

# Computer-mediated parenting education: Digital family service provision



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## ARTICLE INFO

### Article history:

Received 17 August 2015

Received in revised form 11 January 2016

Accepted 12 January 2016

Available online 14 January 2016

### Keywords:

Parent education

Computer-mediated services

Employer-based service provision

Primary prevention

## ABSTRACT

Computer-mediated family service provision holds the promise of equal efficacy, lower cost, and higher accessibility than traditional parent education groups that require parents to travel to a service venue, thereby alleviating often-cited pragmatic barriers to participation in parenting programs. Hence, examinations of which populations are attracted to particular service modalities are a necessary step in building a reliable evidence base. The scant computer-mediated parent education literature indicates that online parenting programs are beneficial to indicated or secondary prevention programs seeking to bolster specific parent, child, or dyadic outcomes; it is reasonable to ask, then, if this service provision mechanism would be equally effective for all parents, outside of targeted intervention designs. The current paper describes the provision of computer-mediated parenting services to a large sample of parents ( $N = 192$ , 89.6% female, average age 40 years; 27% racial/ethnic minority) with no shared prevention indicator through an employer-based program. Our research questions on service provision and utilization include: Who is served by primary prevention programs like this? Do participants report satisfaction with computer-mediated services commensurate with traditional face-to-face services? In addition to significant differences in perceived social support by gender, marital status, and number of children younger than 18 living in the home, results from three measures of parenting attitudes and behaviors (e.g., discipline style, sense of competence, and locus of control), indicate that this sample has some confidence in their general abilities as parents, but struggle to feel an internal sense of control over their children's behavior, with the greatest number of parents tending towards overreactive discipline. Associations between these indicate a consistent pattern such that dysfunctional parenting practices tend to co-occur, and parents who do employ dysfunctional strategies feel less competent as parents. Participants report high satisfaction with these services, at equal or better rates than reported in the parent education literature. This work provides evidence that computer-mediated parenting services can attract and exceed expectations of participants with clinical and subclinical but moderate parenting needs, indicating that this service delivery mode has the potential to reach a wide number of individuals ideally situated for prevention services.

Published by Elsevier Ltd.

## 1. Introduction

In general, parenting education services can either be universal and support general adaptive parenting and family functioning (Webster-Stratton, 2001), or they can target particular child behaviors (i.e., disruptive behavior as found in O'Connor, Rodriguez, Cappella, Morris, and Mcclowry (2012)) or specific samples (i.e., incarcerated fathers as found in Wilczak and Markstrom (1999)). Further, parenting education offers families support that is, on average, far more cost-effective than therapeutic intervention (Crane & Payne, 2011). In 2015, the Pew Research Center reported that 75% of parents with children under age 18 use Internet-based services to find information about parenting. Of these parents, 74% use social media as a source of social support (Duggan, Lenhart, Lampe, & Ellison, 2015). Seventy-nine

percent of parents see social media as a useful place to receive helpful information in general, and 59% report receiving valuable information regarding parenting via social media. The field of family science is well positioned to turn to technology-based service provision options as a means of connecting with a greater number of families who are seeking parenting support and information. This avenue for family service provision holds the promise of equal efficacy, lower cost, and higher accessibility than traditional parent education groups, which require parents to travel to a service venue, thereby alleviating often-cited pragmatic barriers to participation in parenting programs (Enebrink, Högström, Forster, & Ghaderi, 2012; Kazdin, Holland, Crowley, & Breton, 1997; Koerting et al., 2013).

Plantin and Daneback (2009) found that the majority of today's parents search for both information and social support on the Internet, but that patterns in computer-based information and support seeking may be different for different parents. In their sample, first-time, middle class mothers between the ages of 30 and 35 were most active in searching for parenting information on the Internet. This is not

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surprising, given that far more mothers than fathers participate in parenting education programs. For example, [Schultz, Schmidt, and Stichter \(2011\)](#) performed a comprehensive review of parenting education programs for parents of children with Autism, and found that only 23% of participants were fathers. Further, meta-analyses of participation trends in parenting programs echo these findings, with rates of fathers' enrollment around one quarter of mothers' enrollment (~20% for a given program; [Stahlschmidt, Threlfall, Seay, Lewis, & Kohl, 2013](#)).

[Kazdin and Blase \(2011, p. 28\)](#) call for "a portfolio of preventive interventions with various models," and evidence supporting the use of computer-mediated services is mounting. [Gelatt, Adler-Baeder, and Seeley \(2010\)](#) conducted a randomized control trial to evaluate the efficacy of an interactive web-based family life education program for stepfamilies. The program used videos to help parents and stepparents find practical solutions to common challenges that stepfamilies experience. In their diverse sample of 300 parents and stepparents with a child aged 11–15 years, participation positively influenced several key areas of parenting and family functioning, including a decrease in over-reactive parenting and better stepfamily adjustment. [Pacifi, Delaney, White, Nelson, and Cummings \(2006\)](#) report positive gains in parent knowledge for foster and kinship caregivers after computer-mediated courses offered in a randomized experimental study with an intervention and control group, and [Enebrink et al. \(2012\)](#) found that, in a randomized study of parents of children aged 3–12 years diagnosed with conduct disorders, computer-mediated parent training yielded outcomes comparable to many group-based, in-person parent training programs, including more positive child behaviors (e.g., prosocial behavior) and a reduction of problem behaviors (e.g., conduct problems, hyperactivity) in children. Beyond these few more thorough studies, this computer-mediated parenting education literature includes several studies that present small pilot efforts, center service provision around niche populations, or focus on program development or feasibility without providing rigorous empirical testing ([Choi & Bakken, 2010](#); [Feil et al., 2008](#); [Kobak et al., 2011](#); [Loree, Belic, & Ondersma, 2014](#); [Wade, Oberjohn, Burkhardt, & Greenberg, 2009](#)). Across even these few studies, though, computer-mediated parenting programs receive high parent satisfaction scores, such that between 71% and 87% of participants were at least 80% satisfied with their service ([Pacifi et al., 2006](#); [Taylor et al., 2008](#)), which suggests that parents are open and motivated to engage in family programming of this type.

### 1.1. Feasibility of employer-based computer-mediated parenting education

The existing literature on computer-mediated parenting education programs supports its feasibility in a general population (e.g. [Choi & Bakken, 2010](#), [Wade et al., 2009](#)). However, to date, no study considers whether and in what ways corporations can use computer-mediated parenting education programs to support their employees' efforts to balance their work- and family-related responsibilities.

It is worth noting that previous computer-mediated parenting education programs largely service a privileged population of parents in that persons who have access to these programs tend to be partnered, have annual incomes higher than the national average, and are more educated than the typical population of human service recipients ([Gelatt et al., 2010](#); [Pacifi et al., 2006](#); [Taylor et al., 2008](#)). As a consequence, a concern about generalizability arises in situations where corporations offer computer-mediated parenting education to their employees, given that the individuals serviced (a) must be employed at the corporation, (b) must have access to the appropriate technology to participate in the program within their work setting, and (c) must have acceptable flexibility within their work schedule to allow for a break at the time the program takes place.

While it is true that computer-mediated parenting education may be more accessible for a more affluent sample of parents, the literature on affluent parents suggest that they, too, are seeking parenting education to address their concerns and to improve the quality of their home

environment ([Dearing & Taylor, 2007](#)). It may be that the type of struggles faced by this population is different from their lower-resource counterparts. For example, [Luthar and Barkin \(2012\)](#) and [Randall, Bohnert, and Travers \(2015\)](#) argue that affluent parents may place pressure on their children to succeed and impose perfectionist standards that are difficult for their children to meet. Such high and often unrealistic standards are related to children's adjustment problems, including increased susceptibility to negative peer pressure, increased internalizing problems, and children's decreased life satisfaction. Further, there is evidence that affluent parents experience work–family conflicts that preclude leaving work in order to be home with their children when needed during the school day or monitoring their children during after-school work hours ([Luthar & Latendresse, 2005](#)). In addition to the demands of the work day schedule, they also tend to endorse beliefs that children should be independent and self-sufficient and they are likely to treat their children as more mature than their developmental stage might equip them to be ([Luthar & Latendresse, 2005](#); [Padilla-Walker, Christensen, & Day, 2011](#)). Corporation-based parenting education delivered via webinar may be particularly useful to this population of parents due to ease of access and ability to address the common concerns experienced by this group.

### 1.2. Satisfaction outcomes

Satisfaction with service provision comprised a variety of specific indicators, such as the enjoyment of the physical space where service is provided, the staff involved in service provision, communication between client and provider, client engagement, effectiveness of the service, amount of payment required, and the ease of processes involved ([Haskard, DiMatteo, & Heritage, 2009](#); [Pilgrim, Cardona, Pinder, & Sonenstein, 2014](#); [Simmons et al., 2014](#)). As indicated above, satisfaction with parent education programs, particularly computer-mediated programs, tends to be high ([Pacifi et al., 2006](#); [Taylor et al., 2008](#)). Broader research on program or service satisfaction beyond parent education highlights the importance of client satisfaction when assessing the utility and effectiveness of service provision. For example, satisfied individuals are more likely to perceive quality of care or of service, are more likely to comply with program recommendations, and are more likely to return for further services ([Budzi, Lurie, Singh, & Hooker, 2010](#); [Rosenberg, Waugh, & Burnhill, 1998](#)). Furthermore, [Heubeck, Otte, and Lauth \(2015\)](#) found that, when services are offered in group settings, there is no change in level of client satisfaction when compared to clients who are receiving individual services. Taken together, there is evidence suggesting that a computer-mediated, group-based parenting education program offered online could be a satisfactory experience for parents.

