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Original Study

## Impact of Ages and Stages Questionnaire Scores on Pediatrician Referral Patterns

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## Abstract

The American Academy of Pediatrics has recommended an algorithm for identifying children with potential developmental delays. It includes a recommendation that positive screening should result in referral for additional evaluation or intervention. Yet, it is not known whether positive screens do, in fact, influence physician referrals. The primary aim of this study was to evaluate whether positive screens from an Ages and Stages Questionnaire would prompt physicians to refer for additional evaluation or intervention as recommended by the American Academy of Pediatrics algorithm. A sample of 207 physicians read one of three hypothetical clinical vignettes describing an 18-month-old child with ambiguous language development. Vignettes differed on the presence or absence of an Ages and Stages Questionnaire score and, if a score was present, on whether the Ages and Stages Questionnaire score was positive or negative. Physicians indicated what actions they would take including whether they would refer for evaluation or intervention. Multinomial regression analyses showed physicians referred more often for further evaluation or intervention if the hypothetical Ages and Stages Questionnaire score was positive. Likewise, physicians referred less often if the Ages and Stages Questionnaire score was negative. Physicians without the Ages and Stages Questionnaire scores did not choose one action more frequently over another. In this initial investigation, the data show that physicians do refer, as recommended, when presented with positive Ages and Stages Questionnaire screens. This is important because it lends support to one critical component of the American Academy of Pediatrics developmental screening algorithm. Given the use of hypothetical vignettes in this study, it will be important to investigate whether positive Ages and Stages Questionnaire screens impact actual referrals in clinical practice.

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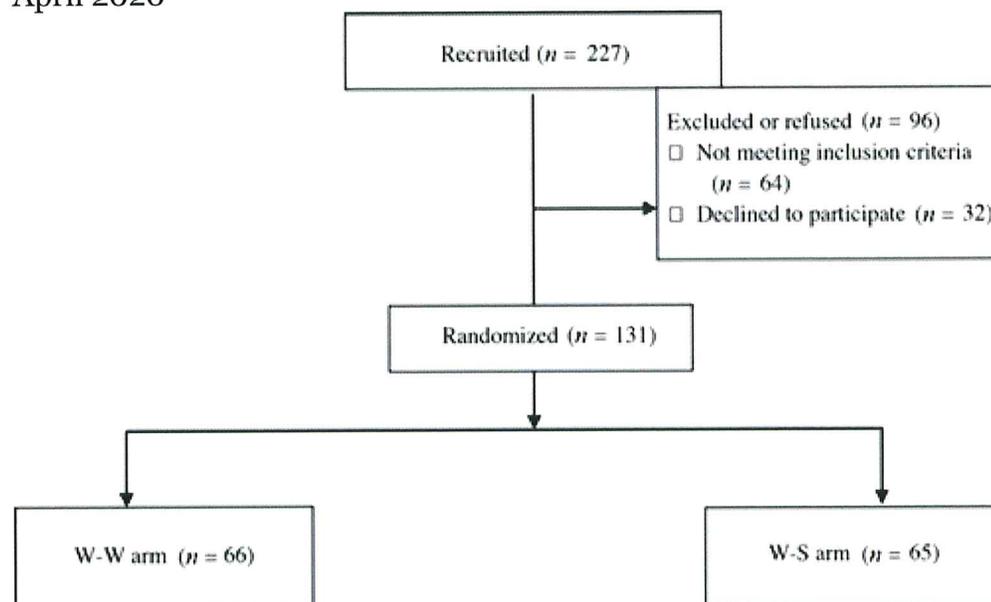
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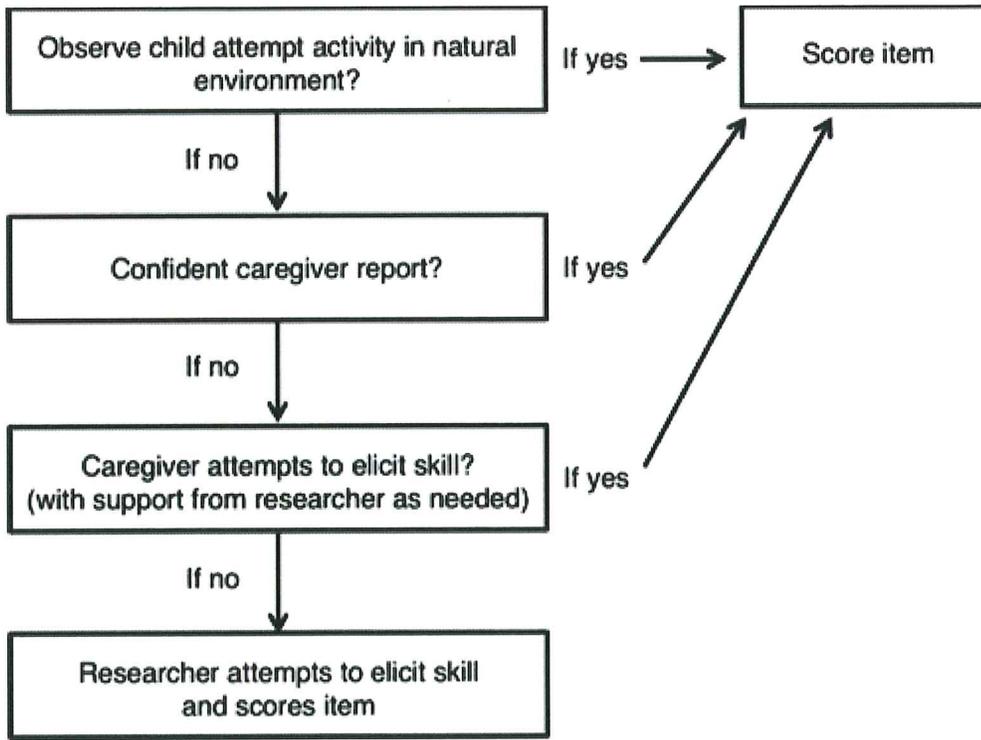
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<b>Sociodemographic Characteristics</b>	<b>N (%)</b>
<b>Gender</b>	
Girls	285 (46.9)
Boys	323 (53.1)
<b>Child's developmental status<sup>a</sup></b>	
Not at risk	413 (67.9)
At risk	195 (32.1)
<b>Mothers level of education<sup>b</sup></b>	
Primary	88 (14.5)
Elementary	40 (6.6)
High	151 (24.8)
University	309 (50.8)
<b>Mothers' employment<sup>c</sup></b>	
Yes	351 (57.7)
No	230 (37.8)
<b>Marital status<sup>d</sup></b>	
Married	575 (94.6)
Divorced	7 (1.2)
Other	5 (0.8)
<b>Family income<sup>e</sup></b>	
Low	139 (22.9)
Middle	317 (52.1)
High	36 (5.9)

