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ORIGINAL ARTICLE

Clinician Intentions to use the Components of Parent Coaching Within Community Early Intervention Systems

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Abstract

Purpose Parent coaching is a complex, psychosocial intervention with multiple core components. Clinicians' use of these core components may be influenced by distinct factors; no research has examined whether clinician perceptions of parent coaching vary across core coaching components. This study aimed to examine the extent to which clinicians working with families of young autistic children in publicly funded early intervention intend to use core parent coaching components, and to examine how closely psychological factors relate to providers' intentions to use each component.

Methods Using the Theory of Planned Behavior as a framework, this study compared the strength of clinicians' intentions across five core parent coaching components: collaboration with parents, delivering the intervention within daily routines, demonstrating the intervention, providing in-vivo feedback, and reflection and problem solving. We examined the associations between intentions and psychological determinants of intentions (i.e., attitudes, norms, and self-efficacy) for each component.

Results Clinicians' average intentions varied by core component, with strongest intentions for demonstrating the intervention strategy for a parent. The associations between intentions and psychological determinants also varied by core component. Attitudes, injunctive norms, and self-efficacy, but not descriptive norms, significantly related to clinicians' intentions to use collaboration and daily routines, whereas attitudes and descriptive norms, but not injunctive norms and self-efficacy, significantly related to clinicians' intentions to use feedback and reflection and problem solving.

Conclusion These results suggest that implementation strategies should be tailored to the specific intervention component to be most efficient and effective. The results also provide examples of potentially malleable factors that implementation strategies can strategically target.

Keywords Parent coaching · Early intervention · Intentions

Most psychosocial interventions, from cognitive behavioral therapy (Wolk et al., 2019) to applied behavior analytic (ABA) autism intervention (Pellecchia et al., 2015), are considered complex in that they include multiple, interacting core components. Although many complex psychosocial interventions have demonstrated efficacy, they often are applied inconsistently or with low fidelity in practice (Becker et al., 2013; Kazdin, 2017). In response to this gap, research efforts have focused on developing and testing implementation strategies to enhance their implementation (Proctor et al., 2013). The complexity of these interventions makes it challenging to implement them with high fidelity in routine practice settings (González-Valderrama et al., 2015). Within each intervention, intervention core components may vary in their *efficacy*, the *fidelity* with which they tend to be implemented, and the extent to which providers *intend* to use them.

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To better understand the efficacy of core intervention components, several recent studies have dismantled complex psychosocial interventions such as Acceptance and Commitment Therapy (Levin et al., 2020) and Mindfulness-Based Stress Reduction (Hunt et al., 2018) by testing the efficacy of individual intervention components, as well as the full intervention. This work could lead to developing more efficient psychosocial interventions by identifying which individual components are necessary and sufficient for the intervention to be effective.

Some components of complex interventions may be more likely to be implemented as designed than others. For example, Pellecchia and colleagues (2015) found that teachers' fidelity to an ABA-based autism intervention delivered in schools varied by intervention component. Other studies have found that providers' intentions to use a complex intervention vary by core component. For example, Wolk et al. (2019) found that clinicians' intentions to implement cognitive behavioral therapy varied significantly by component, with strongest intentions for reviewing homework and weakest intentions for using exposure. Similarly, Fishman et al. (2018) found that teachers of students with autism reported the strongest intentions to use positive reinforcement and weakest intentions to use daily one-to-one instruction. Examining provider perceptions of individual intervention components may inform the development of implementation strategies tailored to specific intervention components.

This is particularly important given the identified need for specifying and testing mechanistic implementation strategies. Specifically, there is an identified need to link implementation strategies to their hypothesized mechanisms (i.e., underlying causal processes through which the strategy affects the desired implementation outcome), and to empirically test these linkages in trials of implementation strategies (Lewis et al., 2018; Williams, 2016). Doing so has the potential to expedite the development of more effective and efficient implementation strategies and to improve the tailoring of implementation strategies to meet the needs of heterogeneous contexts (Lewis et al., 2021).