Though not often studied in the broader parenting education literature, parent satisfaction is often assessed when providing special education services to children and families. Parent satisfaction is related to higher parental engagement in their children's education and to the perception of quality care ([Bitterman, Daley, Misra, Carlson, & Markowitz, 2008](#); [Laws & Millward, 2001](#)). Satisfied parents often enjoy higher self-efficacy, are more likely to believe that they can influence the success and effectiveness of their child's education, and that they can contribute to their child's school environment ([Laws & Millward, 2001](#)). Given previous research on the relationship between parental satisfaction with special education support services and continued service utilization ([Clifford & Minnes, 2013](#)), satisfaction with parenting education may serve as a meaningful predictor of participant engagement and parenting program utilization, and, as such, may be an important marker of broader parenting education program feasibility.

### 1.3. The present study

The studies mentioned above indicate that computer-mediated parenting programs are beneficial to targeted or secondary prevention

programs seeking to bolster specific parent, child, or dyadic outcomes; it is reasonable to ask, then, if this service provision mechanism would be equally effective for all parents, outside of targeted intervention designs. There is very little published work to help answer this question. One exception is Sanders, Calam, Durand, Liversidge, and Carmont's (2008) assessment of the Positive Parenting Program (PPP), which indicates that a computer-mediated modification of PPP improved parenting and child outcomes in a large randomized study. Parents (94% biological mothers of a child 2–9 years old exhibiting concerning behavior) in this study were recruited through national and local newspapers, local news programs, posters, and emails, suggesting that a primary prevention approach to providing parenting education can be effective. The field of family service provision is well-positioned to guide effective program development and, as work by Hughes, Bowers, Thomann Mitchell, Curtis, and Ebata (2012) suggests, has identified frameworks for such guidance. Clearly, more work is needed before claims of effectiveness for computer-mediated service delivery modes can be confidently made. The goal of this paper is to build this literature by describing trends in participation in a computer-mediated primary prevention model for parenting education. Our aims are to demonstrate that self-selecting parents engaged in computer-mediated parent education 1) have low-to-moderate needs best served by sub-clinical prevention supports; and 2) that the use of computer-mediated service delivery does not compromise the satisfaction parents report with parent education services.

The current paper describes an effort to provide computer-mediated parenting services to a large sample of parents with no shared prevention indicator. Our research questions centered on participation trends: Do computer-mediated parenting education services differ in their utilization patterns or satisfaction rates than brick-and-mortar, or face-to-face programs? Could participants drawn to participate in computer-mediated services be described by a coherent pattern of participant characteristics, parenting style, and attitudes about parenting?

## 2. Methods

All study materials were approved by the Institutional Review Board at the University of Connecticut in 2012, as well as by our corporate partner's legal review team.

### 2.1. Participants

Participants ( $N = 215$ ) were recruited from a global insurance company that employs approximately 47,860 individuals (76% female). Redundant entries from participants who enrolled in more than one webinar during the data collection timeframe were eliminated, reducing our sample size to 192 (89.6% of whom are female) first-time enrollees. Racial/ethnic diversity within the employee population comprised 69% European Caucasian/White, 17% African American/Black, 5% Asian, <1% Native Hawaiian/Pacific Islander, and 1% American Indian/Alaskan Native. Our sample approximates this racial/ethnic breakdown with a total of 26.6% racial/ethnic minority participants (73.4% European Caucasian/White – see Table 1). The company offers parenting education opportunities as part of their employee wellness program; many of the wellness programs are offered through web-based platforms, including the parent education webinars, which allow for real-time conversation between the session facilitator and participants. Employees were invited to sign up for wellness program offerings at the beginning of each month. Typically, webinars were held during the noon lunch hour, drawing an average group size of 75–110 participants and focusing on family-related topics such as Toxic Stress, Building Emotional Intelligence, and Positive Discipline. Recruitment spanned 12 parent education webinars offered over 4 months, with an average of 19% of total webinar attendees per session volunteering to evaluate their experience in the present study.

**Table 1**  
Descriptive results.

| Demographic characteristics<br>( $N = 192$ ) | n                               | %     |      |
|----------------------------------------------|---------------------------------|-------|------|
| Gender                                       | Male                            | 19    | 10.0 |
|                                              | Female                          | 172   | 90.0 |
| Ethnicity                                    | Hispanic/Latino                 | 10    | 5.2  |
|                                              | Non-Hispanic/Latino             | 181   | 94.8 |
| Race                                         | African American/Black          | 14    | 7.3  |
|                                              | European Caucasian/White        | 141   | 73.4 |
|                                              | Asian American                  | 8     | 4.2  |
|                                              | Pacific Islander                | 2     | 1.0  |
|                                              | Biracial                        | 3     | 1.6  |
|                                              | Other                           | 13    | 6.8  |
| Marital status                               | Single, never married           | 15    | 7.8  |
|                                              | Single, living with partner     | 4     | 2.1  |
|                                              | Married or partnered            | 147   | 76.6 |
|                                              | Married, separated from partner | 2     | 1.0  |
|                                              | Divorced                        | 21    | 10.9 |
|                                              | Widowed                         | 2     | 1.0  |
| Highest level of education                   | High school diploma/equivalent  | 8     | 4.2  |
|                                              | Some college, but no degree     | 37    | 19.3 |
|                                              | Associate's degree              | 35    | 18.2 |
|                                              | Bachelor's degree               | 65    | 33.9 |
|                                              | Some graduate, no degree        | 9     | 4.7  |
|                                              | Master's degree                 | 37    | 19.3 |
|                                              | Doctorate degree                | 1     | 0.5  |
|                                              |                                 |       |      |
| Household income                             | \$20,000–\$38,999               | 9     | 4.7  |
|                                              | \$39,000–\$59,999               | 18    | 9.4  |
|                                              | \$60,000–\$99,999               | 70    | 36.5 |
|                                              | More than \$100,000             | 94    | 49.0 |
| Variable of interest                         |                                 | M     | SD   |
| Age                                          |                                 | 40.4  | 7.4  |
| Social support                               |                                 |       |      |
| Friends                                      |                                 | 5.07  | 1.40 |
| Significant other                            |                                 | 5.54  | 1.47 |
| Family                                       |                                 | 5.15  | 1.56 |
| Parenting discipline style                   |                                 |       |      |
| Laxness                                      |                                 | 2.71  | 0.98 |
| Over-reactive                                |                                 | 3.81  | 1.19 |
| Hostility                                    |                                 | 2.12  | 1.06 |
| Locus of control wrt child behavior          |                                 | 29.33 | 7.78 |
| Sense of competence                          |                                 | 3.70  | 0.66 |
| Satisfaction                                 |                                 | 28.0  | 3.30 |

The sample described in this study comprised individuals with an average age of 40.44 years ( $SD = 7.93$ ), 94.8% of whom reported being employed full-time. On average, the vast majority of families were parenting multiple children younger than 14 years of age. Seventy-eight percent of participants reported one or two children younger than 18 living in the home, with the largest family size of six children. Table 1 summarizes participant characteristics including participant race, marital status (78.7% married/partnered), the highest completed education level (59% bachelor's degree or higher), and annual household income (58.3% more than \$100 k). More than half of the sample (55.5%) had previously attended a parent education program, and 83% ( $n = 88$ ) of those parents who did have parent education experience had previously engaged in an online parent education webinar.

### 2.2. Measures

Electronic surveys were administered at two time points. Pre-webinar data on demographic characteristics, social support, and the three parenting surveys described below were collected 24 h prior to the start of the webinar session; follow-up surveys on participant satisfaction were distributed via email within 48 h after the webinar session.

#### 2.2.1. Demographics sheet

The Demographics Sheet was composed of questions concerning racial/ethnic background, gender, marital and employment status, level of household income, and level of education, number and ages of children

living in the home, and parent education history (i.e., any previous parent education classes taken, including experience with computer-mediated classes).

### 2.2.2. Multidimensional Scale of Perceived Social Support

The Multidimensional Scale of Perceived Social Support (MSPSS; Zimet, Dahlem, Zimet, & Farley, 1988) is a 12-item questionnaire regarding individuals' perceived social support with scale scores specific to the support perceived from friends, family, and significant others. The measure uses a 7-point Likert scale where 7 = *very strongly agree* and 1 = *very strongly disagree*. Higher scores indicate greater levels of perceived social support. The scale has good internal consistency and internal reliability. Cronbach's coefficient alpha was .88 for the scale as a whole and .85, .87, and .91 for the friends, family, and significant other subscales respectively (Zimet et al., 1988). In the present study, alpha was .96 for the total scale and .95 for each of the three subscales.

### 2.2.3. Parental Locus of Control Scale

The Parental Control of Child's Behavior (PCCB) subscale of the Parental Locus of Control Scale (LoC-CB; Campis, Lyman, & Prentice-Dunn, 1986) consists of 10 questions and identifies the extent to which parents feel able to control their children's behavior, with high scores indicating parents' perceived inability to control their children's behavior and an external locus of control when faced with the stresses of parenting. The measure uses a 5-point Likert scale where 5 = *strongly agree* and 1 = *strongly disagree* and has acceptable internal consistency with a Cronbach's alpha of .71 (Campis et al., 1986). In the present sample, Cronbach's alpha was .89.

### 2.2.4. Parenting Sense of Competence Scale

The Parenting Sense of Competence (PSoc; Johnston & Mash, 1989) scale is a measure of parental self-efficacy. Parents rate the extent to which they agree or disagree with statements concerning childrearing-related feelings of accomplishment and competence using a 6-point Likert scale where 6 = *strongly disagree* and 1 = *strongly agree*. Higher scores indicate greater parenting self-esteem. Johnston and Mash (1989) reported internal consistencies of .75 for the Satisfaction scale, .76 for the Efficacy scale, and .79 for the overall scale; in the current paper, alphas for the Satisfaction scale, Efficacy scale, and total scale were .79, .81, and .83 respectively.

