

Implementation of Developmental Screening by Childcare Providers

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Early identification of young children at developmental risk is important for linkage to needed services. Yet, despite guidelines for developmental screening, many pediatricians do not systematically use screening tools. Because many young children spend time in childcare settings, conducting screening in these settings may improve rates of early identification. Surveys were sent to 356 childcare providers who attended brief developmental screening training to determine practices and perceptions related to implementation of screening in the childcare setting. A 51.7% useable response rate was obtained. A majority of respondents strongly agreed that developmental screening should be conducted in childcare centers, that it is important for staff to discuss developmental concerns with parents and to link children with concerns to resources, and that their center director supported use of the screening tool. Several attitudes both about developmental screening and about organizational support had a positive and significant relationship with current use and intended future use of developmental screening tools. Findings suggest that even brief staff training may positively impact screening attitudes and practices, although follow-up technical assistance may result in fuller, more effective implementation. **Key words:** *assessment, at risk, childcare providers, developmental delay, developmental screening*

EARLY IDENTIFICATION of children who are at risk for developmental delays is a preventive practice that can improve a child's

developmental trajectory and reduce the negative effects of a disability (Brown & Guralnick, 2012). Unfortunately, more than 70% of children with developmental delays are not identified until 5 years of age (Glascoe, 2005). The prevalence of developmental delays has been reported at 12%–16% for children birth through 8 years of age, whereas the prevalence for children receiving early intervention services is approximately 2.7% for children birth through 2 years of age and 5% for children 3–5 years of age (Kasprzak et al., 2012). For autism spectrum disorder, despite symptoms often being present by 12 months of age, the typical age of diagnosis is 4–5 years of age (Centers for Disease Control and Prevention, 2018), and those with low socioeconomic status or racial and ethnic minorities tend to be identified even later (Durkin et al., 2010). Thus, young children in need of early intervention services are not being served.

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Effective screening is the first step to diagnosis and provision of early intervention services. Because of the importance of screening as a means of addressing developmental delays, a variety of professional organizations, federal and state agencies, and researchers have recommended that universal developmental screening occur (Branson & Bingham, 2017). The Child Find mandate of the Individuals with Disabilities Education Improvement Act (IDEA, 2004) indicates that states must have policies and procedures to ensure that all children with disabilities and who need special education and related services are identified, located, and evaluated (Weishaar, 2008).

In 2006, the American Academy of Pediatrics (2006) published a policy statement calling for periodic developmental screenings. Use of a standardized screening tool (e.g., Modified Checklist for Autism in Toddlers, Revised [M-CHAT-R]; Parents' Evaluation of Developmental Status [PEDS]; Survey of Well-Being of Young Children [SWYC]) by pediatricians has been found to improve identification of children at risk (Hix-Small, Marks, Squires, & Nickel, 2007); however, more than 50% of pediatricians report that they rely on informal checklists or clinical opinion rather than using a standardized developmental screening instrument (Radecki, Sand-Loud, O'Connor, Sharp, & Olson, 2011). They report lack of time, staff, and reimbursement as barriers to use of standardized screening tools (Schonwald, Horan, & Huntington, 2009).

In efforts to extend the use of developmental screening, other service providers who have contact with young children have been identified as appropriate for implementation of screening. Because 61% of children in the United States younger than 5 years spend time in out-of-home childcare (Laughlin, 2013), childcare providers have access to a large percentage of young children for a substantial amount of time. Consequently, the National Association for the Education of Young Children (2003) has recommended that childcare providers conduct developmental screenings. Public policy initiatives at the federal and state levels have also focused on the role of child-

care providers in implementing developmental screening (Johnson-Staub, 2014). For example, the state of New Jersey, through Grow NJ Kids, New Jersey's early childcare, and education quality rating improvement system, has identified use of "a research-based developmental screening tool to identify children who may need additional evaluation and/or intervention strategies" as a quality standard for childcare and early learning programs and specifies use of the Ages & Stages Questionnaire, Third Edition (ASQ-3; Squires, Twombly, Bricker, & Potter, 2009), as an appropriate screening instrument (Grow NJ Kids, 2015).

Although professional association and public policy recommendations and regulations have been initiated at the federal and state levels, there is a lack of information available on the extent to which childcare providers are implementing screening and the conditions that may be hindering or facilitating this process. In one recent study, Branson and Bingham (2017) investigated childcare providers' ability to accurately screen child development and make appropriate referrals when screening results indicated. Although childcare providers were found to be able to identify children at risk for developmental delays, with or without a standardized screening tool, they did not indicate that they would refer those children for services. The type or amount of training study participants received on developmental screening was not specified. Follow-up interviews with nine of the original 105 study participants indicated that barriers to referral included the following: concerns about parents' feelings; childcare center policies and procedures; feelings of not being qualified to make referrals; and lack of knowledge about referral agencies.