Parent Coaching

One example of a complex psychosocial intervention is *parent coaching* for the treatment of young children with autism spectrum disorders (ASD). Parent coaching is an evidence-based practice (EBP) for ASD, and results in improved child outcomes across a range of developmental domains, improved parental self-efficacy, treatment engagement, and reduced parental stress (Estes et al., 2014; Kasari et al., 2014; Rogers et al., 2012). Children with disabilities, including ASD, are eligible to receive publicly-funded early intervention services through Part C of the Individuals with Disabilities Education Act (IDEA, 2004). Increasingly, early intervention research, policy, and practice recommendations highlight the importance of including caregivers as partners in their child's treatment (Hanft et al., 2014; Rush, Shelden & Hanft, 2003). Providing early intervention programs that encompass the entire family, not only the child aligns with the family-centered practices the Division for Early Childhood recommends for Part C early intervention (DEC, 2017) and guidelines for Part C services set forth in the Individuals with Disabilities Education Act (IDEA, 2004).

An important aspect of parent-mediated early intervention is that the clinician coaches the parent in how to use intervention strategies with their child (Oono et al., 2013). Evidence-based parent coaching techniques used in the treatment of young children with ASD apply principles of adult learning theory (Dunst & Trivette, 2009) to motivate and enable parents to use intervention strategies. Parent coaching includes several distinct core components (Friedman et al., 2012). Specifically, the clinician: (1) delivers coaching within the family's daily routines; (2) demonstrates the intervention strategy to the parents; (3) collaborates with parents on intervention goals and strategy selection; (4) provides the parent with in-vivo feedback about their use of the intervention strategies; and (5) engages the parent in reflection and problem solving around barriers to using the intervention strategies (Dunst & Trivette, 2009; Friedman et al., 2012; Tomeny et al., 2020). Previous research has found that early intervention providers demonstrate substantial variability in their use of these parent coaching components during their usual practice with families of young autistic children, meaning they used some parent coaching components but did not use others (Pellecchia et al., 2022). Clinicians' use of these core components may be influenced by distinct, factors; to date, however no research has examined whether provider perceptions of parent coaching are similar or different across core coaching components.

Theory of Planned Behavior

The Theory of Planned Behavior (TPB; Ajzen, 1991), a causal model of behavior prediction, may be useful for understanding clinicians' use of parent coaching. The TPB posits that an individual's intentions closely predict their behavior, under circumstances that permit the individual to act on their intentions. The theory also posits that several psychological factors affect an individual's intentions to engage in a given behavior. Specifically, attitudes (perceptions of the relative advantages or disadvantages of

performing the behavior), descriptive normative pressure (perceptions of the extent to which others do the behavior), injunctive normative pressure (perceptions of the extent to which others want the individual to do the behavior), and perceived behavioral control, also referred to as self-efficacy (confidence the individual can perform the behavior if desired) shape intentions for any given behavior (Ajzen, 1991). This model has been empirically supported for a number of health behaviors (Armitage & Conner, 2001). It has also been widely applied to understand the clinical behavior of healthcare professionals (Godin et al., 2008), and the implementation of evidence-based mental health interventions (e.g., Fishman et al., 2018; Maddox et al., 2019; Wolk et al., 2019).

A recent systematic review of studies examining mechanisms of implementation strategies found that the Theory of Planned Behavior was among the most widely applied theory in studies examining mechanisms of implementation in health (Lewis et al., 2020). The TPB may be useful in studies of implementation behavior for several reasons. First, TPB constructs (i.e., attitudes, norms, self-efficacy) provide potential targets for novel implementation strategies. For example, Beliefs and Attitudes for Successful Implementation in Schools (BASIS), is a blended pre-implementation strategy, grounded in the TPB, that aims to strengthen providers' intentions to implement an EBP by targeting factors such as provider attitudes, perceived subjective norms, and self-efficacy (Larson et al., 2021; Lyon et al., 2019).