<sup>a</sup>Child's Developmental Status is based on criterion measure classifications of GECDAS, PBCL, CPRS-R:S or professional diagnosis.

<sup>b</sup>Mothers' level of education data missing for 20 cases (3.3%).

<sup>c</sup>Mothers' employment data missing for 27 cases (4.4%).

<sup>d</sup>Marital status data missing for 21 cases (3.5%).

<sup>e</sup>Family income data missing for 116 cases (19.1%).

- Family income data missing for 110 cases (17.1%).

## Evaluation of the Turkish Version of the “Ages and Stages Questionnaires

April 2011

Table 1. - Demographic Characteristics of the Participants

<i>n</i> (118)	Preterm Children		Term Children		<i>p</i>
	%	<i>n</i> (158)	%		
Sex					<b>&lt;.05</b> a
Female	53	44.9	91	57.6	
Male	65	55.1	67	42.4	
Gestation age					<b>&lt;.001</b> a
Term (>37 weeks)	0	0	158	100	
Moderate to late preterm (32–37 weeks)	31	26.2	0	0	
Very preterm (28–32 weeks)	71	60.2	0	0	
Extremely preterm (<28 weeks)	16	13.6	0	0	

aValues in boldface indicate significant *p* values.

## Sensory-Processing Patterns of Preterm Children at 6 Years of Age

January 2019

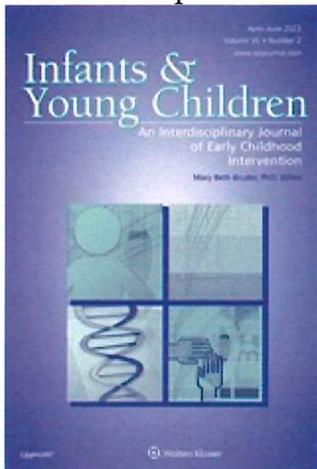
Characteristic	Paper-Pencil ( <i>n</i> = 6,650)	Web-Based ( <i>n</i> = 8,508)	$\chi^2$
Child's gender			$\chi^2 = 2.91, df = 1, p = .09$
Male	51.3	53.7	
Female	48.7	46.3	
Child ethnicity			$\chi^2 = 35.18, df = 1, p = .01$
Minority	28.8	20.8	
Nonminority	71.2	79.2	
Mother's education			$\chi^2 = 80.00, df = 3, p = .01$
Less than high school	5.2	2.6	
High school	20.0	22.2	
AA degree	5.7	13.6	
4-year college or above	26.2	59.2	
Family income			$\chi^2 = 1,381.51, df = 3, p = .01$
\$0-\$12,000	61.8	4.2	
\$12,001-\$24,000	11.6	11.4	
\$24,001-\$40,000	8.2	23.2	
>\$40,000	18.4	61.1	
Person completing ASQ			$\chi^2 = 136.57, df = 1, p = .01$
Family member	76.2	90.6	
Nonfamily member	23.8	9.4	

- Note. AA = Associate of Arts Degree; ASQ = Ages and Stages Questionnaires.

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