheeler,[6] and Monique Lopez[1,2]

1 Department of Psychology, Arizona State University, Tempe, AZ, USA
2 REACH Institute, Arizona State University, P.O. Box 876005, Tempe, AZ 85287-6005, USA
3 Children's Hospital of Philadelphia, Philadelphia, PA, USA
4 School of Social and Behavioral Sciences, Arizona State University, Tempe, AZ, USA
5 Willowstone Family Services, Lafayette, IN, USA
6 Nebraska Center for Research on Children, Youth, Families and Schools, University of Nebraska-Lincoln, Lincoln, NE, USA

Corresponding author — Emily B. Winslow, *email* emily.winslow@asu.edu

Abstract
The public health impact of evidence-based, preventive parenting interventions has been severely constrained by low rates of participation when interventions are delivered under natural conditions. It is critical that prevention scientists develop effective and feasible parent engagement methods. This study tested video-based methods for engaging parents into an evidence-based program for divorcing parents. Three alternative versions of a video were created to test the incremental effectiveness of different theory-based engagement strategies based on social influence and health behavior models. A randomized controlled trial was conducted to compare the three experimental videos versus two control conditions, an information-only brochure and an information-only video. Participants were attendees at brief, court-mandated parent information programs (PIPs) for divorcing or never

married, litigating parents. Of the 1123 eligible parents, 61% were female and 13% were never married to the child's other parent. Randomization to one of five conditions was conducted at the PIP class level, blocking on facilitator. All participants completed a 15-item, empirically validated risk index and an invitation form. Results of regression analyses indicated that the most streamlined version, the *core principles* video, significantly increased parents' interest in participating in the parenting intervention, enrollment during a follow-up call, and initiation (i.e., attending at least one session) compared to one or the other control conditions. Findings suggest that videos based on social influence and health behavior theories could provide an effective and feasible method for increasing parent engagement, which would help maximize the public health benefits of evidence-based parenting interventions.

Keywords: engagement, parenting, prevention, video, social influence

Evidence-based parenting interventions help prevent the onset and escalation of mental health and substance use problems (Sandler et al. 2011). However, the public health impact of these interventions has been hampered by low parent participation (Axford et al. 2012), which we define as taking part in all or some of an intervention. For example, in the Communities that Care trial, only 4–7% of parents participated in a parenting intervention across 4 years (Fagan et al. 2009). Low participation diminishes the population-level impact of evidence-based interventions, which is a function of both an intervention's effect size and its participation rate (Braver and Smith 1996; Shamblen and Derzon 2009). Thus, increasing participation could substantially increase the public health impact of effective interventions.

To increase participation, prevention scientists need to develop effective engagement strategies. We define "engagement" as the initial process of becoming involved in an intervention, including expressing interest in participating, making a commitment to attend, and starting the intervention. Anecdotal success has been reported for resource-intensive engagement strategies, such as in-home recruitment, incentives (e.g., money, food, childcare), and between-session phone calls (Axford et al. 2012). In experimental research, monetary incentives have increased enrollment, but evidence is mixed with respect to increasing the number of sessions attended (Dumas et al. 2010; Gross et al. 2011; Heinrichs 2006). There is some experimental evidence that supports the effectiveness of person-to-person, motivational enhancement strategies (Shepard et al. 2012;Winslow et al. 2016). For example, among low-income, Mexican American parents, Winslow and colleagues (2016) found that an engagement package that included a teacher endorsement and a motivational

call by providers increased initiation (i.e., attending at least one session) and number of sessions attended for high-risk families compared to an information-only control group.

These results are encouraging; however, person-to-person engagement strategies require significant resources for training and implementation. An alternative approach might be to use videos to invite parents to participate. Compared to person-to-person strategies, video-based methods are less costly to deliver after initially produced and more feasible to implement with fidelity on a wide scale (Webster-Stratton and Hammond 1997). Although promotional videos have been used as a part of multi-method recruitment strategies (e.g., Spoth et al. 2007), researchers have yet to test the effectiveness of video-based strategies for increasing participation in preventive parenting interventions. To achieve desired effects, the exact content of the video message requires careful thought. Fortunately, a large body of theoretical and empirical research exists to guide the development of engagement videos, much of which comes from health behavior research. Two constructs have emerged as consistent predictors of health behavior engagement—perceived benefits and barriers (Prochaska et al. 1994; Strecher et al. 1997). For example, parents have been more likely to express interest, enroll, and attend parenting interventions if they perceived many benefits from participating and identified few barriers (e.g., scheduling conflicts, transportation, childcare) (e.g., Corso et al. 2010; Salari and Filus 2017).