### 2.2.5. Parenting Scale

The Parenting Scale (Arnold, O'Leary, Wolff, & Acker, 1993; Rhoades & O'Leary, 2007) is a 30-item scale that assesses parents' disciplinary practices. Parents indicate their tendencies to use specific discipline strategies using a 7-point Likert scale where 7 = *frequent use of discipline mistake* and 1 = *frequent use of effective discipline*. The measure has acceptable internal consistency with Cronbach's alphas for Laxness, Over-reactivity, and Hostility factors reported as .83, .82, and .81, respectively. Scores from this measure indicate the extent to which dysfunctional discipline practices are used by parents, including laxness (i.e., permissive, inconsistent discipline), over-reactivity (i.e., irritability and harsh, authoritarian discipline), and hostility (use of verbal or physical force). Higher scores signify a greater usage of dysfunctional parenting practices. This measure had acceptable internal consistency in the present sample, with alphas of .72, .78, and .54, for the laxness, over-reactivity, and hostility subscales respectively.

### 2.2.6. Client Satisfaction Questionnaire

Participants' level of satisfaction with the parent education program was determined with the Client Satisfaction Questionnaire (CSQ; Larsen, Attkisson, Hargreaves, & Nguyen, 1979). The CSQ was designed specifically to assess clients' general satisfaction within the domains of health and human services. Participants rated the quality of the services that they received and the extent to which they would recommend the program to a friend using the 8-item questionnaire. Possible range

of scores on the CSQ is 8–32, where higher scores indicate greater satisfaction with the program. The reported internal consistency of the CSQ is excellent (Cronbach's alpha = .91) and it was found to be acceptable in the present sample (Cronbach's alpha = .84).

## 2.3. Procedure

In the present study, participants were asked to complete a set of questionnaires prior to the start of the parenting education webinars. Participants who pre-registered for the webinars ( $n = 195$ ) received an email 24 h prior to its start with a link to the survey website, which asked participants to complete the measures, including a demographics sheet, the Multidimensional Scale of Perceived Social Support, the Parental Locus of Control Scale, the Parenting Sense of Competence Scale, and the Parenting Scale. Participants were not required to pre-register for the webinars, nor were they required to complete the pre-webinar survey in order to participate in the webinars. Completion of these measures took less than 15 min. Upon completion of each webinar, links to the satisfaction survey were distributed to all webinar participants via email within 48 h. In cases where participants enrolled in multiple webinars in the series, only the first set of completed pre-webinar measures and satisfaction survey was used.

On the day of each webinar session, participants logged on to an audiovisual conferencing program to attend the webinar. Though no webcams were used during the session, the participants had access to the facilitator's PowerPoint presentation and the audio capabilities and live chat text window software options were enabled so that participants could ask questions to the facilitator throughout the webinar. With 30 years of experience as a parent educator, the facilitator was skilled in actively engaging with the participants during each session by asking questions to participants and enabling the "hand raising" function on the conferencing software. This function allowed the facilitator to ask questions that might be answered with a show of hands, giving important formative information about the group back to the facilitator in real time. For example, the facilitator frequently used this function to assess how common a shared experience was within the audience, asking – for example – "how many of you have ever felt frustrated when....?". The facilitator was explicit in structuring these points of feedback and would present for five to seven minutes, on average, before eliciting feedback from the participants. The live chat text window open to all participants and the use of the "hand raising" signals encouraged active engagement and mutual participation so that participants could get the most out of their experience and could enjoy a more interactive experience than webinars that permit only passive viewership.

## 3. Results

There were no significant differences in parenting or social support measures by participants' race/ethnicity, age, or the highest education level; there were, however, significant differences by gender, marital status, and the number of children younger than 18 living in the home ( $\mu$  and  $SD$  are presented in Table 1). Men reported significantly higher social support ( $\mu = 6.06$ ,  $SD = 1.02$ ) from significant others compared to women ( $\mu = 5.50$ ,  $SD = 1.49$ ;  $t_{(25)} = 2.1$ ,  $p < .05$ ; test adjusted for inequality of variances). Similarly, there were significant differences in social support by marital status, such that married or partnered people reported higher social support from their significant others ( $\mu = 5.70$ ,  $SD = 1.42$ ) than those who were not currently partnered ( $\mu = 4.91$ ,  $SD = 1.54$ ;  $t_{(183)} = 2.97$ ,  $p < .01$ ). This same pattern was evident in reports of social support from family ( $\mu_{\text{partnered}} = 5.29$ ,  $SD = 1.49$ ;  $\mu_{\text{non-partnered}} = 4.52$ ,  $SD = 1.71$ ;  $t_{(183)} = 2.74$ ,  $p < .01$ ). There were significant effects for the number of children younger than 18 living in the home on parent reports of social support from significant others and parents' sense of competence: Those with 3 or more children reported lower social support from their significant other than those with fewer than 3 children ( $F_{(2,183)} = 4.1$ ,  $p < .05$ ) and levels of

competence were lower for those with greater numbers of children ( $F_{(2166)} = 3.1, p < .05$ ).

The majority of participants ( $n = 128, 67\%$ ) reported having moderate parental confidence, but often felt unable to control their children's behavior sufficiently to meet their expectations of themselves as parents. Parents in this sample were more likely to use over-reactive discipline styles than either hostile or lax responses, with average subscale scores of 2.7 for laxness, 3.8 for over-reactivity, and 2.1 for hostility. Although the means for this sample on the whole fall below the clinical cutoffs for each discipline style (3.5, 3.9, and 2.9, respectively; Rhoades & O'Leary, 2007), the number of participants with scores over these thresholds is perhaps worth noting. Half (50.3%) of participants were over the clinical cutoff for over-reactivity, one fifth (20%) of participants were over the clinical cutoff for laxness, and nearly a quarter (23.9%) of participants were over the clinical threshold for hostility. Based on the majority trends from these three measures of parenting attitudes and behaviors, this sample could be best summarized as having some confidence in their general abilities as a parent, but struggle to feel an internal sense of control over their children's behavior, with the greatest number of parents tending towards over-reactive discipline.

Beyond significant associations among the demographic characteristics income, age, and education, there were significant correlations between parents' sense of competence and sense of control with regard to their child's behavior (in addition to expected associations between all subscales of the Parenting Scales; Rhoades & O'Leary, 2007). These associations indicate a consistent pattern such that dysfunctional parenting practices tend to co-occur, and parents who do employ dysfunctional strategies feel less competent as parents, as summarized in Table 2.

Post-webinar satisfaction data were collected from 35 participants. Given that the possible range of scores for the CSQ is 8–32, the mean satisfaction score of 28 ( $SD = 3.3$ ) indicates that these participants were, on average, highly satisfied with the webinar. These satisfaction rates are equal to or better than the rates reported in the parenting education literature (Pacifi et al., 2006; Taylor et al., 2008), indicating that there is promise in delivering parenting education that is highly satisfactory to parents in webinar format.

Due to the corporate employer's concerns about participants' anonymity and their desire to use satisfaction data from the maximum number of employees for program evaluation purposes, satisfaction survey links were sent to all webinar attendees regardless of whether they had signed up for the webinar in advance and had completed the pre-webinar measure set. As a consequence, only 57% ( $n = 20$ ) of satisfaction responses can be linked to participants' demographic characteristics. Among these, no significant differences in satisfaction scores were found based on parents' reported age, gender, race, marital status, or number of children, indicating that satisfaction was not significantly associated with participant demographic characteristics in the present sample.

**Table 2**  
Associations between participant characteristics and variables of interest ( $N = 192$ ).

| Variable of interest | 1     | 2      | 3      | 4      | 5      | 6   |
|----------------------|-------|--------|--------|--------|--------|-----|
| Number of children   | –     |        |        |        |        |     |
| Laxness              | –.01  | –      |        |        |        |     |
| Over-reactivity      | .16*  | .38**  | –      |        |        |     |
| Hostility            | .03   | .28**  | .48**  | –      |        |     |
| LoC child behavior   | .13   | .44**  | .66**  | .36**  | –      |     |
| Sense of competence  | –.17* | –.42** | –.63** | –.25** | –.67** | –   |
| Satisfaction†        | .06   | .06    | –.29   | .10    | –.07   | .04 |

\* $p < .05$ , \*\* $p < .01$ .

† Correlations between parenting variables of interest and satisfaction scores are reported for linked cases ( $n = 20$ ).

#### 4. Discussion

Results from this evaluation of a novel, employer-based parenting education webinar series contribute much needed detail to the literature on computer-mediated service provision. Support seeking through computer-mediated platforms (i.e., distance learning, social networking, and other online support group mechanisms) is increasingly common (Johnson, 2015); therefore, examinations of which populations are most attracted to, and best served by, particular venues is a necessary step in building a reliable evidence base.

Kazdin and Blase (2011) suggest that "...the use of various technologies to deliver treatment has the ability to reach a large proportion of the population in need of services" (p. 25). One of the potential benefits of using computer-mediated service delivery is greater access to a population of parents whose work schedules and settings lend themselves to webinars. Parenting education delivered via webinar may be particularly desirable for parents who struggle with work-family balance or who prefer the relative anonymity of the webinar environment. Given the full time employment status of the participants in this study, the workplace environment makes for an ideal service venue for participating in web-based parent education programs. It is often erroneously assumed that affluence inherently indicates a lack of parenting stressors. To the contrary, previous research confirms that even wealthy parents with access to abundant resources could benefit from parent education services that address the needs of all families regardless of financial status (Dearing & Taylor, 2007; Luthar & Barkin, 2012; Luthar & Latendresse, 2005). As indicated by the finding that more than half of the present sample had engaged in at least one parent-education program in the past, there is sufficient evidence that this group of working parents will seek parenting services, particularly those offered in the workplace. Further, as more than half of the sample reporting parenting styles that fall over clinical cut-offs, there is a clear unmet need that might be well-served by employer-based service provision.