Second, the TPB may be useful for tailoring implementation strategies to contexts, providers, and EBPs. For example, implementation strategies targeting attitudes, norms, and self-efficacy may be most important in contexts where provider intentions to use parent coaching are weak. Further, if one specific psychological factor (e.g., attitudes) is most strongly linked to provider intentions, it may be particularly important and efficient for implementation strategies to target that specific factor (Fishman et al., 2021). On the other hand, if provider intentions to use parent coaching are strong, but implementation is rare, strategies should target the factors that prevent providers from acting on their strong intentions, such as skills or environmental constraints (Fishman et al., 2018).

Clinicians' intentions, attitudes, normative pressure, and self-efficacy as well as the associations among these constructs, may vary across the core components of parent coaching. Elucidating these relationships specific to each component could lead to targeted implementation strategies that are tailored for specific core components of complex, psychosocial interventions (Fishman et al., 2020).

Current Study

The goal of the current study was to examine individual-level factors that may be important for early intervention clinicians' use of parent coaching, using the Theory of Planned Behavior as a framework. Among early intervention clinicians ("clinicians"), we measured their strength of intention to use each of the five core components of parent coaching: collaboration with parents ("collaboration"), delivering intervention within daily routines ("daily routines"), demonstrating the intervention strategy for a parent ("demonstration"), providing a parent in-vivo feedback ("feedback"), and asking a parent to reflect on the use of an intervention strategy and problem solve regarding potential barriers ("reflection/problem solving"). For each core component, we also measured four theoretical psychological determinants of intentions (i.e., potential individual-level mechanisms): attitudes, descriptive norms, injunctive norms, and self-efficacy.

We used these data to address three primary research questions. First, how strong are clinicians' intentions, to use each component of parent coaching, and to what extent do attitudes, norms, and self-efficacy for each component vary? Finally, how do attitudes, descriptive normative pressure, injunctive normative pressure, and self-efficacy relate to clinicians' intentions to use parent coaching, and do these relations vary by parent coaching component?

Method

Procedures

We invited early intervention clinicians from 44 agencies that were in one of two different areas of the United States to participate in this study. Agency recruitment occurred through the study team and their academic colleagues engaged in community-based early autism research. Community partners at the agency and system levels shared information about the study opportunity to their networks of early intervention agency leadership. We administered the surveys in person at 3 agencies during group staff meetings, from which we collected 37 surveys. At the other 41 agencies, agency leaders distributed information about the survey to all clinicians in their agency. Interested clinicians contacted the study team, which provided them with a secure, unique survey link via email. The survey included questions about clinicians' demographic information and professional background, and questions about their intentions to use each of the five core components of parent coaching (collaboration with parents; delivering intervention within daily routines; demonstrating the intervention strategy for

Table 1 Participant Demographics and Professional Characteristics ($N = 256$)

Variables	%
Gender:	
Female	94.5%
Male	4.3%
Missing	1.2%
Race:	
White	77.0%
African-American or Black	8.2%
Asian	8.2%
American Indian/Alaska Native	1.6%
Pacific Islander	0.8%
Middle Eastern	0.8%
Other	6.6%
Ethnicity: Latino/Hispanic/Spanish	15.2%
State:	
PA	70.3%
CA	27.0%
DE	2.3%
OH	0.4%
Job title:	
Speech and Language Pathologist	24.2%
Occupational Therapist	18.0%
Special Instructor	26.6%
ABA Therapist	14.5%
Physical therapist	9.8%
Other	12.9%
Employee Type:	
Full-time employee	26.2%
Part-time employee	7.4%
Independent contractor	67.2%
Other	1.2%
Highest Level of Education:	1.2%
Some College	18.0%
College	79.7%
Graduate/Professional Degree	0.8%
Other	0.4%
Missing	
Specialized training with ASD? Yes	62.0%
Specialized training in parent coaching? Yes	56.1%

a parent; providing a parent in-vivo feedback; and asking a parent to reflect on the use of an intervention strategy and problem solve regarding potential barriers). It also included questions about clinicians' attitudes, norms and self-efficacy regarding these components. Participants who completed the survey received a $45 electronic gift card. All procedures were approved by the Institutional Review Boards of the University of Pennsylvania and the City of Philadelphia.