An alternate source of guidance on engagement comes from Cialdini's (2009) principles of social influence. According to Cialdini, there are six primary principles by which social influence impacts behavior: (1) *reciprocation*—wanting to repay benefits and services received, (2) *social validation*—following similar individuals' actions in similar situations, (3) *legitimate authority*—valuing recommendations from credible experts, (4) *liking*—agreeing with people who are likeable, (5) *scarcity*—viewing limited opportunities as more valuable than plentiful ones, and (6) *commitment/consistency*—behaving in ways that are consistent with prior goals and commitments. Numerous studies have documented the power of these principles for influencing behavioral choices such as lawmakers' votes, household energy conservation, and organ donations (Allcott 2011; Cialdini 2009; Peoples 2010). The commitment/consistency principle has emerged as particularly important (Cialdini 2009). Studies have shown that when individuals make an active commitment to a position or set of goals (e.g., publically stating their goal), they are more likely to follow through behaviorally (Cialdini 2009; Martin et al. 2012).

Engagement Videos

In the current study, we drew from Cialdini's (2009) social influence principles and health behavior theories to develop videos to increase engagement in an evidence-based parenting intervention for divorcing parents. First, we created a prototype based on these theories. Then, we conducted separate focus groups with providers, divorced mothers, and divorced fathers to refine video content and presentation. We oversampled ethnic minority and lower educated parents to ensure that focus groups were ethnically and socioeconomically diverse. After incorporating focus group feedback, we created three alternative versions of the engagement video to test the incremental effectiveness of different theory-based strategies.

The *core principles* video targeted all but one of the principles of influence: reciprocation, social validation, legitimate authority, liking, and scarcity.

The *commitment* video included the same content as the core principles video but also targeted the sixth influence principle: commitment/consistency. Given evidence of greater persistence of change over time when individuals make an initial active commitment (Cialdini 2009; Martin et al. 2012), we created a separate video to test whether it would lead to more durable effects on engagement controlling for the other influence principles, as participants moved from initial interest in the parenting program to enrollment and initiation.

The *risk feedback* video included the same content as the commitment video but also included a risk assessment and feedback procedure. This risk feedback procedure was expected to increase engagement among parents with high self-reported risk scores because helping parents assess their family's strengths and weaknesses and providing feedback about how an intervention will help has increased engagement of parents who perceive more problems (Shepard et al. 2012; Winslow et al. 2016). Engaging high-risk families is important because prior research suggests these families often benefit the most from preventive parenting interventions (Sandler et al. 2011), including the intervention used in this study, the New Beginnings Program (NBP) (Dawson-McClure et al. 2004).

New Beginnings Program

The NBP is described in detail in other articles (e.g., Wolchik et al. 2007). In brief, the NBP is a 10-week, preventive intervention for divorcing and

separating parents designed to alter risk and protective factors that impact child outcomes after divorce. The program teaches skills such as how to increase parental warmth and effective discipline and reduce children's exposure to inter-parental conflict. Results of a randomized controlled trial have revealed long-term effects of the NBP (15 years post-intervention) to reduce internalizing and externalizing problems and substance use and abuse (Wolchik et al. 2013).

To compare the effectiveness of the experimental videos for increasing engagement in the NBP, we developed two types of control conditions: an informational brochure to control for standard practice and an information-only video to control for potential effects of the video modality on engagement. We tested the effects of the experimental videos on three engagement outcomes: interest (i.e., expressed interest in participating immediately after viewing the video), enrollment (i.e., signing up to participate during the follow-up call), and initiation (i.e., attending at least one session). We examined interest and enrollment because researchers have found that most parents decline initial offerings to sign up for preventive parenting programs (e.g., Heinrichs et al. 2005).We examined initiation because many parents who enroll in a parenting intervention never attend (e.g., Baker et al. 2011).

Hypotheses

We hypothesized that the core principles video, which attempted to activate most of the influence principles, would elicit higher interest, enrollment, and initiation compared to either the brochure or video control conditions. We also hypothesized an additive effect of the commitment video to evoke even higher enrollment and initiation than the core principles video because it included the same content as the core video but also targeted the commitment/consistency principle, which was expected to promote follow through from interest to initiation. Finally, we hypothesized that risk would interact with condition such that the risk feedback video would enhance engagement compared to the core principles or commitment videos for parents who scored high on the risk measure because the risk feedback video explained that the program would be especially beneficial for families who exceeded the cut-offs announced in this video.

Method

Participants

Participants were attendees at one of 96 4-h, parent education classes for divorcing parents (and never married, litigating parents) of minor children mandated by the court (under ARS §25–352). These *parent information programs* (*PIP*s) were delivered by seven facilitators from five agencies who provided PIPs at 24 locations in Maricopa County, Arizona. Facilitators were counselors who had successfully obtained contracts with the court to deliver PIPs.

PIP participants were excluded from analyses if they did not complete the eligibility questions on a form given during the PIP class (2%, n = 41) or if they did not meet eligibility criteria (35%, n = 614). Eligible parents lived in the Phoenix area, were not incarcerated, spoke English, and had a child aged 3–18 who stayed overnight at least once per week.[1] As shown in Fig. 1, of the 1778 parents who attended PIP classes, 1123 met eligibility criteria and were included in analyses. Of the 1123 eligible parents, 61% were female and 87% were currently or previously married to the child's other parent (i.e., 13% were never married to the other parent). Because our arrangement with PIP administrators permitted only 15 min to conduct all procedures, we were unable to collect other demographic data during PIP classes.