For many childcare providers, screening may be a new practice or one that they have recently started to use. The concept of implementation science focuses on putting new practices to use and incorporating new practices in an organizational setting; it is the pathway from a decision to use a new practice and routine use of that practice (Rogers, 2003).

Implementation science focuses on examining how to support use of new practices and how new practices are assimilated into an organization. Implementation science literature indicates that there are both individual and organizational/systems factors that can facilitate or hinder use or implementation (Damschroder et al., 2009; Durlak & Dupre, 2008; Forman, 2015). Individual factors include the new implementers' perceptions of the potential positive impacts of the new practice; compatibility with their values, attitudes, and beliefs and those of their organization; fit with other work tasks and programs; perceptions of the ease of use of the new practice; and perceived competence to carry out the new practice (self-efficacy). Organizational/systems factors include support of coworkers for the new practice (implementation is a social process), support of managers/administrators, financial support, supportive organizational policies and procedures, and provision of effective training and technical assistance. The extent to which these factors influence use of developmental screening by childcare providers can provide direction for the development of strategies to increase uptake of this practice through training and technical assistance aimed at building individual and organizational capacity and support. However, at present, such information is very limited. Information derived from implementation science aims to bridge the gap between professional practices that have been identified as "best practices" or optimal and current practices.

This study aimed to determine the extent to which childcare providers implement developmental screening and subsequent referral when needed, their perceived barriers and facilitators to implementation, and to determine the relative influence of individual and organizational factors that facilitate or hinder implementation. This study investigated the extent to which childcare providers (a) implement use of a standardized screening instrument after workshop training; (b) perceive developmental screening and use of screening results as consistent with their work role and goals;

(c) perceive a standardized screening instrument as useful and easy to use; (d) perceive a standardized screening instrument to be reasonable in terms of time required and financial cost; (e) perceive their coworkers and center director to be supportive of screening; (f) feel competent to conduct screening; and (g) feel competent to engage in follow-up with parents.

METHODS

The Rutgers University institutional review board approved this study.

Participants

Participants included 356 directors and staff members from childcare centers in New Jersey who attended a training workshop on conducting developmental screening using the ASQ-3. Participants registered in advance for developmental screening training sessions. There was a maximum of 40 participants per training session. Participants came from all 21 counties in New Jersey, and workshops rotated between different counties and regions in the state to facilitate this state-wide access and representation.

Postal mail distribution of the survey yielded a 51.7% usable response rate (134 respondents out of 259 potential respondents). The 259 potential respondents represent an adjusted denominator from 356 total sent surveys to account for 97 surveys that were never delivered to the target recipient ($n = 21$ returned to sender as "undeliverable"; $n = 30$ notified that target recipient was no longer employed at center; $n = 46$ notified that the childcare program was no longer running).

Training workshop description

The training was delivered by a master's level child development specialist and consisted of a 3-hr workshop that included a description and discussion about the definition and importance of developmental screening. Features of the ASQ-3 were explained, and implementation strategies on how to best use the screening tool in preschool/daycare

settings were identified. An overview of where to refer families if their child needed further evaluation was provided. A case study was presented, which allowed participants the opportunity to practice scoring the instrument and to discuss factors that might impact screening results. The importance of sensitive communication of screening results was described, and participants had the opportunity to role-play how to communicate results to families. Each participant received a training manual that included a review of workshop material and a variety of helpful tools and resources to make implementation of developmental screening easier. Examples of resources included tips for scoring the ASQ-3, sample letters to parents, and local resources for further evaluations and services. Each attendee was given ASQ-3 ordering information, a discount coupon from the test publishing company, and a certificate of training completion.

Survey instrument

Given the lack of published instruments assessing childcare providers' implementation of developmental screening within childcare centers, a 30-item survey was developed by study investigators to identify attitudes around developmental screening in general and attitudes and practices around using the ASQ-3 in particular. The survey was developed using the implementation science framework of Damschroder et al. (2009).