There are important prevention implications from the present findings on parents' sense of competence and locus of control with regard to their children's behavior. Parents with lower self-efficacy and an external locus of control are likely to respond to the stress of parenting differently than those who feel capable and effective in their relationships with their children (Campis et al., 1986). Specifically, efficacious parents who feel confident in their role and have positive attributions about parenting are likely to take intrinsic interest in, and enjoyment from, parenting tasks, forecasting interactions with their children that are characterized by high responsivity and that bolster adaptive child outcomes. Conversely, parents' despondency, characterized by a sense of burden or incompetence, negative attributions, and dissatisfaction with parenting, can operate as a precursor to negative parent-child interactions with potentially deleterious physical, social-emotional, and cognitive outcomes for children (Ardelt & Eccles, 2001; Bernstein, Laurent, Measelle, Hailey, & Ablow, 2013; Coleman & Karraker, 1997; O'Connor et al., 2012; Wilson, Gardener, Burton, & Leung, 2007). The present results indicate parents' reports of low efficacy and a propensity towards irritability and harsh parenting are noteworthy: 50% of participants fall above the clinical cut-off for over-reactive parenting, with mean scores almost a full standard deviation higher than reported population means from a normative community sample (Rhoades & O'Leary, 2007). It is this finding that has perhaps the largest implications for universal prevention service delivery. The present effort was not a targeted intervention that selected participants with a particular set of parenting attitudes or behaviors, but those self-selected for these services seem to have a particular profile of those in need of support – including clinical levels of parenting needs. The prevention implication is powerful: Computer-mediated parent education seems to attract parents who may report clinical levels of parenting struggles plus more modest struggles with their sense of competence. This need, if left unaddressed, might evolve over time into far more severe needs breaching a greater set of clinical thresholds.

Satisfaction with program experiences may be key in predicting service utilization. Given that parent education services may be a particularly important mechanism for bolstering parental competence, ensuring the satisfaction of participants – thus their continued utilization of, and engagement in, these services – is important. General satisfaction with this particular parenting education program was high ( $M = 28$ , range = 8–32). It is worth noting that, while the measure used to assess satisfaction in this study did not measure specific indicators of program satisfaction, the qualities of the facilitator likely played a role in participants' perceptions of the program quality. There is evidence from previous research suggesting that providers who are warm, attentive, actively listen, and are concerned with the individual needs of their clients are likely to receive high satisfaction scores (Abdel-Tawab & RamaRao, 2010; Budzi et al., 2010; Haskard et al., 2009). The facilitator in the present study exemplified each of these characteristics during the webinar sessions and intentionally focused on eliciting active participation from parents regularly throughout all webinar sessions. Evidence shows that satisfied consumers are likely to engage with their service providers in positive ways (Haskard et al., 2009), creating a mutually enjoyable parenting education environment where both the facilitator and the participants are engaging in continued positive, beneficial interactions. In the future, studies concerning participant satisfaction with online parenting education online should measure specific indicators, including facilitator qualities, of satisfaction. This will require that new measures of satisfaction be developed and validated for use in computer-mediated venues, as none with a rigorous evidence base to support their use are available in the extant literature to date. It may also be that participants in this particular sample, the majority of whom had previously engaged in parent education programs, were biased and chose to participate in the current webinar series because of previously satisfying experiences. However, there was no correlation between parent education history and participant satisfaction and, given the small number of participants who answered both questions regarding history with online parent education and satisfaction ( $n = 20$ ), it is not possible to confidently determine if there is a difference in webinar satisfaction based on the extent of previous experience with online education programs. Nonetheless, these high satisfaction scores, taken together with our finding that parents with clinical parenting needs will self-select into computer-mediated service provision, suggest that participants were happy with their choice to engage in parenting services and may see the positive outcomes reported with more satisfied engagement over time (Haskard et al., 2009). Future work should work with corporate partners to ensure adequate follow-up over time.

The perceived social support group differences found in this study are generally consistent with expectations: participants with partners felt more supported by their significant other and family than divorcees, widows, and those who otherwise reported being single, and those with more children felt less supported than those with fewer. The group difference test indicating men felt more supported than women is interesting and echoes previous findings by Leinonen, Solantaus, and Punamäki (2003) and Newland et al. (2013), but given the low numbers of male participants in the study, should be interpreted with a good deal of caution (further discussion of disproportionate gender participation follows, below).

#### 4.1. Limitations and future directions

The mode of the parenting education delivery (i.e., via webinar) lent itself to employees who had a lunch break and access to a computer at the time the webinars took place. In so doing, employees who did not meet these criteria were effectively unable to participate in the webinars. The homogenous, relatively privileged nature of the present sample is likely due to access restrictions that are a function of webinar services in a corporate setting. Future research concerning computer-

mediated parenting education must consider the ways in which employees in more resource limited settings can effectively be reached.

Further, it is worth noting that our corporate partners offered parenting education webinars to their employees as part of an employee wellness program that aims to improve work–life balance and to increase the productivity of the employees who participated in the webinars. Previous research has indicated that employees who experience work–family conflict are less productive in the workplace and less committed to the company (Duncan & Pettigrew, 2012; Vanderpool & Way, 2013). Companies who offer environments that are supportive of families by offering flexible schedules, as well as family-friendly policies and programs specifically aimed at improving well-being and family lives, have productive employees who are satisfied with their work–family balance (Chen et al., 2015; Duncan & Pettigrew, 2012; Vanderpool & Way, 2013). Other employment settings may be less interested in, or may not lend themselves as well to, offering parenting education via webinars to their employees. To address issues of implementation at the corporation level and access at the individual level, future research should consider altering methodology to suit the needs of the target population (e.g., offering online parenting education with a telephone call-in option for persons without computer access, offering webinars at alternative times of the day).

Average scores on parenting behaviors and attitudes in the present study suggest that these parents struggle to feel competent or consistently in control of their child's behavior; however, the study lacks a direct measure of parenting stress or needs assessment that might have articulated the goals and self-identified needs of this sample. Additionally, a broader measure of parental attributions (i.e., of their children or of themselves more broadly beyond a sense of efficacy in controlling their children's behavior) was not possible given concerns for participant burden. A final pragmatic limitation must be acknowledged: Corporate employer policy and practices concerning individual employee protections precluded consistent documentation of the demography of each participant. We took an inclusive approach to the follow-up recruitment, accepting any participant's surveys regardless of linked demographic data from the pre-webinar measure set.

While this paper represents a novel contribution to the parent education literature by examining employer-based services, a caution regarding generalizability must be made. Results from this work represent a single corporate employer and a sample drawn from its population: A largely European Caucasian/White, female and full-time employee workforce with reliable and easy access to computers. While the sample drawn here is representative of this larger corporate employee population, further research is needed on employer-based services offered to more diverse populations, in particular those who work fewer hours or whose work is less computer oriented.

As with other parenting programs, the present study found steep differences in participation across parents' gender. The extant literature on parent education at large indicates that fathers' rates of participation in parenting programs are ~20% for a given program (Stahlschmidt et al., 2013), rates not met in the present study (~10%), thus limiting our ability to thoroughly test for gender effects. The recruitment materials used for this study were designed to be universal and did not target one gender over another, potentially a missed opportunity given that parent education programs that explicitly include men support child and parent outcomes (Lundahl, Tollefson, Risser, & Lovejoy, 2007). While recruitment materials are only one facet of a program that might attract or dissuade fathers' participation, research has documented unique features of fathers' attitudes towards seeking support than can be addressed through tailored recruitment approach (i.e., informal word of mouth and program alumni testimonials, or offering other desired content as a complimentary service; Stahlschmidt et al., 2013). Future efforts should pay particular heed to this gendered service utilization trend, as it may be exaggerated in online service modalities: Based on recent Pew center survey, women may be more likely to seek out, receive, and give information and support via computer-mediated

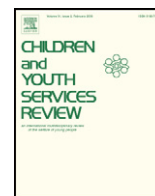
platforms (Duggan et al., 2015). Mothers are more likely than fathers to engage in a number of social media platforms, and they report responding to other parents' good and bad news, finding emotional support, and enjoying helpful information and parenting advice via social media outlets more than fathers. Future studies of computer-mediated parenting services may also consider examining the effect of group size on engagement in an online setting.

This study represents an important effort by a large-scale employer to provide family-focused services to their staff as one component of their wellness programming. Efforts like this mark a valuable opportunity to address work-life balance without adding the often-cited practical barriers to service engagement for parents (Kazdin et al., 1997; Koerting et al., 2013). Parenting interventions are a meaningful avenue for creating enduring positive change in children's and family outcomes (Sandler, Schoenfelder, Wolchik, & McKinnon, 2011), and a rising pressure to improve the rigor and sophistication of the methods used to foster parenting changes (Powell, 2013). This work provides evidence that computer-mediated parenting services can attract participants with clinical and moderate subclinical parenting needs, indicating that this service delivery mode has the potential to reach a wide number of individuals in need.

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# Reducing hostile parenting through computer-mediated parenting education



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## ARTICLE INFO

### Article history:

Received 1 August 2016

Received in revised form 29 November 2016

Accepted 30 November 2016

Available online 1 December 2016

### Keywords:

Parent education

Computer-mediated services

Employer-based service provision

Hostile parenting

## ABSTRACT

**Objective:** The present study evaluated a computer-mediated parent education program aimed at improving parents' self-concept and dysfunctional parenting practices.