Procedure

Conditions — This randomized controlled trial compared five conditions: (1) core principles video, (2) commitment video, (3) risk feedback video, (4) brochure control, and (5) video control. All videos, including the video control, contained the same introductory material. Specifically, the videos began by presenting divorce as a stressful time for children and parents. Then, all videos prompted parents to complete a validated, 15- item risk assessment measure (see the "Measures" section for details of this measure; Tein et al. 2013).

1 In cohort 1, parents who were never married but attended the PIP because of disputes over custody, child support, or parenting time were deemed ineligible. In subsequent cohorts, this eligibility criterion was removed because they were deemed appropriate for the NBP. Analyses (not shown) showed that parent's marital history was not related to any dependent variables.

Core Principles Video — This 11-min video targeted all the influence principles except commitment/consistency. Reciprocation was activated by stating that if parents participated, group leaders would likewise provide something of value by offering strategies parents could use to help their children. Testimonials from prior program participants targeted social validation by showing similar parents (i.e., both fathers and mothers from multiple ethnic subgroups) in a similar situation (i.e., going through divorce) who chose to participate in the program and recommend it to other divorced parents. Legitimate authority was targeted by quoting local and national newspaper endorsements of the program and showing testimonials from credible experts (i.e., group leaders and teacher) who endorsed the program. The liking principle was targeted by having attractive, appealing parents and group leaders deliver the video's messages. The scarcity principle was activated by stressing the unique aspects of the program.

Many of the aforementioned strategies (e.g., testimonials, newspaper endorsements) simultaneously targeted the health behavior construct, perceived benefits, by conveying the benefits parents, children, and families would receive by participating. Perceived barriers were counteracted by offering scheduling choices and free childcare to make it easier to attend.

Commitment Video — This 13½-min video included the same content as the core principles video plus additional content to target the commitment/consistency principle. To enhance commitment, this video prompted parents to circle on a form their biggest "concern" (i.e., goal): either (1) child behavior problems, (2) child school problems, or (3) problems between the parent and child. Then, parents were told to explain in writing why they were primarily concerned about that issue. Next, parents were asked to commit publicly by raising their hands to endorse their biggest concern. Finally, for each concern, the narrator in the video explained how the intervention would help address the concern by describing the proven benefits of the intervention as demonstrated by research.

Risk Feedback Video — This 14½-min video contained the same content as the commitment video plus a risk assessment and feedback procedure. As stated previously, all videos prompted parents to complete the risk measure. However, the risk feedback video ultimately guided parents to self-score this measure; then, the video provided feedback regarding

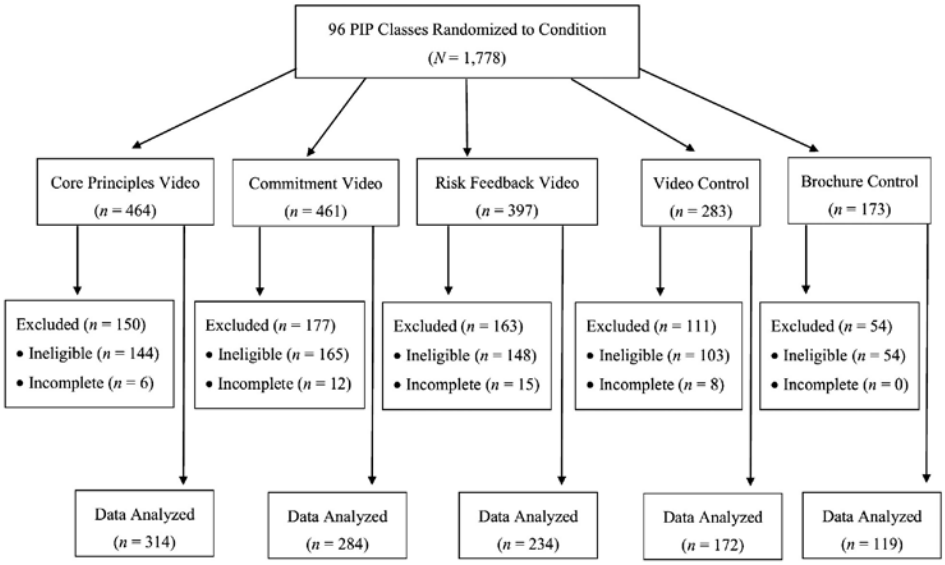

Fig. 1. Participant flowchart. *PIP* court-mandated, parent information classes.

the benefits parents could expect depending on the score. The video explained that the program would help all families but would provide "very good" results for those who self-scored between 6 and 12 and "even better or excellent benefits" for those who self-scored 13 or higher. These cutoffs were determined empirically by prior research (Tein et al. 2013).