Participants

A total of 264 clinicians from 37 agencies, out of 358 clinicians who were invited (74% response rate), consented to participate in the survey. The analytic sample consists of 256 clinicians from 35 agencies who provided data on at least one intentions or psychological determinant variable. Data from 8 clinicians, who consented to the survey but did not provide data on any of the variables used in the current analyses were discarded. Table 1 provides demographic characteristics of the sample. The sample was majority White and female, and most participants in the sample had obtained a graduate/professional degree. Participants in the sample had, on average, 7.7 years of experience working in early intervention ($SD = 8.3$), and more than half of the participants (56%) reported receiving specialized training in parent coaching independent of the current study.

Measures

Demographics and Background Characteristics

The survey asked questions about clinicians' socio-demographic and professional background characteristics including gender, race, ethnicity, job title, employment type (i.e., full time, part time, independent contractor), years' experience working in early intervention, and specialized training.

Intentions

Participants were asked to rate their strength of intention to use each of the five core components of parent coaching at almost every parent session (Table 2). The items used validated stems (Fishbein & Ajzen, 2010) for each core component (e.g., "How likely are you to collaboratively make decisions with parents at almost every session?"). Each item was rated on a 7-point scale (1 = Extremely unlikely to 7 = Extremely likely) with higher numbers representing stronger intentions. To ensure that respondents had a clear understanding of the coaching components when completing the survey, precise definitions for each coaching component and examples were included in the survey in bolded print and presented before the survey questions for each component.

Psychological Determinants of Intentions

Participants reported their attitudes about each core component of parent coaching (i.e., "Think about what it would be like if you almost always work with parents during their usual daily routines during sessions. Would that feel…") using four items (i.e., inappropriate-appropriate; stressful-calm; inconvenient-convenient; useless-helpful) rated on a scale from 0 to 10 for each item (Fishbein & Ajzen, 2010). In the current sample, the scales had high internal consistency for each parent coaching component (α's between

Table 2 Intentions and Psychological Determinants of Intentions for Five Component Practices of Parent Coaching

	Collaboration		Daily Routines		Demonstration		Feedback		Reflection and Problem Solving	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Intentions (1–7)	5.98	1.19	5.67	1.31	6.15	1.20	5.86	1.14	5.93	1.15
Attitudes (0–10)	8.12	1.64	8.02	1.67	8.51	1.41	7.93	1.66	8.32	1.48
Descriptive Norms (1–5)	3.82	0.84	3.78	0.90	4.21	0.71	3.89	0.79	3.89	0.78
Injunctive Norms (1–5)	4.49	0.57	4.41	0.62	4.40	0.65	4.32	0.62	4.39	0.61
Self-efficacy (1–5)	4.38	0.81	4.27	0.78	4.52	0.60	4.34	0.72	4.36	0.66

Note. Daily Routines were defined as "work with parents during their usual daily routines at almost every parent session;" Feedback was defined as: "How likely are you to "give immediate feedback to parents after they attempt a technique at almost every parent session;" Collaboration was defined as: "collaboratively make decisions with parents at almost every parent session;" Reflection and Problem Solving was defined as: "reflect and problem solve with parents regarding technique use at almost every parent session;" Demonstration was defined as: "Demonstrate an intervention strategy for a parent at almost every parent session."

0.84 and 0.88). A composite score was calculated by averaging these four items.

Participants also reported descriptive norms using two items (i.e., "At my organization, most practitioners will do this"; "Most practitioners who work with similar parents are willing to do this.") on a 5-point scale from 1 = Strongly disagree to 5 = Strongly agree for each of the coaching components. Correlation between these items ranged from Spearman's Rho = 0.68 to 0.80. A composite score was calculated by averaging these two items.

Injunctive norms were measured using the question stem: "If you almost always collaboratively made decisions with parents during a parent session, how would the following groups of people feel about you doing that?", with a 5-point scale ranging from 1 = Strongly disapprove to 5 = Strongly approve for three potential groups of people: "My boss/supervisor," "The parents being collaborated with," and "Colleagues who are important to me." Because ratings regarding "my boss/supervisor" and "colleagues who are important to me" were substantially correlated with each other (all Spearman's Rhos > 0.5), but correlations between ratings regarding "my boss/supervisor" and "the parents being collaborated with" were lower (Spearman's Rho's ranging from 0.27 to 0.44), a composite score was calculated by averaging ratings for "boss/supervisor" and "colleagues who are important to me."