The survey consisted of 27 multiple-choice or Likert-type items and three open-response items. The survey was organized into four sections: (a) *Characteristics of Childcare Providers/Centers*—six items designed to elicit information regarding the size and setting of center and training and background of respondent; (b) *Attitudes About Developmental Screening*—four items designed to elicit information regarding the role of developmental screening in childcare centers (attitude meaning an evaluation of an activity influenced by beliefs); (c) *Attitudes and Practices About the ASQ-3*—15 items designed to identify current screening practices as well as

barriers and facilitators to those practices; five subcategories included perceptions of role and current use of the ASQ-3, perceptions of usefulness of the ASQ-3, perceptions of barriers and facilitators to using the ASQ-3, intent to use the ASQ-3 in the future, and perceptions of barriers to providing useful feedback to parents regarding ASQ-3 results; and (d) *Future Needs*—five items designed to identify future needs for training and to elicit open-ended responses to barriers and facilitators to screening. We piloted the survey with four developmental specialists with expertise on the implementation of the ASQ-3. Edits pertaining to content, readability, and feasibility of completion were made on the basis of this feedback. The survey took approximately 10 min to complete. English and Spanish versions of the survey were used. Spanish translation was conducted by a certified translator.

Items assessing attitudes were based on factors identified in the implementation science literature as having an impact on use and sustainability of new practices in a variety of organizational environments including education and health care service settings (Damschroder et al., 2009; Durlak & Dupre, 2008; Forman, 2015). Each of these items was designed to assess an individual or organizational factor that has been identified as having the potential to influence implementation success. These factors included attitudes about the impact or effects of the new practice (e.g., “I think the ASQ-3 results provide useful information for teachers/staff”; “I think ASQ-3 results provide useful information for parents”); compatibility with the new implementer's values and attitudes about developmental screening (e.g., “All children should have developmental screening in their childcare center”; “It is important for childcare staff to discuss children's developmental concerns with parents”); fit with their other work tasks (e.g., “Developmental screening should be part of my work role”; “The time required for the ASQ-3 is reasonable for me, given my other work responsibilities”); perceptions of ease of use (e.g., “I think it is easy for parents to complete the ASQ-3”; “I think it is easy to score the ASQ-3”);

perceptions of self-efficacy (e.g., “I feel competent to use the ASQ-3”; “I feel confident in my ability to give feedback to parents about ASQ-3 results”); perceptions of coworker support (e.g., “The other staff in my center think using the ASQ-3 is a good idea”); perceptions of administrative support (e.g., “The director of my center supports the use of the ASQ-3”); perceptions of adequacy of financial support (e.g., “The financial cost of the ASQ-3 is not a problem for my center”); and compatibility with organizational policies (e.g., “Completing the ASQ-3 will help my center accomplish its goals and serve children better”).

Data collection procedure

A survey was sent via postal mail to 356 childcare providers in New Jersey who attended a state-recommended 3-hr training session on developmental screening using the ASQ-3 between December 2016 and November 2017. Surveys were sent in August 2018 to ensure that childcare centers had sufficient time (at least 8 months) to purchase ASQ-3 materials, implement screening, and determine effectiveness/needs.

The mailer (#10 size envelope) contained (a) a personalized cover letter on institutional letterhead with the front side in English and the backside in Spanish, (b) English and Spanish versions of the survey, (c) a noncontingent monetary incentive, and (d) a self-addressed stamped envelope (#9 size envelope). The personalized cover letter outlined the rationale for the study, delineated inclusion criteria, and described instructions for participation that included the informed consent procedures and confidentiality safeguards that were to be used. The monetary incentive was a \$10 bill that was included in all mailers for participants to keep, regardless of whether they elected to participate or not.

Data analytical procedure

Quantitative analysis

Responses to the multiple-choice and Likert-type items were entered into Microsoft Excel software and checked by two investigators for miscoded data. Data were then analyzed using R (R Core Team, 2013). For

research questions that investigated the relation between two ordinal variables, polychoric correlations between the variables were estimated using diagonally weighted least squares estimation using the R package lavaan (Rosseel, 2012). Polychoric correlations were used because they are designed to measure relationships between ordinal variables and do not assume that the variables are measured at an interval or ratio level. The average percentage of missing data on the variables was 2% (range = 0%–9%). Listwise deletion was used to handle missing data.

Qualitative analysis

Responses to the three open-ended items were examined through qualitative content analysis (Leech & Onwuegbuzie, 2008). Using this method, for each item, two investigators independently read the responses and developed a list of themes. The themes were labels designed to reflect the meaning of the response and to identify similarities and differences among the responses. Investigators then compared their lists and, through discussion, agreed on a set of themes that would be used to code the responses from each of the three open-ended items. The two investigators then independently read and coded responses using the agreed-upon coding categories (themes) for each item. After this independent coding, the two investigators met to review their response codes. When a discrepancy in coding between the investigators was identified, they discussed their rationale for coding until they agreed on a final code that would be used for the response. Once coding was completed for the three open-response survey items, a response rate was calculated by adding the number of responses coded for a particular theme and dividing it by the total number of responses for that survey item.