**Design:** Employer-based parent education services were offered as part of a corporation's employee wellness program. Participants (N = 247) were asked to complete pre- and post-test surveys including surveys of demographic information, parental self-concept, and dysfunctional parenting behaviors.

**Results:** Participants reported clinically significant levels of dysfunctional parenting practices at baseline. Results from the single-dose intervention indicated a significant decrease in hostile parenting from pre-test to post-test, which was likely predicted by parents' sense of competence at baseline.

**Conclusion:** Computer-mediated parent education workshops were efficacious in improving parents' self-concept and reducing parents' use of hostile parenting tactics. The study provides an important contribution to the extant literature by documenting the effectiveness of computer-mediated parenting programs, particularly those offered through the workplace.

Published by Elsevier Ltd.

## 1. Introduction

Parents create a home environment for their children that serves as the context of children's social, emotional, and physical development, and it is patterns of parenting behavior, in part, that create the emotional tenor of this context. Parents may be warm, caring, and empathetic, or they may be cold, harsh, and insensitive, each general style – if consistent over time – then impacts the child's development in predictable ways. For example, parenting that is warm, sensitive, and supportive facilitates children's socioemotional development, as children from these environments tend to show more positive affect, less negative affect, and fewer externalizing behaviors (Eisenberg et al., 2001; Kaplan, Evans, & Monk, 2008). Conversely, evidence shows that hostile discipline is associated with children's internalizing and externalizing behaviors, peer interpersonal violence, misbehavior, academic struggles, aggression and delinquency, and can predict psychopathology symptoms in adolescence (Bayer et al., 2012; Brannigan, Gemmell, Pevalin, & Wade, 2002; Cole et al., 2014; Jia, Wang, & Shi, 2014; Hallquist, Hipwell, & Stepp, 2015; Hinnant, Erath, & El-Sheikh, 2015; Tang & Davis-Kean, 2015). Though parent-child relationships change over time, hostile parenting at all stages is a risk factor for lasting negative emotional outcomes for children (Brannigan et al., 2002; Lorber & Egeland, 2009). As evidence, Lorber and Egeland (2009) found that

poor quality parenting during infancy, as defined by negative affect, negative regard for child, and insensitivity, remained a significant predictor of externalizing behavior in individuals through their mid-twenties.

Hostile parenting practices include overly critical responses to children, high levels of control, censorship of children, and punishment that is inconsistent, may be aggressive or physical, and relies on lecturing, limiting, and controlling, rather than teaching and redirecting (Brannigan et al., 2002; Cole et al., 2014; Hallquist et al., 2015; Tang & Davis-Kean, 2015). Children parented in environments characterized by pervasive negativity and stress are impacted on a biological level, as research indicates their cognitive reactivity systems are associated with increased negative emotionality and heightened sensitivity to stress over the long-term (Brooker & Buss, 2014; Cole et al., 2014; Hinnant et al., 2015).

In the extreme, hostile feelings directed toward children are expressed as neglect or abusive behaviors (Crouch, Skowronski, Milner, & Harris, 2008). However, even in less severe cases, children whose parents engage in hostile, aggressive, and insensitive interactions, whether these interactions are directed toward the child or not, are reared in contexts that accept, condone, and encourage such behaviors (Kempes, Matthys, de Vries, & van Engeland, 2005). Social cognitive theory posits that children reared by hostile parents will imitate the behaviors they have seen modeled in their environment and turn to similarly hostile and aggressive interaction styles, believing that this interaction style is effective to meet their goals (Bandura, 1977; Jia et al., 2014; Kempes et al., 2005). Similarly, other family members may

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learn from and imitate behaviors that they see modeled by a hostile or aggressive parent. In two parent families, for example, one parent's negative or hostile interactions with a child impact the second parent's interactions with the child, leading to increased negativity in the parent-child relationship with the second parent as well (Kim, Lee, Taylor, & Guterman, 2014). Children who are disciplined more (particularly if the punishment is physical or aggressive, but even if it is nonviolent) are more likely to display behavior problems, as the parent and child engage in a reciprocal pattern of repeated misbehavior and punishment (Kim et al., 2014). Systems theory asserts that all parts of the family system contribute to the interactions that occur within the family, hence hostile interactions between parent and child contribute to overall patterns of family functioning predictive of individual health and wellbeing outcomes into adulthood (Darling, 2007; Elgar, Craig, & Trites, 2013; Freed, Rubenstein, Daryanani, Olino, & Alloy, 2016; Lerner, 2006; Whitchurch & Constantine, 1993; Yap, Pilkington, Ryan, & Jorm, 2014). For example, parents struggling with parenting-related stress are more likely to discipline their children, as are parents who have a poor quality partner relationship or those who are living in a violent community context (Kim et al., 2014).

Supportive, positive parenting is associated with parents' sense of efficacy, an optimistic belief that they are competent parents, and an internal locus of control with a self-enabling belief in their ability to affect their child's behavior (Bandura, 2012; Evans, Nelson, Porter, Nelson, & Hart, 2012). Parents who experience a great deal of stress are less likely to have an internal locus of control, and instead hold a self-debilitating belief that they have no control over their child's behavior (Bandura, 2012; Bernstein, Laurent, Measelle, Hailey, & Ablow, 2013). Bandura (1977, 2012) emphasized the importance of self-efficacy in completing a task, describing an efficacious individual as one who is motivated to persevere at a difficult task and have success. Therefore, an efficacious parent will persist in their efforts to foster positive behavior in their children, even when they are under stress or the task is difficult. There is evidence, for example, that increases in parental efficacy predict decreases in child's disruptive behavior (O'Connor, Rodriguez, Cappella, Morris, & Mcclowry, 2012). Conversely, parents with a low level of efficacy engage in ineffective parenting practices that foster poor child behavior - corporal punishment or increased use of punitive interactions that focus on criticizing and scolding the child and demanding compliance - confirming the parent's belief that they have little ability to change their child's behavior (Evans et al., 2012; Sanders & Woolley, 2005). This increased poor behavior then further decreases the parent's self-efficacy, which breeds more misconduct and adjustment difficulties, creating a cycle of poor behavior and ineffective parenting (Kim et al., 2014; Khoury-Kassabri, Attar-Schwartz, & Zur, 2014; Yaman, Mesman, van IJzendoorn, & Bakermans-Kranenburg, 2010). Systems theory picks up this self-efficacy theme from social cognitive theory and asserts that the parents' level of efficacy and locus of control are associated with child behavior, with parent and child reciprocally influencing one another in an interdependent and bi-directional way (Darling, 2007; Lerner, 2006).

### 1.1. Parenting support services

The vast majority of parents with children under age 18 (75%) seek information about parenting online (Duggan et al., 2015). Social media is an Internet forum that is particularly popular with these parents, as approximately 75% turn to social media for social support, and more than half (59%) consider the parenting information they find on social media to be valuable. Technology-based service provision options are a means of connecting with families seeking parenting support and information through widely used and trusted mechanisms. Literature on computer-mediated parenting education emphasizes that this type of service provision is growing and has the potential to positively impact a large number of families, but research has yet to examine whether it reaches comparable in-need groups as those served through traditional

parent education settings (Breitenstein, Gross, & Christophersen, 2014). In a recent paper, Kazdin and Blase (2011) acknowledge this outstanding need and asked, *What models of intervention delivery will help reach the population of individuals in need?* wherein the authors call for "a portfolio of preventive interventions with various models" (p. 28), and evidence on the efficacy of each model.

There is an undeniable need for an examination of which service models work best for whom and which outcomes are amenable to change through computer-mediated service delivery mechanisms; researchers are slowly moving beyond feasibility studies to assess the influence that such programs have on both parents and children (Breitenstein et al., 2014; Hall & Bierman, 2015; Powell, 2013). As an example of the slowly accumulating evidence for the efficacy of computer-mediated parenting services, Gelatt, Adler-Baeder, and Seeley (2010) conducted a randomized control trial of participants in a web-based education program for stepfamilies and found that the program significantly decreased over-reactive parenting. Similarly, Sanders and colleagues (Sanders, Baker, & Turner, 2012; Sanders, Calam, Durand, Liversidge, & Carmont, 2008) have shown evidence from randomized controlled trials that online adaptations of Triple P (Positive Parenting Program) consistently yield positive parent and child outcomes for families of children with disruptive behavior, while Enebrink, Högström, Forster, and Ghaderi (2012) report that in a randomized controlled study of parents of children aged 3–12 with clinical conduct problems, computer-mediated parent training yielded parent and child outcomes comparable to in-person parenting programs. In a randomized controlled trial of parents with serious mental illness, Kaplan, Solomon, Salzer, and Brusilovskiy (2014) found that an online parenting program offering education and support effectively improved parenting and coping and decreased parenting stress.

These studies specifically target particular at-risk portions of the population, often selecting samples based on problem behavior or clinical diagnosis. Prevention efforts prior to clinical diagnosis are a crucial mechanism for closing the gap between the presentation of problematic behavior or mental health symptoms and the estimated relief provided through psychobehavioral or pharmacological treatments (estimated at only 50%, given maximized coverage of those seeking treatment, clinician efficacy, and treatment compliance; Hahlweg, Heinrichs, Kuschel, Bertram, & Naumann, 2010). Indeed, the widely recognized mediation of children's behavior problem by parenting practices has led to the acknowledgment that universal prevention is a key component of a public health approach to bolstering child and family wellbeing, given that treatment through family services can never hope to reach full coverage for children's behavior problems. Given the pervasive implications of self-efficacious parenting for all families and the impacts harsh and aggressive parenting practices may have on children's outcomes, interventions that specifically aim to reduce hostile parenting behaviors in an effort to improve parent-child interactions represent a promising universal prevention effort that may prove pragmatically delivered through computer-based platforms. Although the US Department of Health and Human Services (2011) National Prevention Strategy calls for clinical and community services as one of the four strategic directions, few parenting efforts have addressed the community service component from a universal or primary prevention perspective.