Finally, participants reported on self-efficacy for each core component of parent coaching using the item "I am confident that, if I wanted to, I could do this" rated on a 5-point scale ranging from 1 = Strongly disagree to 5 = Strongly agree.

Analytic Approach

Because data were collected from clinicians nested within 35 agencies, we also used intraclass correlation coefficients (ICCs) to examine the amount of variation in intentions that can be accounted for by agency.

For. the whole sample, we calculated means, standard deviations, and response frequency distributions to describe clinicians' intentions, attitudes, norms, and self-efficacy regarding the five parent coaching components.

We then used independent sample t-tests to determine whether intentions for each parent coaching component varied between job type (i.e., full-time employee, part-time employee independent contractors), as well as by job title (i.e., speech and language pathologist, occupational therapist, special instructor, ABA therapist, physical therapist, other).

Finally, we used linear mixed models (one for each parent coaching component) to examine the relationship between the four psychological determinants of intentions (i.e., attitudes, descriptive norms, injunctive norms, self-efficacy) and early intervention clinicians' intentions to use each of the parent coaching components. The models included attitudes, descriptive norms, injunctive norms and self-efficacy as fixed effects, random intercepts for agency, and intentions to use the core component of parent coaching as the dependent variable. For ease of comparison across scales, we computed standardized regression coefficients by multiplying the unstandardized coefficient by the standard deviation of the X variable and dividing by the standard deviation of the Y variable (Snijders and Bosker, 2012).

Results

Strength of Intentions and Psychological Determinants of Intentions

Intraclass correlation coefficients (ICCs) for clinician intentions to use each of the five core components of parent coaching ranged from 0.01 (for demonstration) to 0.08 (for collaboration), indicating that 8% or less of the total variation in intentions for each core component could be accounted for by agency.

Table 3 Linear mixed models with attitudes, descriptive norms, injunctive norms and self-efficacy as fixed effects, random intercepts for agency, and intentions to use parent coaching components as the dependent variable (separate models for each component)

	Collaboration		Daily Routines		Demonstration		Feedback		Reflection and Problem Solving	
	β	*p*	**β**	*p*	**β**	*p*	**β**	*p*	**β**	*p*
Attitudes	**0.30**	**< 0.001**	**0.27**	**< 0.001**	**0.31**	**< 0.001**	**0.42**	**< 0.001**	**0.49**	**< 0.001**
Descriptive Norms	0.09	0.15	0.10	0.11	0.08	0.22	**0.14**	**0.04**	**0.18**	**0.003**
Injunctive Norms	**0.18**	**0.005**	**0.21**	**< 0.001**	**0.20**	**0.007**	0.10	0.17	0.02	0.74
Self-efficacy	**0.21**	**< 0.001**	**0.30**	**< 0.001**	0.02	0.76	0.05	0.40	0.02	0.71

Means and standard deviations of intentions, attitudes, descriptive norms, injunctive norms, and self-efficacy regarding the use of the five parent coaching components are shown in Table 2. Across the five parent coaching components, mean intentions scores ranged from 5.67 (for daily routines, between "Slightly Likely and Quite Likely") to 6.15 (for demonstration, between "Quite Likely and "Extremely Likely"). Attitude composite scores ranged from 7.93 (for feedback) to 8.51 (for demonstration). The mean descriptive norm scores ranged from 3.78 (for daily routines) and 3.89 (for feedback and reflection and problem solving; all between "Neither Agree nor Disagree" and "Agree"). Injunctive norm composite scores ranged from 4.32 (for feedback) to 4.49 (for collaboration; both between "Approve" and "Strongly Approve"), and self-efficacy scores ranged from 4.27 (for daily routines) to 4.52 (for demonstration; both between "Agree" and "Strongly Agree").