RESULTS

Survey Section A: Participant demographics

Respondents in the childcare centers most commonly identified as teacher (44.5%) or director (33.6%). More than two thirds (68.2%)

of the childcare centers enrolled more than 60 students, with roughly one third (33.3%) enrolling more than 100 students. Centers were described as urban (21.7%), suburban (70.2%), or rural (8.1%). The majority of respondents had a college or graduate school degree (72.1%). Also, the majority of respondents (88.5%) had at least 5 years' experience as a childcare professional. Participant demographics are detailed further in Table 1.

Survey Section B: Attitudes about developmental screening in general

The majority (72.4%) of respondents strongly agreed that all children should have

developmental screening in their childcare centers. Furthermore, 57.9% of respondents strongly agreed that part of their work role should be to conduct the developmental screenings, whereas 42.1% only somewhat agreed, somewhat disagreed, or strongly disagreed with this being part of their work role. The large majority of respondents strongly agreed that it is important for childcare staff to discuss children's developmental concerns with parents (87.1%) and that it is important for childcare staff to link children with developmental concerns to resources (79.5%). See Table 2 for more response detail.

Survey Section C: Attitudes and practices about the ASQ-3

See Table 3 for more response detail for this section that includes the following five subcategories: perceptions of role and current use of the ASQ-3; perceptions of usefulness of the ASQ-3; perceptions of barriers and facilitators to using the ASQ-3; intent to use the ASQ-3 in the future; and perceptions of barriers to providing useful feedback to parents regarding ASQ-3 results.

Perceptions of role and current use of the ASQ-3

When asked about their use of the ASQ-3 in their centers, 39.2% of respondents indicated that they have completed ASQ-3 screening with all children. However, 67% of respondents strongly agreed that they intend to use the ASQ-3 in the future. Professionals' attitude that all children should have developmental screening in their centers was positively and significantly related to the proportion of children that they screened in their centers ($r = .4, p < .001$). Professionals' attitude that all children should have developmental screening in their centers was positively and significantly related to their intent to use the ASQ-3 in the future ($r = .52, p < .001$). Professionals' attitude that developmental screening should be part of their role was positively and significantly related to the proportion of children that they screened in their centers ($r = .28, p = .012$) and their intent to

Table 1. Survey Participant Demographics

Characteristic	N	n (%)
Current role/position	128	
Director		43 (33.6)
Assistant director		6 (4.7)
Teacher		57 (44.5)
Assistant teacher		22 (17.2)
Number of children in center	129	
1-5		3 (2.3)
6-20		5 (3.9)
21-40		9 (7.0)
41-60		24 (18.6)
61-100		45 (34.9)
>100		43 (33.3)
Setting of center	124	
Urban		27 (21.7)
Suburban		87 (70.2)
Rural		10 (8.1)
Educational background	133	
Some high school		1 (0.8)
Completed high school		16 (12.0)
Some college		20 (15.0)
College degree		68 (51.1)
Graduate school degree		28 (21.0)
Years' experience as a childcare professional	131	
<2		2 (1.5)
2-5		13 (9.9)
5-10		29 (22.1)
>10		87 (66.4)

Note. Not all 134 participants responded to these items.

Table 2. Attitudes About Developmental Screening in General

Characteristic	N	n (%)
All children should have developmental screening in their childcare center	134	
Strongly disagree		7 (5.2)
Somewhat disagree		3 (2.2)
Somewhat agree		27 (20.2)
Strongly agree		97 (72.4)
Developmental screening should be a part of my work role	133	
Strongly disagree		4 (3.0)
Somewhat disagree		9 (6.8)
Somewhat agree		43 (32.3)
Strongly agree		77 (57.9)
It is important for childcare staff to discuss children's developmental concerns with parents	132	
Strongly disagree		4 (3.0)
Somewhat disagree		0 (0.0)
Somewhat agree		13 (9.9)
Strongly agree		115 (87.1)
It is important for childcare staff to link children with developmental concerns to resources	132	
Strongly disagree		3 (2.3)
Somewhat disagree		1 (0.8)
Somewhat agree		23 (17.4)
Strongly agree		105 (79.5)

Note. Not all 134 participants responded to these items.

use the ASQ-3 in the future ($r = .47, p < .001$). Professionals' attitude that parents would be cooperative in completing the ASQ-3 was positively and significantly related to the proportion of children that they screened in their centers ($r = .34, p = .001$). The number of children in a center was not significantly related to the proportion of children that was screened in their centers ($r = .03, p = .785$).