Brochure and Video Controls — The brochure provided information about the effects of divorce on children; described the goals, structure, and benefits of NBP; and listed contact information. The 11½-min video control contained identical content as the brochure but was delivered orally on the video by one of the program developers in a "talking head" format.

Randomization — Randomization to condition was conducted at the PIP class level, blocking on facilitator. As shown in Fig. 1, 96 PIP classes, which naturally varied on class size, were randomly assigned to one of five conditions. To increase power to detect differences between experimental conditions, we randomized 25%of PIP classes to each experimental video condition and 12.5% to each control condition. Facilitators implemented all five conditions according to an implementation schedule given to them in advance of their PIP classes.

Facilitator Training — PIP facilitators attended a 3-h training to learn how to implement each engagement condition. The research team provided technical assistance by attending the first few PIP classes to troubleshoot problems and by communicating with facilitators weekly. Facilitators received a DVD for each video condition and packets for each PIP class that included brochures, implementation instructions, and enough materials for the maximum number of parents expected to attend. Implementation of the video delivery/engagement protocol was monitored for fidelity by a research staff member who went to each site weekly.

Protocol — In all conditions, facilitators first handed out response booklets that included the risk assessment, labeled "Me, My Children, and My Family," and the invitation form. In all video conditions, the beginning of the video prompted parents to complete the risk assessment; whereas in the brochure control condition, parents were prompted by the facilitator to complete it. Then, parents in the video conditions watched the video, and parents in the brochure condition were given an equivalent amount of time to read the brochure. Afterwards, all parents completed the invitation form that included eligibility questions and a question asking their level of interest in participating in the NBP on a scale from (1) *not interested* to (4) *definitely interested*. Those indicating an interest level above 1 also provided contact information.

Professionally trained recruiters called interested parents (i.e., interest level above 1) to confirm eligibility; explain choices of group days, times, and locations; describe free childcare; and explain session videotaping. If needed, recruiters made multiple attempts to contact parents and called back if parents needed to check their schedules. During the call, parents could enroll for an upcoming group, decline to enroll, or choose to be called back for a future group (6 months later). Some parents had limited choices of days, times, and locations (e.g., fathers had fewer choices due to lower enrollment that resulted in fewer groups; parents recruited in later cohorts had fewer opportunities to attend a future group). Parents who enrolled received a confirmation letter and a call from the NBP provider to schedule the 45-min, individual NBP orientation session, which typically preceded the first group parenting skills session by 1 to 3 weeks, although occasionally, orientation was completed on the same day as the first group session.

Measures

Dependent Variables — On the invitation form, parents marked their level of *interest* in participating in the NBP on a 4-point, ordinal scale: 4 (*definitely interested in participating*), 3 (*definitely interested in participating, but not in the next month or two*), 2 (*not sure about participating and want to know more*), and 1 (*not interested in participating*).

Enrollment was a dichotomous variable for whether or not the parent enrolled over the phone during a follow-up recruitment call for eligible parents who marked 2 or above on interest.

Group leaders recorded attendance at each session. *Initiation* was a dichotomous variable for whether or not the parent attended the first session, orientation. Orientation attendance provided a good indicator of initiation (i.e., attending at least one session) because orientation was a prerequisite to attending group sessions. There were no recorded cases in which a parent attended a group session but did not attend orientation. Among those who attended orientation, 87% were known to have attended at least one of the group sessions. Only 14 cases were missing on orientation attendance (1%). For these missing cases, we used group session attendance data to confirm the parent never attended. There was one case in which orientation data were missing and the parent attended a group session; however, this case was not included in analyses because the PIP form was incomplete, which prevented eligibility from being determined.

Parents who marked (1) *not interested* on the invitation form automatically received a 0 on *enrollment* and *initiation* because they did not receive a follow-up recruitment call.

We were unable to examine the number of sessions attended as a dependent variable. In contrast to orientation attendance data, group leaders did not return group session attendance data immediately. Consequently, reporting inconsistencies were not detected in time to correct them reliably.

Risk Assessment — *Risk* was assessed with the 15-item Child Risk Index for Divorced or Separated Families scale (Tein et al. 2013), a parent-report risk index based on Dawson- McClure et al.'s (2004) work, which identified variables that best predicted child behavioral outcomes. Items assess child adjustment problems, parent conflict with ex-spouse, parent-child relationship quality, and parent internalizing symptoms. Cross-validation analyses showed that the 15-item risk index correlated highly with Dawson-McClure and colleague's (2004) risk score and predicted

mother- and child-reported behavior problems at post-intervention and 6-year follow-up (Tein et al. 2013). PIP attendees rated each problem currently occurring in their family on a 3-point scale: 1 (*never*), 2 (*sometimes*), and 3 (*always*). Scores reflect a count of items rated 2 or 3; range = 0 to 15 (α = .77). The cutoffs used in the risk feedback video (6 and 13) were based on receiver operating characteristics analyses (including specificity and sensitivity analyses) and frequency distributions as described in Tein and colleagues (2013).