The Role of Job Type and Job Title

Clinician intentions to use each of the parent coaching components did not significantly differ based on whether the provider was a full-time employee, part-time employee, or independent contractor. Similarly, intentions to use most practices did not differ based on provider job title. The only exception was intentions to use Demonstration, which were significantly higher for physical therapists ($M = 6.48$, $SD = 0.65$) than for other clinicians ($p = .022$). These results should be interpreted with caution give the number of comparisons tested.

Associations Between Psychological Determinants and Intentions

Results of linear mixed models predicting intentions from attitudes, descriptive norms, injunctive norms, and self-efficacy are displayed in Table 3.

For collaboration, attitudes (b = 0.22, $p < .001$), injunctive norms (b = 0.38, $p = .005$), and self-efficacy (b = 0.31, $p < .001$), but not descriptive norms, significantly predicted clinicians' intentions. Similarly, for daily routines, attitudes (b = 0.21, $p < .001$), injunctive norms (b = 0.45, $p < .001$), and self-efficacy (b = 0.51, $p < .001$), but not descriptive norms, significantly predicted clinicians' intentions.

For demonstration, only attitudes (b = 0.26, $p < .001$), and injunctive norms (b = 0.36, $p = .007$) predicted intentions.

For feedback, attitudes (b = 0.29, $p < .001$) and descriptive norms (b = 0.20, $p = .04$), but not injunctive norms and self-efficacy, predicted clinician intentions. Similarly, for reflection and problem solving, attitudes (b = 0.38, $p < .001$) and descriptive norms (b = 0.27, $p = .003$), but not injunctive norms and self-efficacy, predicted intentions.

Discussion

Although they often are treated as monolithic, psychosocial interventions usually have many components, and clinicians' motivation and ability to implement each of these components may vary. To date, however, few implementation strategies have taken the multifaceted quality of these interventions into account. The present study adds to the small but growing body of evidence suggesting that implementation strategies should be tailored to the specific intervention component to be most efficient and effective.

Clinicians' average intentions were strongest for demonstrating the intervention strategy for a parent. This is perhaps not surprising, given that demonstrating interventions is the component closest to working directly with the child, the activity and skillset with which clinicians often have most comfort (Campbell & Halbert, 2002; Fleming et al., 2011). Intentions were weakest for delivering interventions within daily routines. This component may depend on whether the visit coincides with a relevant routine and also require more clinician creativity. These results varied little by whether the clinician was a fulltime employee, part-time employee or a contractor, or by their discipline.

The intervention components showed distinct patterns about which psychological determinants were associated with intentions. For collaboration and daily routines, clinicians' attitudes (whether the clinician perceived that component as a good or bad thing to use), injunctive norms (whether the clinicians perceived that others want them to use the component), and self-efficacy (whether the clinician was confident that they can use the component), but not

descriptive norms (whether clinicians perceived that other clinicians like them used that component), all were associated with their intentions. For feedback and reflection and problem solving, only attitudes and descriptive norms were associated with intentions. Finally, for demonstration, attitudes and injunctive norms predicted intentions. The finding that clinician attitudes were important for all components is consistent with findings that attitudes toward innovation can be important predictors of whether the innovation is adopted (Aarons, 2005; Nelson et al., 2006). In contrast, descriptive norms were associated only with providing parents feedback and engaging in reflection and problem solving, two related components that often are paired during coaching. One possible explanation for why these specific components were associated with descriptive norms is that many clinicians may not view providing parents feedback as within the scope of their roles (Tomczuk et al., 2022). Furthermore, clinicians working within early intervention systems have reported a preference for intervening directly with the child, instead of providing feedback to parents (Sawyer & Campbell, 2012), which may make descriptive norms important for feedback and reflection and problem solving in particular. This finding suggests that implementation strategies focused on changing clinicians' perceptions of the extent to which others are using an innovation or components of an innovation, like delivering feedback or reflecting and problem solving, could be important for improving their intentions to implement those components.