Table 3. Attitudes and Practices Regarding the Ages & Stages Questionnaire, Third Edition

Characteristic	N	n (%)
I think the ASQ-3 results provide useful information for teachers/staff	133	
Strongly disagree		2 (1.5)
Somewhat disagree		2 (1.5)
Somewhat agree		50 (37.6)
Strongly agree		79 (59.4)
I think ASQ-3 results provide useful information for parents	132	
Strongly disagree		2 (1.5)
Somewhat disagree		1 (0.8)
Somewhat agree		45 (34.0)
Strongly agree		84 (63.6)
I think it is easy for parents to complete the ASQ-3	133	
Strongly disagree		2 (1.5)
Somewhat disagree		8 (6.0)
Somewhat agree		55 (41.4)
Strongly agree		68 (51.1)
I think it is easy to score the ASQ-3	132	
Strongly disagree		1 (0.8)
Somewhat disagree		5 (3.8)
Somewhat agree		51 (38.6)
Strongly agree		75 (56.8)
The time required for the ASQ-3 is reasonable for me, given my work responsibilities	131	
Strongly disagree		3 (2.3)
Somewhat disagree		15 (11.4)
Somewhat agree		55 (42.0)
Strongly agree		58 (44.3)
The financial cost of the ASQ-3 is not a problem for my center	123	
Strongly disagree		12 (9.8)
Somewhat disagree		22 (17.9)
Somewhat agree		48 (39.0)
Strongly agree		41 (33.3)

(continues)

Table 3. Attitudes and Practices Regarding the Ages & Stages Questionnaire, Third Edition (*Continued*)

Characteristic	N	n (%)
The other staff in my center think using the ASQ-3 is a good idea	130	
Strongly disagree		1 (0.8)
Somewhat disagree		7 (5.4)
Somewhat agree		68 (52.3)
Strongly agree		38 (29.2)
Does not apply		16 (12.3)
The director of my center supports use of the ASQ-3	130	
Strongly disagree		4 (3.0)
Somewhat disagree		5 (3.8)
Somewhat agree		20 (15.4)
Strongly agree		90 (69.2)
Does not apply		11 (8.5)
Completing the ASQ-3 will help my center accomplish its goals and serve children better	133	
Strongly disagree		2 (1.5)
Somewhat disagree		6 (4.5)
Somewhat agree		46 (34.6)
Strongly agree		79 (59.4)
I feel competent to use the ASQ-3	128	
Strongly disagree		1 (0.8)
Somewhat disagree		6 (4.7)
Somewhat agree		43 (33.6)
Strongly agree		78 (60.9)
I think parents are/would be cooperative in completing the ASQ-3	131	
Strongly disagree		3 (2.3)
Somewhat disagree		19 (14.5)
Somewhat agree		73 (55.7)
Strongly agree		36 (27.5)
I feel confident in my ability to give feedback to parents about ASQ-3 results	132	
Strongly disagree		2 (1.5)
Somewhat disagree		9 (6.8)
Somewhat agree		51 (38.6)
Strongly agree		70 (53.0)
		(continues)

Table 3. Attitudes and Practices Regarding the Ages & Stages Questionnaire, Third Edition (*Continued*)

Characteristic	N	n (%)
I think parents do/would follow up on referral recommendations from ASQ-3 results	131	
Strongly disagree		2 (1.5)
Somewhat disagree		17 (13.0)
Somewhat agree		91 (69.5)
Strongly agree		21 (16.0)
I have completed the ASQ-3 with	130	
No children in my class/group		35 (26.9)
A few children who seem to have problems		14 (10.8)
Some children		30 (23.1)
All children		51 (39.2)
I intend to use the ASQ-3 in the future	127	
Strongly disagree		4 (3.1)
Somewhat disagree		4 (3.1)
Somewhat agree		34 (26.8)
Strongly agree		85 (67.0)

Note. Not all 134 participants responded to these items. ASQ-3 = Ages & Stages Questionnaire, Third Edition.

Perceptions of usefulness of the ASQ-3

When asked whether the ASQ-3 results provide useful information for teachers/staff, 59.4% of respondents strongly agreed with this statement. When asked whether the ASQ-3 results provide useful information for parents, 63.6% of respondents strongly agreed with this statement. The proportion of children that professionals screened in their centers was not significantly related to their attitude that the ASQ-3 is useful for teachers ($r = .05, p = .676$) or the ASQ-3 is useful for parents ($r = .15, p = .169$). When asked whether completing the ASQ-3 allows the center to provide better care to children, 59.4% of respondents strongly agreed with this statement.

Perceptions of barriers and facilitators to using the ASQ-3

Financial costs of the ASQ-3 were seen as a barrier to implementation to at least some degree for many respondents (66.7%). When asked whether other staff members in their centers believed that using the ASQ-3 was a good idea, 29.2% strongly agreed. When asked whether the director of their center supports the use of the ASQ-3, 69.2% strongly agreed.