Data Analytic Approach

To check the effectiveness of random assignment, chi-square analyses were done to determine if conditions differed on baseline variables. Condition was not associated with risk, parent gender, or marital history (i.e., never married vs. previously married to the other parent).

We used Mplus (Version 7, Muthén and Muthén 1998–2012) to test hypotheses with an alpha of 0.05 based on the two-tail test. The rate of missing observations was low, ranging from 0 to 2%. Missing data were handled with the full information maximum likelihood method (Arbuckle 1996). Recall that random assignment to condition was made at the PIP class level, with attendees nested within class. Thus, intraclass correlations were examined for potential clustering effects on dependent variables and the moderator. Intraclass correlations ranged from 0.02 for the risk index to 0.08 for initiation. The latter value suggests that initiation outcomes were more similar among attendees in the same class than would be expected by chance (Kreet and de Leeuw 1998; Hox 2002), possibly due to some feature of the facilitator, the class dynamics, or the demographics of the PIP class. We were interested in the individual-level engagement outcomes. Without adjusting for the clustering effect, the standard error might be underestimated. Accordingly, all tests of hypotheses adjusted for standard errors and cluster effects of PIP classes by specifying "Type = Complex" in the model (Muthén and Muthén 1998–2012).

To evaluate the population-level effectiveness of the experimental videos, all eligible parents were included in all analyses (e.g., not interested parents were included in the denominators for enrollment and initiation). Logistic regressions were used to test hypothesized effects of condition on dichotomous-dependent variables (enrollment and initiation), and ordinal regression was used to test condition effects on interest. Three sets of analyses were conducted for each dependent variable, alternating the reference condition in each set of analyses to test

hypothesized main effect comparisons. To do this, four dummy variables were entered into a regression model as predictors that contrasted the reference condition (i.e., the omitted dummy variable) to each of the other conditions (Cohen et al. 2013). To test main effects of the core principles video, separate analyses were conducted with the brochure and video control conditions as reference conditions. To test additive effects of the commitment video, the core principles video condition was used as the reference condition.

To examine hypothesized interactions between condition and risk, a similar approach was used with the risk feedback video as the reference condition. The risk feedback video explained that the NBP would help all families but would provide "very good" results for those who scored between 6 and 12 on the risk assessment and "even better or excellent benefits" for those who scored 13 or higher. Sixty percent of parents scored between 6 and 12 and 5% scored 13 or above. Because the subsample that met the second cutoff was too small to keep distinct (i.e., fewer than 10 cases in some conditions), we collapsed the two cutoffs and used a dichotomous variable in analyses: 0 (*low risk*) for scores from 0 to 5 and 1 (*high risk*) for scores 6 and above.

Results

Descriptive Statistics

Most parents expressed some interest in participating in the NBP when invited at the PIPs: in the overall sample, 20% were definitely interested now, 15% were definitely interested for a later group (not now), 22% wanted more information, and 43% were not interested. **Figure 2** shows the percent of parents in each condition that expressed interest, enrolled, and initiated. Although interest is an ordinal variable (i.e., ranging from not interested to definitely interested now), for descriptive purposes in Fig. 2, we dichotomized the interest variable to show the percent of parents who expressed some interest (definitely interested now, later, or wanting more information) versus those who were not interested. Among those assigned to a control condition, 45–55%expressed some interest; 56–62% of those assigned to an experimental video expressed some interest. Enrollment ranged from 13 to 14%in the control conditions and from 18 to 24% in the experimental conditions, whereas initiation ranged from 7 to 8% in control conditions and from 9 to 15% in experimental conditions. Interest, enrollment, and initiation