### 1.2. The present study

The studies mentioned above indicate that secondary prevention, or targeted computer-mediated parenting programs are beneficial to clinical populations - particularly in samples of families with young children. Clearly, more work is needed before broader claims of effectiveness for computer-mediated service delivery models can be confidently made in non-clinical settings for a range of families, particularly when considering impacts for specific parenting outcomes like hostile or over-reactive parenting. The goal of this paper is to build the parenting service delivery literature by exploring outcomes from a

computer-mediated primary prevention parenting education service. Our aim is to demonstrate that parents engaged in computer-mediated parent education experience significant improvements in parenting outcomes (i.e., hostile parenting, or sense of self-efficacy/competence). Evidence suggests that employment-based services are ideally suited to address working parents' parenting needs. Not only do parents struggle to navigate the pressures of family life and employment in ways that reduce optimal parenting practices (Cooklin et al., 2016; Vieira, Matias, Ferreira, Lopez, & Matos, 2016) and productivity in the workplace (Duncan & Pettigrew, 2012; Vanderpool & Way, 2013), but they also experience limitations on time and energy stemming from employment that are frequent barriers to family service engagement (Kazdin, Holland, Crowley, & Breton, 1997; Koerting et al., 2013). Therefore, we partnered with an employment-based service provider working with families through an online platform to overcome often cited barriers to service engagement while providing benefits to both employers and their employees.

This work was shaped by two research questions: Would associations between parenting self-concept that reflect self-efficacy, including sense of competence and locus of control, be significantly related to parenting style? Could a single intervention session foster improvements in self-reported parenting outcomes? In our study of parenting supports that emphasized positive parenting practices offered to all employees through a corporate employer, we hypothesized that parents' sense of competence would be positively related to their locus of control, and negatively related to dysfunctional parenting practices, particularly those that related to hostile and over-reactive parenting behaviors. We also hypothesized that parents would have increased sense of competence, increased locus of control, and decreased reports of hostile and over-reactive parenting after attending a computer-based parenting webinar session. Finally, we hypothesized that parents' self-concept would positively predict their parenting practices.

## 2. Methods

The Institutional Review Board at the University of Connecticut and the legal review team of our corporate partner approved all study materials in 2014.

### 2.1. Participants

All study participants attended at least one parenting education webinar offered by their employer, a global insurance company. The company employs approximately 47,860 individuals, 76% of whom are female. We collected data from participants separately at baseline before the start of the webinar and again at post-test in the weeks after the webinar. After removing duplicate entries by participants who attended subsequent webinars, the data set included  $N = 247$  uniquely identified cases for individuals attending their first webinar in the series. Of these, a total of 195 participants completed the baseline survey, 45 of whom completed both baseline and post-test surveys (longitudinal group). An additional 52 participants completed only post-test assessments, likely opting to provide feedback after the webinar in response to the facilitator's request for evaluations and thus missing the pre-test opportunity; these post-test only data are omitted from all analyses.

Due to policies of our corporate partner, we were only able to collect demographic data on participating employees at baseline; therefore, demographic data is available only for those 195 participants who completed baseline surveys. Racial diversity within this employee population is comprised of 69% European Caucasian/White, 17% African American/Black, 5% Asian, <1% Native Hawaiian/Pacific Islander, 1% American Indian/Alaskan Native. Based on demographic data reported at baseline ( $n = 195$ ), our sample is representative of this employee population with 25.4% racial minority participants (74.6% European Caucasian/White). Participants, mostly female (89.6%), had an average

age of 40.2 years ( $SD = 7.9$ ), 97.4% of whom report being employed fulltime. Most parents reported having multiple children younger than 14 years of age: Over three quarters (80%) of participants reported 1 or 2 children younger than 18 living in the home, with the largest family size of 5 children. Children's ages ranged from younger than one-year-old to older than 18-years-old, with an average child age of eight-years-old. Table 1 summarizes participant characteristics including race and ethnicity breakdown, marital status (77.2% married/partnered), highest education level (57.7% Bachelor's degree or higher), and annual household income (49.2% more than \$100K). More than half (55%) of the sample had experience attending a previous parent education class, 83% of whom indicated their previous parent education participation was through a webinar.

### 2.2. Measures

Participants completed electronic surveys following a pre and post-test evaluation design. Pre-test surveys, which assessed demographic characteristics and parenting, were distributed 24 h before the webinar began. Post-test surveys were distributed within 4 weeks after the webinar session.

#### 2.2.1. Demographics Sheet

The Demographics Sheet included questions on participants' racial and ethnic background, gender, marital status, employment status, level of household income, highest level of education completed, number and ages of children living in the home, and parent education history (i.e., experience having taken any previous parent education classes, including experience with computer-mediated classes).

#### 2.2.2. Parental Locus of Control Scale

The Parental Control of Child's Behavior (PCCB) subscale of the Parental Locus of Control Scale (LoC-CB; Campis, Lyman, & Prentice-Dunn, 1986) is a 10-item questionnaire that identifies the extent to which parents feel able to control their children's behavior. High scores indicate parents who have an external locus of control when faced with the stresses of parenting and a perceived inability to control their children's behavior. The measure uses a 5-point Likert

**Table 1**  
Descriptive results at baseline.

| Demographic characteristics (N = 195) |                                 | n   | %    |
|---------------------------------------|---------------------------------|-----|------|
| Gender                                | Male                            | 20  | 10.4 |
|                                       | Female                          | 173 | 89.6 |
| Ethnicity                             | Hispanic/Latino                 | 9   | 4.7  |
|                                       | Non-Hispanic/Latino             |     |      |
| Race                                  | African American/Black          | 14  | 7.3  |
|                                       | European Caucasian/White        | 144 | 74.6 |
|                                       | Asian American                  | 8   | 4.1  |
|                                       | Pacific Islander                | 2   | 1.0  |
|                                       | Multiracial                     | 3   | 1.6  |
|                                       | Other                           | 13  | 6.7  |
| Marital status                        | Single, never married           | 15  | 7.8  |
|                                       | Single, living with partner     | 4   | 2.1  |
|                                       | Married or partnered            | 149 | 77.2 |
|                                       | Married, separated from partner | 2   | 1    |
|                                       | Divorced                        | 21  | 10.9 |
|                                       | Widowed                         | 2   | 1    |
| Highest level education               | High school diploma/equivalent  | 8   | 4.1  |
|                                       | Some college, but no degree     | 37  | 19.1 |
|                                       | Associate's degree              | 37  | 19.1 |
|                                       | Bachelor's degree               | 65  | 33.5 |
|                                       | Some graduate, no degree        | 9   | 4.6  |
|                                       | Master's degree                 | 37  | 19.1 |
| Household income                      | Doctorate degree                | 1   | 0.5  |
|                                       | \$20,000–\$38,999               | 9   | 4.7  |
|                                       | \$39,000–\$59,999               | 18  | 9.3  |
|                                       | \$60,000–\$99,999               | 71  | 36.8 |
|                                       | More than \$100,000             | 95  | 49.2 |

scale (5 = *strongly agree* and 1 = *strongly disagree*) and has acceptable internal consistency with a Cronbach's alpha of 0.71 (Campis et al., 1986). In the present sample, alpha was 0.89.

### 2.2.3. Parenting Sense of Competence

The Parenting Sense of Competence (PSoC; Johnston & Mash, 1989) scale is a measure of parental self-efficacy, where higher scores indicate greater parenting self-efficacy. Parents rate the extent to which they agree or disagree with statements regarding childrearing-related feelings of accomplishment and competence using a 6-point Likert scale (6 = *strongly disagree* and 1 = *strongly agree*). Internal consistencies are high for the Satisfaction scale (alpha of 0.75), for the Efficacy scale (alpha of 0.76), and for the overall scale (alpha of 0.79; Johnston & Mash, 1989). Alphas for the Satisfaction scale, Efficacy scale, and total scale were also high in the current study, at 0.79, 0.81, and 0.83 respectively.

### 2.2.4. Parenting Scale

The Parenting Scale (Arnold, O'Leary, Wolff, & Acker, 1993; Rhoades & O'Leary, 2007) is a 30-item scale that assesses the extent to which parents use dysfunctional discipline practices, with higher scores indicating greater use of dysfunctional parenting practices. Parents indicate their tendencies to use specific discipline strategies using a 7-point Likert scale (7 = *frequent use of discipline mistake* and 1 = *frequent use of effective discipline*). According to the factor structure proposed by Rhoades and O'Leary (2007), the measure focuses on three dysfunctional discipline practices in particular. These subscales include laxness (i.e., permissive, inconsistent discipline), over-reactivity (i.e., irritability and harsh, authoritarian discipline), and hostility (use of verbal or physical force). The measure has acceptable internal consistency with Cronbach's alphas of 0.83 for laxness, 0.82 for over-reactivity, and 0.81 for hostility. In the present sample, alphas are 0.72, 0.78, and 0.54 for laxness, over-reactivity, and hostility respectively.