Respondents generally agreed that the ASQ-3 was easy for parents to complete (92.1%), easy to score (95.4%), and that the time required for the ASQ-3 was reasonable in the context of other work responsibilities (86.3%). Only 27.5% of respondents strongly agreed that parents are/would be cooperative in completing the ASQ-3. Only 16% of respondents strongly agreed that parents do/would follow-up on referral recommendations from ASQ-3 results. Also, 60.9% of respondents strongly agreed that they feel competent to use the ASQ-3, whereas 53% of respondents strongly agreed that they feel confident in

their ability to give feedback to families about ASQ-3 results.

The proportion of children that professionals screened in their centers was positively and significantly related to their attitudes that it is easy for parents to complete the ASQ-3 ($r = .3, p = .004$), the ASQ-3 is easy to score ($r = .41, p < .001$), the time required for the ASQ-3 is acceptable ($r = .3, p = .003$), the cost of the ASQ-3 is acceptable ($r = .42, p < .001$), other staff members support use of the ASQ-3 ($r = .38, p < .001$), their directors support use of the ASQ-3 ($r = .29, p = .019$), using the ASQ-3 will help them serve children better ($r = .36, p < .001$), and they are competent at using the ASQ-3 ($r = .51, p < .001$).

Responses to the open-ended item (see Table 4) on barriers indicated that the childcare providers thought that parent issues (36%), lack of provider knowledge (16%), lack of time (26%), and lack of funds (22%) prevented them from doing developmental screening. Parent issues included parents not having time to participate in screening,

Table 4. Response Percentages for Qualitative Coding Themes

Open-Response Survey Item	Coding Theme	Response %
Barriers to screening	Parent issues	36
	Time	26
	Funds	22
	Lack of staff knowledge	16
Barriers to parent feedback sessions	Parents don't attend/have time	26
	Parents deny child problems	21
	Parents don't complete form	19
	Negative parent perception of screening	12
	Lack of staff knowledge/skill	10
	Information is not parent-friendly	5
	Language barriers	5
What would help improve your screening?	Difficult to identify referral services	2
	More training	37
	Better information for parents	21
	Technical assistance	18
	Funds	12
	Time	9
	Add teacher ratings to screening process	4

Note. Response percentages may total more than 100% due to percentages computed at 0.5 or greater being rounded up.

parents not completing the screening instrument, and negative parent attitudes toward and resistance to screening. For example, one respondent stated, “Some of the parents are not giving truthful responses back in the ASQ. Some parents are not returning the survey at all or refusing to do it.” Another stated, “Parents being oppositional for screening of their child even when issues are present and obvious.” Some of the respondents who identified lack of provider knowledge as a barrier indicated that they needed more training, “We need more ongoing training.” The amount of time the screening process takes and the cost of the ASQ-3 were also identified as barriers, given the other demands placed on providers: “We can barely pay staff, much less afford another tool”; “the list of other demands teachers have to meet every day.”

Intent to use the ASQ-3 in the future

Professionals’ intent to use the ASQ-3 in the future was positively and significantly related to their attitudes that the ASQ-3 is useful for teachers ($r = .45, p < .001$), the ASQ-3 is useful for parents ($r = .48, p < .001$), it is easy for parents to complete the ASQ-3 ($r = .51, p < .001$), the ASQ-3 is easy to score ($r = .7, p < .001$), the time required for the ASQ-3 is acceptable ($r = .48, p < .001$), the cost of the ASQ-3 is acceptable ($r = .55, p < .001$), other staff members support use of the ASQ-3 ($r = .28, p < .001$), their directors supports use of the ASQ-3 ($r = .44, p < .001$), using the ASQ-3 will help them serve children better ($r = .59, p < .001$), and they are competent with using the ASQ-3 ($r = .74, p < .001$).

Perceptions of barriers to providing useful feedback to parents regarding ASQ-3 results

On the basis of responses to the item on barriers to parent feedback sessions, the childcare providers perceived the following three barriers as the most influential: parents would not attend the sessions or would not have time to attend (26%); parents would deny that their children have developmental needs (21%); and parents would not complete

the form (19%). Table 4 lists all eight barriers to implementing parent feedback sessions identified in the childcare providers’ open responses. For example, regarding denial of child problems, one respondent stated, “Not honest about negative results/opinions; don’t like and won’t accept negative results,” whereas another wrote, “Some parents don’t want to hear that their child may need evaluations or is having trouble achieving certain milestones.” In regard to negative attitudes toward screening, one provider wrote, “Parents not willing to participate or not understanding the importance of developmental screening; parents, mostly our immigrant population have fear that screening or extra services ‘label’ their child in the community.”