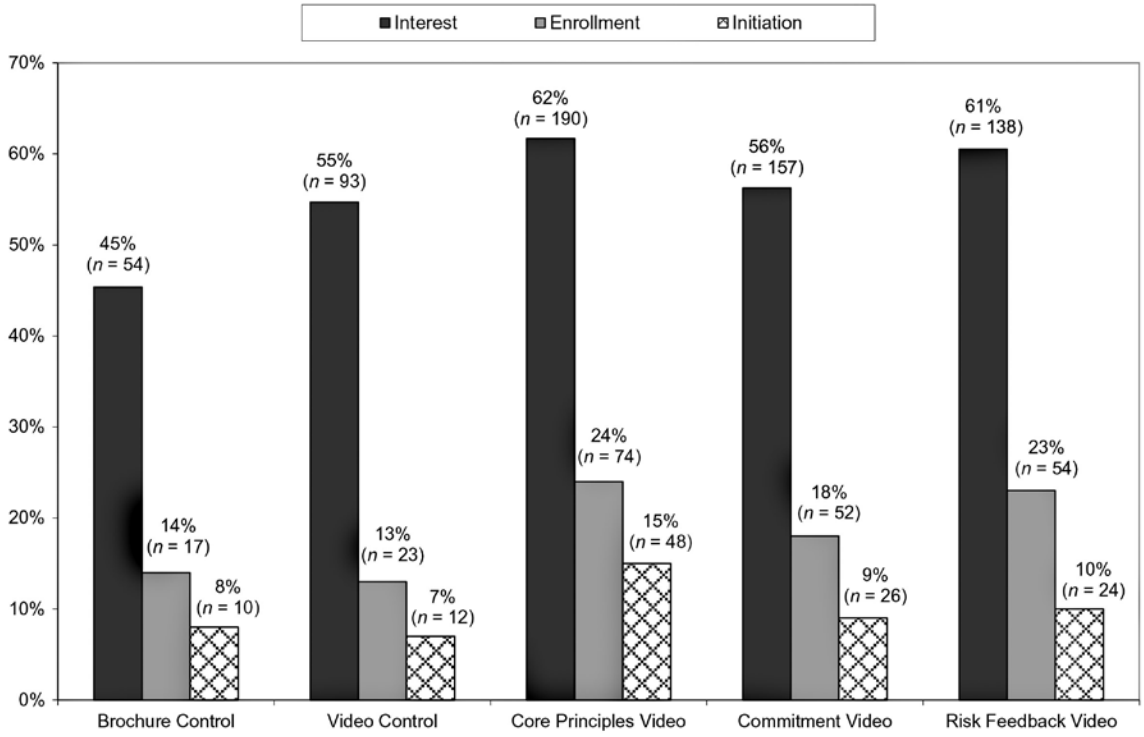

Fig. 2. Interest, enrollment, and initiation rates by condition. For descriptive purposes, the interest variable from the invitation form was dichotomized (not interested vs. definitely interested now, later, or wanting more information). Enrollment is defined as signing up for an NBP group during the follow-up recruitment call. Initiation is defined as attending the first NBP session, orientation. All percentages use total eligible parents as the denominator (i.e., not interested parents are included in the denominators for enrollment and initiation).

were moderately to highly correlated: r = .56 between interest and enrollment, r = .41 between interest and initiation, and r = .70 between enrollment and initiation.

Main and Additive Effects of the Experimental Videos

Table 1 shows results of regression analyses adjusting for clustering of participants within PIP classes. As expected, the core principles video elicited significantly higher interest than did the brochure control condition, b = 0.61, p < .05. Compared to the video control condition, this effect was a non-significant trend in the expected direction, b = 0.38, p < .10.With respect to enrollment and initiation, the opposite pattern was observed: the core principles video significantly increased enrollment (b = .69, p < .01) and initiation (b = .88, p < .05) compared

Table 1. Main and additive effect comparisons of experimental videos on engagement.

Model	*PIP Interest b (SE)*	*Phone enrollment b (SE)*	*Program initiation b (SE)*
1. *Brochure control* (*reference*)			
Video Control	.23(.28)	−.08(.35)	−.20(.50)
Core principles video	.61(.25)*	.62(.34)†	.68(.40)†
Commitment video	.35(.23)	.30(.35)	.09(.42)
Risk feedback video	.65(.24)**	.59(.33)†	.22(.46)
2. *Video control* (*reference*)			
Brochure control	−.23(.28)	.08(.35)	.20(.50)
Core principles video	.38(.22)†	.69(.26)**	.88(.38)*
Commitment video	.13(.20)	.37(.28)	.30(.40)
Risk feedback video	.43(.20)*	.66(.26)**	.42(.45)
3. *Core principles video* (*reference***)**			
Brochure control	−.61(.25)*	−.62(.34)†	−.68(.40)†
Video control	−.38(.22)†	−.69(.26)**	−.88(.38)*
Commitment video	−.26(.15)†	−.32(.26)	−.58(.26)*
Risk feedback video	.05(.16)	−.03(.23)	−.46(.33)

For PIP Interest, regression coefficients were obtained from ordinal regressions; for enrollment and initiation, coefficients were obtained from logistic regressions. Hypothesized comparisons are italicized. ** $p < .01$; * $p < .05$; † $p < .10$

to the video control condition, whereas the effects were trends in relation to the brochure control, *b*'- s = 0.62 and 0.68, $p < .10$, respectively. As shown in model 3 of **Table 1**, our additive effects hypothesis that the commitment video would increase enrollment and initiation beyond that of the core principles video was not supported. In fact, effects were in the opposite direction than expected: the core principles video elicited significantly higher initiation than did the commitment video, $b = -0.58$, $p < .05$.

Effects of Risk

We hypothesized that the risk feedback video would be more effective than the core principles or the commitment videos at engaging parents who met the high-risk cutoffs announced in the video. We did not find

support for these hypothesized interactions, *p*'s = .19–.89. However, there were significant main effects of risk. Across conditions, parents scoring high on risk had higher engagement than those who scored low on risk: 67% of high risk versus 40% of low risk showed some interest, $b = 1.19$ ($SE = .13$), $t = 9.56$, $p < .001$; 25% of high risk versus 10% of low risk enrolled, $b = 1.14$ ($SE = .18$), $t = 6.34$, $p < .001$; and 14% of high risk versus 5% of low risk initiated the NBP, $b = 1.14$ ($SE = .25$), $t = 4.62$, $p < .001$. The effects of risk and the core principles video condition were additive: 74% of parents in the core principles video condition who scored high on risk showed some interest, 29% enrolled, and 20% initiated.