### 2.3. Procedure

At the beginning of each month, all corporate employees were invited to participate in Wellness Program offerings that took place during their noon lunch hour; many of these offerings were provided through web-based platforms, which allowed for real-time conversation with the group facilitator via chat windows, and drew an average group size of 75–110 participants. Recruitment spanned 12 parent education webinars offered over 4 months, on topics such as Toxic Stress and Positive Discipline. Our corporate employer had specific requests for session content to meet topical interests (e.g., “money and kids”, or “social media for parents”) and offer a broad range of topics to draw the most interest from employees. This precluded the use of a published curriculum, hence the series of offerings was created for this study, tailored to respond to our partners' interests. Though each session focused on a different aspect of parenting (such as stress or discipline), all sessions emphasized the overarching theme of positive, supportive parenting and reducing aggression/hostility at home, and provided examples and strategies to parents specifically to bolster parental efficacy. An average of 19% of total webinar attendees per session volunteered to participate in the present evaluation.

Employees who registered for a parent education webinar received an email from the company's wellness program 24 h prior to the webinar's start. The email contained a link to the survey website, where interested parents gave consent and enrolled in the study. Employees were not required to pre-register for webinars, and they were not required to participate in this evaluation study or to complete the baseline survey set in order to participate in the webinar. Any employee was free to join a webinar on the day of each session provided there was audience space for the session remaining. Participants logged into an audiovisual conferencing program to attend the webinar wherein participants had access to a PowerPoint presentation created and presented

by the facilitator live (as opposed to a pre-recorded delivery), and the audio capabilities and live chat text window were enabled for a more interactive experience. The facilitator, a licensed social worker with over 30 years of experience as a parent educator, regularly used the interaction features of the webinar software to boost audience engagement by asking participants to respond every few minutes to simple questions via the “raise your hand” function, for example. Links to the post-test survey and a separate consent form were distributed to all webinar participants via email within 4 weeks after the webinar session.

### 2.4. Analysis

We first present group data from the baseline group (all participants who completed baseline measures,  $n = 195$ ), which assesses participant demographic and parenting characteristics, then we assess changes over time with paired-sample analyses using longitudinal data from the longitudinal group (the subset of participants who completed both baseline and post-test surveys,  $n = 45$ ). Missing data at baseline were <2% for demographic variables, approximately, 5% for sense of control scale items, 13% for sense of competence items, and 16% on parenting discipline style items. More data were missing in post-test batteries, for example 11% on the sense of control scale items, however, isolated missing items appeared to be missing at random. A pattern of missing entire scales was the result of participants' failure to complete the later portions of the assessment battery and, therefore, differentially impacted measures at the end of the survey set (i.e., sense of competence at the end of the baseline assessment). Individual items missing within scales were replaced by mean imputation; cases with scales missing in their entirety were omitted from analysis.

## 3. Results

### 3.1. Baseline analyses

Parenting variables (discipline style, locus of control, and sense of parenting competence) at baseline did not differ based on parents' ethnicity, age, or highest level of education (see Table 1 for means and standard deviations). At baseline, parents in this sample were more likely to use over-reactive discipline styles ( $\mu = 3.8$ ) than either hostile ( $\mu = 2.1$ ) or lax responses ( $\mu = 2.7$ ). Although at baseline the mean scores for the sample fell below the clinical cutoffs for each discipline style (3.9, 2.9, and 3.5 respectively; Rhoades & O'Leary, 2007), half (50.6%) of participants were over the clinical cutoff for over-reactivity, a quarter (24.4%) of participants were over the clinical threshold for hostility, and one fifth (19.5%) of participants were over the clinical cutoff for laxness. Based on the majority trends from these three measures of parenting, this sample could be summarized as having some confidence in their general abilities as a parent but struggle to feel a sense of control over their children's behavior (see Table 3), with the greatest number of parents tending toward over-reactive discipline. [For in-depth discussion of trends in service utilization at baseline, see Russell et al., 2015.]

In addition to the results summarized in Table 3, significant positive associations between parents' income, age, and education exist (no associations with child age reached significance). Parents' sense of competence is negatively correlated with their perceived inability to control their child's behavior and negatively correlated with each of the dysfunctional discipline styles measured by the Parenting Scale (laxness, over-reactivity, and hostility; see Table 3), findings that support our hypothesis. Conversely, parents' perceived inability to control their child's behavior is positively correlated with each of the dysfunctional discipline styles measured by the Parenting Scale (in addition to expected associations between all subscales of the Parenting Scale). These relationships point to the co-existence of multiple parenting practices that are less than optimal, particularly for parents who do not feel competent in their role as a parent.

### 3.2. Longitudinal analyses

Looking longitudinally at participants with linked baseline and post-test data, significant differences were found for hostility ( $t_{(33)} = 2.1$ ,  $p < 0.05$ ) and laxness ( $t_{(31)} = 4.0$ ,  $p < 0.001$ ; Table 2). Hostility scores decreased over time for these participants from a mean of 2.1 (SD = 1.2) to 1.9 (SD = 1.2), and laxness increased from 2.5 (SD = 0.9) to 3.0 (SD = 0.6). These results suggest parents used significantly less verbal aggression and physical force, and were more permissive in disciplining their children after participating in this study. The difference in PCCB scores from a mean of 27.6 (SD = 8.2) to 26.0 (SD = 7.7) trended to indicate greater perceived control over children's behavior over time, but this trend was not significant ( $t_{(36)} = 1.7$ ,  $p = 0.11$ ). No significant differences were found in parents' reports of their sense of competence. These findings partially support our hypothesis that meaningful differences in parenting behaviors would exist from pre-test to post-test.

As expected, correlations between pre- and post-test measures were uniformly high (Pearson correlations ranging from 0.6 to 0.95, all  $p < 0.001$ ; Table 3). Significant correlations were found across scales in post-test scores: hostility with over-reactivity ( $r = 0.58$ ,  $p < 0.001$ ), PCCB with over-reactivity ( $r = 0.52$ ,  $p < 0.01$ ), and parents' sense of competence with over-reactivity ( $r = -0.484$ ,  $p < 0.01$ ), hostility ( $r = -0.463$ ,  $p < 0.01$ ), and PCCB ( $r = -0.541$ ,  $p < 0.01$ ). Subsequently, we explored what might drive changes in hostility for those who experienced change from baseline ( $n = 21$ ). Linear regression analyses indicated that parents' sense of competence at baseline is the most likely predictor of change in hostility after participating in these webinars ( $R^2 = 0.187$ ,  $\beta = -0.432$ ,  $F_{(1,18)} = 4.1$ ,  $p = 0.06$ ), such that higher parents' sense of competence at baseline predicted greater decreases in hostility at post-test. Given the small sample size of those who experienced change, this trend would likely reach significance with a larger sample (Cohen, 1992).

### 4. Discussion

The empirical, outcomes-based assessment of this computer-mediated parent education series contributes to the emerging literature on the efficacy of this type of service provision. Though many parent education programs, online or otherwise, focus on targeted populations (i.e., families facing specific challenges associated with a particular diagnosis such as conduct disorders, Autism spectrum disorders, or attention disorders), this study focused on primary prevention outcomes in the general population of corporate employees. Examinations of employer-based wellness programs like these add real world evidence to our understanding of family interventions, capturing an ecologically valid context of use that addresses well-documented barriers to service engagement for working parents. An additional strength to this study is the partnership with a large-scale private sector business, which informs the design of interventions that will be acceptable to stakeholders likely to widely implement similar programs (in contrast to the prevalent, small-scale patchwork of parent education historically available

in many communities). While collaborations like these can encounter obstacles originating from policies and procedures not intended to accommodate research (i.e., privacy protections relevant to longitudinal data collection beyond those commonly observed in academic settings), these challenges are off-set by the valuable insights gained from access to large samples of working parents who may otherwise struggle to fit research participation into their schedules (see Kazdin et al., 1997; Koerting et al., 2013).

Support seeking through distance learning, social networking, and other online support group platforms is growing exponentially (Johnson, 2015), hence examinations of parenting outcomes over time are a necessary step in building a reliable evidence base. One of the potential benefits of using computer-mediated service delivery is the possibility for greater access to a broader population than those facing diagnosis-specific needs; this has specific appeal for promoting parenting support for the general population, as parenting education offers families support that is, on average, more cost-effective than therapeutic treatments (Crane & Payne, 2011). Further, prevention efforts that address family concerns prior to clinical diagnosis are in line with the US Department of Health and Human Services (2011) National Prevention Strategy and specifically address the need for stronger community prevention services (apart from the on-going pursuit of improving clinical intervention approaches). Our study is among the first to examine the nexus of two unusual settings for parenting services – the corporate workplace and the online service provision mechanism.