Survey Section D: Perceptions of future needs to conduct developmental screening

Respondents reported they would like to have additional information on doing developmental screening (30.5%), discussing developmental screening with parents (58.2%), and linking families to services (71.2%). Respondents reported a preference on receiving this information through the following methods: in-person consultation and problem-solving (71.2%); workshops (61.9%); printed materials (58.5%); and web-based consultation (34.7%). Telephone consultation was not regarded as an ideal method to provide information, as only 4.2% of respondents selected this option. See Table 5 for response detail.

Responses to the open-ended item on how to improve the delivery of quality developmental screening (see Table 4) included more training (37%), better information for parents (21%), technical assistance (18%), more funds (12%), more time for screening (9%), and having teachers complete a screening instrument that could be compared with parent-provided screening information (4%). Many respondents requested more workshops, “More workshops; workshops on how to talk to parents about the results and resources,” whereas

Table 5. Thoughts on Future Needs

Characteristic	<i>N</i>	<i>n</i> (%)
I would like to have additional information on	118	
Doing developmental screening	36 (30.5)	
Discussing developmental screening with parents	69 (58.9)	
Linking families to services	84 (71.2)	
I would like to have additional information on these issues through the following method(s)	118	
Workshops	73 (61.9)	
Printed materials	69 (58.5)	
In-person consultation and problem-solving	84 (71.2)	
Telephone consultation	5 (4.2)	
Web-based consultation	41 (34.7)	

Note. Not all 134 participants responded to these items. Cumulative percentages surpass 100% because respondents could select more than one response option.

some indicated that they felt that on-the-job technical assistance in the form of modeling and coaching would be helpful, "Having someone to help us get started"; "I think that programs need coaching and mentoring on how to conduct developmental screenings"; and "An expert to come in to help initially with the screenings." Requests for better information for parents included requests for lists of resources and referral sources to give to parents, as well as enhanced general information about the value of screening: "Inform parents about the importance of filling out the ASQ-3 and getting help for those children who need it"; "More resources and contact information to parents"; "Having a list of resources ready to give parents; conducting a workshop for parents about ASQ-3"; and "Workshops on how to talk to parents about the results and resources."

DISCUSSION

Although the majority of respondents indicated their intention to use the ASQ-3 in the future, only 39% indicated that they had completed the ASQ-3 with all children in their care. In exploring attitudes that might be related to use of the ASQ-3, results indicated that the majority of respondents strongly agreed that developmental screening should be conducted in childcare centers, that it is important for staff to discuss developmental concerns with parents and to link children with concerns to resources, and that their center director supported use of the ASQ-3. Responses to items assessing other attitudes related to screening indicated that participants agreed, although to a lesser extent, that developmental screening should be part of their role, that the ASQ-3 provides useful information, that it is easy for parents to complete, easy to score, has reasonable time requirements, and will help their center accomplish its goals, and that they feel competent to use the ASQ-3 and give feedback to parents about the results. Items for which the response option "somewhat agree" was endorsed most frequently, indicating some ambivalence on the part of respondents, included those asking if the financial cost of the ASQ-3 was problematic, if other staff members supported use of the ASQ-3, and if parents would follow up on referral recommendations made from ASQ-3 results. The largest percentage of responses indicating negative attitudes was found for the items related to time and financial requirements for the ASQ-3 and for the items related to parent cooperation in completing the ASQ-3 and following up on referral recommendations.

Several attitudes about developmental screening and the ASQ-3, as well as attitudes about organizational support, had a positive and significant relationship with current use and intended future use of the ASQ-3. Data analysis indicated that attitudes regarding the importance of developmental screening, its fit with other work tasks, ease of use, time, financial support, support from administrators

and coworkers, and competence to use the ASQ-3 and engage in follow-up with parents were significantly related to current use of the ASQ-3 and intention to use in the future. Current use of the ASQ-3 was not significantly related to the attitude that the ASQ-3 is useful for teachers or parents; however, intention to use the ASQ-3 in the future was significantly related to attitudes about its usefulness for teachers and parents. The attitude that parents would be cooperative in completing the ASQ-3 was significantly related to current use (although beyond the scope of this article, the interested reader is referred to Jones, White, Aeby, & Benson, 1997, for a study of attitudes of early childhood teachers toward family and community involvement).

These findings are consistent with previous research on the factors that influence implementation of evidence-based psychosocial interventions and other innovations in organizational settings (Damschroder et al., 2009; Durlak & Dupre, 2008). They are also consistent with Branson and Bingham's (2017) finding that although childcare providers are able to administer a screening tool and accurately identify children at risk for developmental delays after training, they often fail to communicate with parents of at-risk children about the results of their findings and may fail to refer those children for further assessment and intervention services.