Discussion

In this study, we experimentally evaluated three engagement videos, which we designed based on principles of influence (Cialdini 2009) and health behavior theories (e.g., Strecher et al. 1997). Relative to one or the other control conditions, we found consistent effects of the core principles video for increasing parent engagement into the NBP. Contrary to expectations, we did not find additive effects of the commitment video, or interactive effects of the risk feedback video, for increasing engagement relative to the core principles video.

Core Principles Video

The core principles video significantly increased interest compared to the brochure control and enrollment and initiation compared to the video control. Trends were observed in the expected direction for all other comparisons of the core principles video versus control conditions. This was the first experimental study to show that a video targeting the influence principles of reciprocation, social validation, legitimate authority, liking, and scarcity increased interest in participating in a parenting program and nearly doubled rates of enrollment (24 vs. 13–14%) and initiation (15 vs. 7–8%). This doubling of rates reflects a small-to-medium effect size (odds ratio ~2). The initiation rate for the core principles video (15%) was higher than the rates reported for most large-scale studies conducted under real-world conditions (1 to 7%) (Cullen et al. 2016; Fagan et al. 2009; Prinz et al. 2009) and comparable to the high end reported by Spoth et al. (2007) (17%). Given that video has potential for wide reach

at low cost once produced, these findings suggest that engagement videos incorporating influence principles represent a promising way to engage parents into evidence-based parenting programs.

These findings corroborate results of other experimental engagement studies (Shepard et al. 2012; Winslow et al. 2016), suggesting scale-up of effective parenting interventions would benefit from use of evidence-based engagement practices. Our findings demonstrated that interest, enrollment, and initiation can be increased using carefully planned, theory-based strategies. In other research, we have found that theory-based engagement strategies can increase the number of sessions attended as well (Winslow et al. 2016). The population-level impact of an intervention is a function of both its efficacy and the proportion of the population that participates (i.e., population-adjusted effect size) (Braver and Smith 1996; Shamblen and Derzon 2009). Therefore, maximizing participation is just as important as maximizing an intervention's effectiveness when moving evidence-based interventions to practice.

Commitment Video

It was surprising that the commitment video did not increase parent engagement beyond that of the core principles video and in fact appeared to be less effective in promoting initiation. We had expected the commitment video to increase enrollment and initiation because the video encouraged parents to make a public commitment to a valued goal, which the literature suggests should enhance behavioral follow-through (Cialdini 2009; Martin et al. 2012). However, the efficacy of the specific procedure used in commitment video to target the commitment/consistency principle may have been diminished by the fact that, regardless of which concern a parent chose, the video told parents that the NBP would help. This may have inadvertently undermined the credibility of the claims the video made. In future research, a more effective way to target the commitment/consistency principle might be to provide personalized feedback regarding intervention benefits that are specific and limited only to the goal to which the parent has publicly committed. Engagement approaches that include personalized strategies, such as problem-solving barriers and reviewing parents' child-focused goals and showing how the intervention will help achieve those goals, have been effective at increasing initiation and number of sessions attended (Kim et al. 2012; Winslow et al. 2016).

Risk Feedback Video

The risk feedback condition incorporated a self-assessment procedure in which parents completed a risk assessment scale, tallied the number of problems they endorsed, and then heard how the NBP would help. The risk feedback video conveyed the message that parents scoring high on this scale would receive the most benefits from the program. Accordingly, we expected that the risk feedback video would boost engagement of high-risk families compared to the core principles and commitment videos. This hypothesis was not supported. One possible explanation is that the efficacy of this procedure may have been muted because all parents completed the risk assessment scale at the beginning of the class in every condition. While this enabled us to examine risk level as both a potential main effect and as a moderator, it also may have produced unintended effects on engagement. Only those in the risk feedback condition self-scored the risk assessment and received feedback from the video; however, the process of merely completing the risk assessment scale may have activated parents' self-evaluation sufficiently that the self-scoring and feedback procedures were not necessary for parents with high perceived problems to realize the need for intervention. This interpretation is supported by the main effect observed between risk level and engagement outcomes.

Although the lack of interaction between risk and the risk feedback video condition was unanticipated, the main effects of risk on engagement are encouraging. In all conditions and for all dependent variables, parents scoring high on risk had higher engagement than those who scored low on risk. This is consistent with previous findings that parents who reported high child maladjustment were more likely to enroll in the NBP than those reporting few problems (Winslow et al. 2009). Prior research with the NBP program suggests that high-risk families benefited the most from the intervention at a 6-year follow-up (Dawson-McClure et al. 2004). Similar findings have been discovered in other preventive parenting studies (e.g., Sandler et al. 2011). Thus, parents who could most benefit tended to self-select into the NBP, which has positive implications for the public health impact of this intervention, as well as for other preventive interventions if the main effect of risk generalizes.