Components of complex interventions may also differ in their feasibility and acceptability for implementation. It is possible that providers viewed components of parent coaching as more acceptable or more feasible to implement within publicly funded early intervention, which would influence their intentions and determinants of intentions to use those components. A more in-depth qualitative exploration into providers' perspectives about the feasibility, acceptability, and usability of the parent coaching components can greatly inform large scale implementation efforts.

We note several study limitations. First, participating agencies were recruited via outreach to community partner agencies and word of mouth, which may have led to a sample that was not representative of EI agencies in the regions overall. Similarly, the sample of clinicians who responded to the survey may have not been representative of clinicians in the agency overall, and information is not available about the clinicians who did not respond. This is a common limitation among community-based survey research, and our 74% response rate was quite high (Baruch & Holtom, 2008). Second, the current study focused exclusively on individual-level clinician factors. The importance of examining potential implementation mechanisms at multiple levels is increasingly recognized (Williams, 2016), and it is possible that organizational and system level factors affect providers' intentions to use parent coaching. We argue, however, that to the extent organizational variables are important, they likely are mediated through the clinician-level psychological characteristics we measure here (Fishman et al., 2018, 2020). Moreover, given the observed ICCs, the most variance in clinician intentions that could be accounted for by agency-level variables is 8%. Nevertheless, the incorporation of organization- and system-level factors is an important future direction. Finally, we do not have data regarding clinicians' actual use of the parent coaching components. Although intentions have predicted practitioner behavior in a variety of settings (Godin et al., 2008; Presseau et al., 2014), it would have been potentially useful to collect data regarding the providers' use of these intervention components during sessions with families of young children with ASD. Direct observation of usual practice was beyond the scope of this study although existing literature cites poor implementation of evidence-based parent coaching (Pellecchia et al., 2022; Salisbury et al., 2012), which makes it important to identify specific factors for implementation strategies to target.

Despite these limitations, there are important implications related to our findings. The current results provide evidence for potential individual-level targets for implementation strategies (i.e., attitudes, norms, self-efficacy), which can inform needed work to specify mechanistic implementation strategies (Lewis et al., 2018; Williams, 2016); moreover the results suggest that key implementation strategy targets may vary by intervention component. These results suggest that efficient and effective implementation strategies will address several issues concurrently. First, they will address components of complex interventions separately, recognizing that what drives successful implementation of one component may differ from what drives implementation of others. Second, strategies should differ when intentions to implement are strong, compared with when they are weak. When intentions are weak, strategies should leverage psychological determinants of intentions to strengthen them. When they are strong, strategies should focus on removing barriers to practitioners acting on strong intentions (Fishman et al., 2018, 2020). Choosing strategies could involve examining average strength of intentions for a particular group of practitioners, but also opens the possibility of individualized implementation strategies that address implementation barriers specific to the individual.

Finally, to the extent that intentions are an important predictor of implementation, effective implementation strategies will target different determinants of intention to increase the strength of those intentions. This could involve offering incentives or changing clinicians' understanding of the value of a particular component to improve attitudes;

increasing the effectiveness of supervisor or parent messaging or using peer comparisons to strengthen norms; or using training or coaching to improve self-efficacy. Indeed, recently-developed implementation strategies, such as the BASIS strategy (Larson et al., 2021; Lyon et al., 2019) target these potential mechanisms. The current results suggest the importance of developing and testing similar strategies to strengthen early intervention clinicians' intentions to use parent coaching.

Furthermore, our results suggest that at least for parent coaching, a suite of potential strategies should be developed depending on the intervention component. This is likely the case for other complex psychosocial interventions as well, and is consistent with recent efforts to improve the tailoring of implementation strategies (e.g., Highfield et al., 2018; Krause et al., 2014; Powell et al., 2017). The consideration of intervention component in the selection and tailoring of implementation strategies for complex, psychosocial interventions delineates a new path forward in developing flexible, efficient and effective strategies to increase use of evidence-based practices.

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Declarations

Compliance with Ethical Standards This study was approved by the Institutional Review Boards of the University of Pennsylvania and the City of Philadelphia, and was performed in accordance with the ethi-cal standards as laid down in the 1964 Declaration of Helsinki and its later amendments. Informed consent was obtained from all individual participants included in the study.

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