In summary, the results of this study indicate that after relatively brief training, childcare providers report that they are competent to administer a developmental screening instrument, with a substantial, although not a majority, of respondents indicating that they had screened all children under their care. A greater number of respondents indicated that they had not screened any children or had only screened some children. Despite this, the majority of respondents indicated that they planned to use the screening instrument in the future. The findings also indicate that several individual attitudes and organizational issues may need further attention in planning for successful implementation of screening measures by childcare providers. In particu-

lar, the childcare providers indicated concern about the time and financial requirements of screening and on working with parents to complete the screening instrument, receive feedback, and follow-up on referrals for further services.

Thus, it will be important to address these issues as part of a training program and an implementation plan. A plan should be developed before training regarding how the childcare center will acquire screening measures (e.g., through childcare center funds, state funds, and/or grants from other nonprofit organizations) and that information can be communicated prior to or during training. The Easterseals organization offers free ASQ-3 access to families (see <http://www.easterseals.com/mtffc/asq/>). Although this requires Internet service and basic knowledge of Internet use, it has the potential to defray cost issues. Concerns about time can be explicitly addressed during training through discussion of how screening activities can fit into the childcare provider's workday. In addition, as indicated by the results of this study, the importance of screening all children in the center, issue of working with parents to facilitate accurate completion of the screening instrument, productive discussion of screening results, and parent follow-up on referrals should be a focus of training, in addition to addressing the content and process of a screening measure. Use of family and provider testimonials during training may also improve training outcomes, as implementation science literature has indicated that new practices are more likely to be implemented when information provided about them is emotionally interesting and relevant to the new implementer (Forman, 2015). Thus, having a parent share how screening results and referral helped the family connect with resources and improve family and child functioning can be a useful addition to information provided about a screening instrument during training. In addition, it might be beneficial to have childcare providers share the experience of starting the screening process with children and families, including problems they faced, such as initial

apprehension, and how they dealt with any fears or doubts about screening children. By sharing the positive outcomes of screening, the childcare provider may have a favorable influence on trainees' disposition toward screening.

The literature on increasing skill levels for new practices indicates that both training and subsequent technical assistance have yielded the best results (Forman, 2015). Efforts to increase skill in administering a screening measure and in working with parents around screening issues might benefit from provision of consultation and coaching subsequent to training. Such consultation or coaching (e.g., either in person or web-based) could consist of on-the-job problem-solving, modeling, and/or observation with performance feedback (Dunst, Bruder, & Hamby, 2015).

Follow-up on referrals and recommendations is a significant aspect of the screening process, as without follow-up, screening will not yield useful outcomes. Results of this study indicate that future research should focus on this area. Issues that need further exploration include providers' comfort level in making a referral, their knowledge of sources of services for referral, and effective methods of sharing screening results and recommendations with families.

Limitations

This study has a number of limitations and any conclusions should be considered tentative, given questions about generalizability to other states. Because this is a survey study, causality between the variables cannot be implied. Also, the state in which this study was conducted may be unique in terms of the resources, emphasis, and training provided to childcare providers around developmental screening for the purposes of early identification and intervention. The state recommendation for childcare centers to conduct developmental screening appears to be unique when compared with other states. Those who completed the training and the survey in the present study may not be

representative of the education level in other states, given the reported levels of college attendance, college completion, and graduate school completion in the sample. Similarly, those who completed the training and survey may not be representative of the entire spectrum of childcare providers in New Jersey because of their potential attitudes toward conducting developmental screening that may have prompted them to participate. There is potential that survey respondents differed in some substantive way from non-respondents, although there are no available data to confirm this possibility. Investigators did not know what respondents came from which programs or whether they came from the same programs. Also, it is possible that results regarding the use of the ASQ-3 may differ from results regarding the use of other developmental screening tools. Regarding the survey itself, it was developed by investigators for this study and has unknown validity and reliability. Despite these limitations, the results are obtained from a more than 50% useable response rate and provide an interesting perspective on attitudes and practices from an important segment of the workforce who are typically underutilized in the role of developmental screening for young children. Future research can follow up with respondents to see if they are continuing to use the screening instrument.

CONCLUSION

Training childcare providers to administer developmental screening measures has the potential to increase the early identification of children who are at risk for developmental delays. Relatively brief training has been found to yield positive results regarding childcare providers' competence to administer screening measures. However, additional research is needed to determine whether implementation strategies that will address provider perceptions of time and financial constraints, as well as parent engagement in the screening process, increase childcare provider effective utilization of screening measures.

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