Interest to Initiation Drop Off

The core principles video produced effects on all three aspects of engagement, including initiation in the program, which suggests that the core principles video could increase population-level participation rates. However, we observed a substantial drop off from initial interest to program initiation (e.g., 74% of parents who scored high on risk expressed some level of interest in participating but only 20% of those who scored high on risk initiated the NBP). This "intention-behavior gap" is a widely observed phenomenon in behavior change research (Sheeran and Webb 2016) and in the preventive parenting field (Baker et al. 2011). This finding highlights the public health challenge of how to provide an effective prevention strategy that will reach the 74% of this population who is both interested in the service and could benefit (i.e., high risk).

One approach would be to implement additional engagement strategies that proceed parents' viewing of the core principles video to sustain motivation over time (from the initial viewing to the first session). For example, the follow-up phone call could incorporate personalized strategies (i.e., barrier problem-solving and goal matching) that have increased initiation and the number of sessions attended in other research (Becker et al. 2013; Kim et al. 2012; Winslow et al. 2016). Although such strategies have increased the number of sessions attended, additional strategies may be needed to maximize ongoing participation because other factors such as group cohesion come into play once an intervention begins (Carpentier et al. 2007). To sustain participation beyond initiation, future research should use a theory-based approach to identify malleable predictors of program completion and active session involvement and design strategies to target these predictors.

Strengths and Limitations

The randomized controlled design of this study provided a strong test of the effects of the engagement videos. Conditions were equivalent at baseline on variables assessed, suggesting randomization was successful and unmeasured predictors of engagement probably did not confound the experiment. Randomization was done at the PIP class level blocking on facilitator because randomization at the individual level would have increased the likelihood of contamination due to the group context of the PIPs. Consequently, the shared and unique context of each group might have influenced individuals' responses to engagement strategies (i.e.,

data were not independent). As a result, the study might have been less efficient and had reduced power to detect effects.

The experiment was embedded in real-world practice, which bolsters the external validity of the findings and suggests the engagement methods could be feasible for wide-scale implementation. However, because the study was embedded in existing services, our time for assessment was limited, so we were unable to assess sociocultural variables (i.e., education, income, race/ethnicity) that might have moderated the effectiveness of the engagement videos. In addition, it is unclear if and how the court-mandated context in which the experiment took place might have affected engagement. For example, parents might have been less receptive to taking another parenting class, especially if they had negative feelings about having to attend the PIP. Fortunately, this potential contextual effect did not confound the experiment because the court-mandated context was the same in all conditions.

In addition, the additive design we used to test the incremental effectiveness of different theory-based strategies resulted in videos that varied somewhat in length, from 11 min for the core principles video to 14½ min for the risk feedback video. We have no reason to believe that the variability in length impacted engagement; however, we cannot rule out this possibility. In addition, we were unable to examine condition effects on the number of sessions attended due to inconsistent attendance reporting by group leaders.

Although the study design allowed us to compare some parts of the underlying theories (e.g., commitment/consistency principle vs. core principles), we were not able to partition effects of social influence versus perceived benefits or identify which core social influence principles were driving effects. In future research, these questions could be addressed by examining changes in putative mediators. Finally, the effectiveness of the videos might be strengthened by implementing additional engagement strategies that effectively close the gap from interest to initiation. For example, in other research, we are developing and evaluating brief motivational strategies (e.g., engagement call) that appear to help reduce this gap (Winslow et al. 2016).

Conclusions

To our knowledge, this was the first study to evaluate video-based strategies for increasing engagement into a preventive parenting

intervention using an experimental design. It was also the first study to integrate and experimentally test engagement strategies based on social influence and health behavior theories. We found the most consistent effects for the video that targeted the health behavior constructs of perceived benefits and barriers and the social influence principles of reciprocation, social validation, legitimate authority, liking, and scarcity. Unexpectedly, we did not find additive effects of the video that targeted the commitment/consistency principle nor the hypothesized interaction between risk and the risk feedback video condition. However, encouragingly, the main effects of risk indicated that parents who scored high on risk were more likely to engage in all conditions than those who scored low on risk. Results of this study suggest that engagement videos based on social influence and health behavior theories could provide an effective and feasible method for increasing engagement in evidence-based parenting programs, which would help maximize the public health benefits of these interventions.

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Conflicts of Interest — The authors declare that they have no conflict of interest.

Ethical Approval — All procedures in this study 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. All study procedures were reviewed and approved by Arizona State University's Institutional Review Board.

Informed Consent — Data were collected anonymously for PIP participants who were not interested in participating in the New Beginnings Program. Those who expressed interest signed consent to link their survey data to themselves through the use of unique identifiers. Informed consent was obtained from all parents who participated in the New Beginnings Program.

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