The present findings carry meaningful prevention implications given the importance of parents' self-concept in the effectiveness of their parenting practices as discussed by both social cognitive and systems theories (Bandura, 1977; Bandura, 2012; Darling, 2007; Lerner, 2006). Parents who possess an internal locus of control, believe that they can impact their child's behavior, are confident in their parenting skills, and ascribe positive attributes to their parenting are more likely to enjoy their role as parents and are more successful in engaging in positive parent-child relationships and in parenting behaviors that promote positive child outcomes (Ardelt & Eccles, 2001; Bernstein et al., 2013; Campis et al., 1986; Coleman & Karraker, 1997; O'Connor et al., 2012; Wilson, Gardener, Burton, & Leung, 2007). For example, intervention results reported by O'Connor et al. (2012) indicate post intervention improvements in parenting self-efficacy (Cohen's  $d$  for improved efficacy from pre to post test of 0.5), with subsequent positive impacts on child behavior outcomes over time. Further, extant literature on the negative impact of hostile and aggressive parenting on children's social and emotional development emphasizes a need to decrease the prevalence of such destructive parenting practices. Our results indicate that parents' sense of control and hostile, aggressive parenting behaviors are amenable to change with even a single dose of parent education offered via a computer-mediated platform (see Table 2 for effect sizes). It is this finding that has perhaps the most dramatic implications, as the present effort was not a targeted intervention. We did not specifically select participants with a particular set of parenting attitudes or behaviors, but parents from the general corporate environment in which this parent education occurred self-selected for these services. Many

**Table 2**  
Descriptive statistics for variables of interest.

| Variable of interest       | Pre-test M (SD) | Post-test mean (SD) | Pre to post-test t      | Cohen's $d$ |
|----------------------------|-----------------|---------------------|-------------------------|-------------|
| Number of children         | 1.70 (0.87)     | –                   | NA                      |             |
| Parent age (years)         | 40.24 (7.85)    | –                   | NA                      |             |
| Child age (years)          | 8.41 (4.65)     | –                   | NA                      |             |
| PSOC                       | 3.86 (0.63)     | 3.74 (0.61)         | ns                      |             |
| Parenting - laxness        | 2.54 (0.88)     | 3.04 (0.56)         | $t_{(31)} = 4.00^{***}$ | 0.78        |
| Parenting - overreactivity | 3.77 (1.39)     | 3.95 (0.89)         | ns                      |             |
| Parenting - hostility      | 2.15 (1.18)     | 1.89 (1.23)         | $t_{(33)} = 2.15^*$     | 0.36        |
| LoC over child behavior    | 27.57 (8.822)   | 25.97 (7.70)        | ns                      |             |

\*  $p < 0.05$ .

\*\*  $p < 0.01$ .

\*\*\*  $p < 0.001$ .

**Table 3**

Baseline associations among participant characteristics and variables of interest.

| Variable of interest       | 1 | 2    | 3      | 4        | 5        | 6       | 7        |
|----------------------------|---|------|--------|----------|----------|---------|----------|
| Number of children         | – | 0.03 | –0.17* | –0.01    | 0.16*    | 0.03    | 0.13     |
| Income                     |   | –    | 0.03   | 0.03     | –0.06    | –0.18*  | –0.05    |
| PSOC                       |   |      | –      | –0.42*** | –0.63*** | –0.25** | –0.67*** |
| Parenting - laxness        |   |      |        | –        | 0.38***  | 0.28*** | 0.44***  |
| Parenting - overreactivity |   |      |        |          | –        | 0.48*** | 0.66***  |
| Parenting - hostility      |   |      |        |          |          | –       | 0.36***  |
| LoC over child behavior    |   |      |        |          |          |         | –        |

\*  $p < 0.05$ .\*\*  $p < 0.01$ .\*\*\*  $p < 0.001$ .

participants scored above the clinical cutoff on one or more of the dysfunctional parenting practices assessed at baseline (laxness, overreactivity, hostility), indicating that this type of service attracted a population with clinical needs nonetheless. The prevention implication is powerful in light of the harmful consequences of parental hostility and the impact that parents' perceived control has on their parenting behaviors. Computer-mediated parenting services are convenient for both participants and service providers and are enjoyed by participants who volunteer to attend them (Breitenstein et al., 2014; Hall & Bierman, 2015; Russell, Maksut, Lincoln, & Leland, 2015). These results provide much needed further evidence that such services can be efficacious; however, future efforts in this vein should go beyond feasibility testing and preliminary efficacy methods and shift to rigorous intervention evaluation designs. These steps should include the use of a longer term follow-up assessment and a comparison sample (ideally, a randomized assignment of participants to multiple intervention conditions including an untreated control group).

Attention to the increased laxness reported by participants in the post-test assessment survey is warranted as there is evidence that permissive parenting including lax or inconsistent discipline is associated with increased problem behavior (Dowling, Slep, & O'Leary, 2009). Parenting practices are often described along a continuum, where optimal behavior falls between two extremes. To the extent that parents use consistent discipline approaches, parents must balance responses to their children that are adequately demanding without going as far as intrusive and over-controlling actions – which are also associated with less adaptive child and adolescent outcomes (Barber, 2002; Bayer, Sanson, & Hemphill, 2006; Hudson, Comer, & Kendall, 2008; LaFleur, Zhao, Zeringue, & Laird, 2016; Stattin & Kerr, 2000; Wagner, Propper, Gueron-Sela, & Mills-Koonce, 2016). Fine-tuning parents' approach to discipline by targeting an optimal balance in the middle of the continuum may not be as efficaciously done through a single dose, computer-mediated platform as targeting the far more straight-forward aim of pulling away from a single extreme and reducing harsh or hostile interactions, for example. Future studies designed to support parents as they navigate toward a balanced discipline style between permissive/laxness and over-controlling/intrusiveness should consider the added benefits of repeated dose parenting interventions and careful measurement of family dynamics that could examine open communication, conflict, cohesion, and adaptability in addition to discipline styles.

#### 4.1. Limitations & future directions

According to mean scores on measures of parenting attitudes and behaviors, participants in the present study seem to lack efficacy in their parenting practices, but we do not directly measure parenting stress or attributions beyond self-concept in this study, nor do we directly observe parenting behaviors. As this study was conducted in the workplace, we were cognizant of participant burden and were limited in our ability to observe parents with their children. Similarly, we were unable to obtain perceptions of parenting behaviors from participants' children. Perhaps our largest pragmatic obstacle concerned our

inability to use participant identification information to match pre- and post-test data. Privacy policies of our corporate partners precluded us from collecting extensive demographic data or assigning, tracking, or documenting participant numbers; as a result, this study relied on participants to create and remember their own unique identifier, a practice that was largely ineffective. We chose an inclusive approach to resolving this problem by including any participant data available for baseline analyses regardless of whether or not we could link the data over time. While this decision led to a large disparity in pre and post-test group sizes, we chose to present data on the larger set at baseline to best represent the set of participants overall, and focused longitudinal analyses on the small subset of participants who did have both baseline and post-test data. In cases where improved participant tracking practices are possible, extensions of this research might consider following participants over time to assess any long-term effects. Future steps to improve the evaluation of online parenting services provided in the workplace should move beyond intervention designs of preliminary feasibility testing, like the pre-post design used in the present study, to include elements of best practice standards in efficacy trials, as noted above.

While this paper addresses a gap in the literature on computer-mediated parent education by providing evidence for the feasibility of this format and preliminary efficacy of the program, it is important to address the generalizability of the study results. These study results are derived from employees at a single corporate employer. Though the company is a global corporation, the sample includes largely European Caucasian/White, female, and full-time employees who necessarily had access to a computer during their noon lunch hour. These demographics mirror the samples that are generally derived from computer-mediated parent education groups in that they tended to be partnered, have annual incomes higher than the national average, and are more educated than the typical population of human service recipients (Gelatt et al., 2010; Pacifici, Delaney, White, Nelson, & Cummings, 2006; Taylor et al., 2008), which does restrict the study's generalizability. Nevertheless, there is evidence to suggest that affluent populations have unique parenting needs that may be addressed by digital workplace programs (Dearing & Taylor, 2007; Luthar & Barkin, 2012; Luthar & Latendresse, 2005; Randall, Bohnert, & Travers, 2015; Russell et al., 2015). Further, though the present sample included more females than would be expected given the corporation's gender distribution, it is consistent with previous research that indicates fathers are far less likely to participate in parent education programs than are mothers (Stahlschmidt, Threlfall, Seay, Lewis, & Kohl, 2013). Future research should address this concern by specifically targeting fathers to participate in parent education programs, particularly those offered online, as women are more likely to use Internet-based services to meet their parenting needs (Duggan, Lenhart, Lampe, & Ellison, 2015). Of final concern is the quantity of missing data in the present study. Participants often skipped measures that appeared at the end of the survey battery. Future research may benefit from randomizing the survey order to ensure missing data are more uniform. This is especially a concern for research conducted in the workplace, where employers are

likely to have rigid time constraints and become distracted by work-related tasks before completing the entire survey set.

Employers are in a unique position to improve employee performance by offering wellness supports to their employees that address work/family balance. Previous research indicates that workers who experience work-family conflict are less committed to their employer and less productive at work, findings that should motivate employers to assist their employees in finding the desired work-family balance (Duncan & Pettigrew, 2012; Vanderpool & Way, 2013). Computer-mediated programs are ideally suited to meet the needs of both employers and employees by providing an efficacious means of improving employees' family lives while avoiding parents' often cited obstacles to engaging in service provision (Kazdin et al., 1997; Koerting et al., 2013). Further, family systems theory would assert that improving parents' work-family balance and decreasing parents' stress would have important impacts on child as well as parent outcomes (Darling, 2007). Parents who are less stressed perceive more control in their parenting role and engage in fewer hostile and aggressive practices, which then promotes positive child behaviors and further encourages adaptive and successful parenting practices (Bernstein et al., 2013; Bugental, Blue, & Cruzcosa, 1989; Evans et al., 2012; Kim et al., 2014). Helping parents to reduce their hostile parenting tendencies has positive implications for employers, parents, and children alike. Even one-time, computer-mediated parent education workshops work toward this goal, with reported Cohen's *d* effect sizes for parent outcomes ranging from 0.08 to 0.84 (Breitenstein et al., 2014). Evaluations of these efforts – including the present study's comparable effects (Cohen's *ds* of 0.78 and 0.36, Table 2) – address a gap in the computer-mediated parent education literature and suggest future intervention approaches may find success using this new mode of service delivery.

## Acknowledgments

The authors wish to thank Ruth Freeman, LCSW, of Positive Parenting CT, for her tireless energy and exemplary skills as a parent educator committed to evidence-based practice. We also thank our corporate partners who supported this study and their employees who generously gave their time to participate. Finally, we offer sincere thanks to Dr. J. J. Trudeau for his data management insights and thorough reviews of earlier drafts.

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