Perks and Perils of Online Data Collection

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Objectives

Online data collection
- Gathering information via websites, email, and cell phones
- Collecting high quality, representative normative data for ASQ-4 efficiently

Advantages
- Lower costs
- Ease of data collection from large samples
- Convenience for caregivers
- Reach diverse populations
- Access often difficult-to-reach populations
- Reduction of data entry errors

Disadvantages
- Sampling errors
- May be skewed towards those with internet/cell service
- Over-representation of caregivers with concerns about child's development
- Accuracy of information cannot be verified
- Participants may not understand items or criteria
- May complete questionnaires quickly or incompletely

Innovation

Ease of broad-based subject recruitment

Access to a diverse subject pool

Ease of data entry and analyses

Ability to conduct analyses on large data sets during implementation to ensure data quality

Automated algorithms enable performance of in-depth analyses in which reliability of data is quantitatively assessed with implementation of scoring procedures

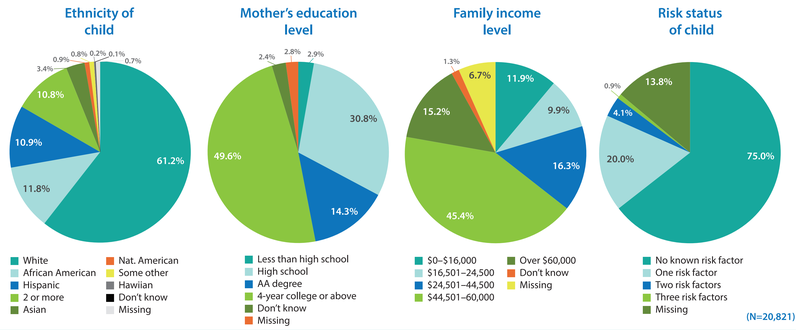
Sampling adjustments available post-hoc to fix skewed sample
- Weighted random sampling
- Relative sampling

Method

Sample characteristics and number of ASQ-4 completed

Questionnaire interval	Gender			Race			Age
	Missing cases	Male	Female	African American	Other races	White	Mean (SD)
2 (N=101)	0	45 (44.6%)	56 (55.4%)	18 (17.8%)	28 (27.7%)	55 (54.5%)	1.881 (0.535)
4 (N=135)	2	70 (52.6%)	63 (47.4%)	31 (23.0%)	29 (21.5%)	75 (55.6%)	3.756 (0.579)
6 (N=101)	2	42 (42.4%)	57 (57.6%)	17 (16.8%)	24 (23.8%)	60 (59.4%)	5.960 (1.086)
8 (N=169)	0	69 (40.8%)	100 (59.2%)	21 (12.4%)	41 (24.3%)	107 (63.3%)	7.982 (1.044)
9 (N=111)	0	57 (51.4%)	54 (48.6%)	4 (3.6%)	36 (32.4%)	71 (64.0%)	9.054 (0.264)
10 (N=30)	0	15 (50.0%)	15 (50.0%)	5 (16.7%)	15 (50.0%)	10 (33.3%)	10.100 (0.548)
12 (N=188)	0	83 (44.1%)	105 (55.9%)	25 (13.3%)	56 (29.8%)	107 (56.9%)	11.766 (0.677)
14 (N=66)	0	29 (43.9%)	37 (56.1%)	16 (24.2%)	14 (21.2%)	36 (54.5%)	13.833 (0.714)
16 (N=179)	0	87 (48.6%)	92 (51.4%)	16 (8.9%)	44 (24.6%)	119 (66.5%)	15.603 (0.682)
18 (N=246)	0	132 (53.7%)	114 (46.3%)	23 (9.3%)	61 (24.8%)	162 (65.9%)	17.756 (1.225)
20 (N=118)	2	62 (53.4%)	54 (46.6%)	20 (16.9%)	26 (22.0%)	72 (61.0%)	19.661 (0.527)
22 (N=44)	0	21 (47.7%)	23 (52.3%)	12 (27.3%)	16 (36.4%)	16 (36.4%)	21.636 (0.718)
24 (N=168)	1	78 (46.7%)	89 (53.3%)	42 (25.0%)	40 (23.8%)	86 (51.2%)	24.702 (11.302)
27 (N=86)	0	41 (47.7%)	45 (52.3%)	27 (31.4%)	33 (38.4%)	26 (30.2%)	26.593 (0.938)
30 (N=214)	1	112 (52.6%)	101 (47.4%)	21 (9.8%)	63 (29.4%)	130 (60.7%)	29.603 (0.742)
33 (N=75)	0	33 (44.0%)	42 (56.0%)	19 (25.3%)	21 (28.0%)	35 (46.7%)	32.427 (0.888)
36 (N=202)	1	106 (52.7%)	95 (47.3%)	54 (26.7%)	62 (30.7%)	86 (42.6%)	36.228 (1.249)
42 (N=308)	1	152 (49.5%)	155 (50.5%)	87 (28.2%)	75 (24.4%)	146 (47.4%)	41.851 (1.535)
48 (N=311)	1	133 (42.9%)	177 (57.1%)	97 (31.2%)	96 (30.9%)	118 (37.9%)	47.768 (1.649)
54 (N=290)	7	130 (45.9%)	153 (54.1%)	54 (18.6%)	89 (30.7%)	147 (50.7%)	53.252 (1.546)
60 (N=155)	2	77 (50.3%)	76 (49.7%)	28 (18.1%)	32 (20.6%)	95 (61.3%)	60.381 (2.534)

Demographics of total sample (94% online and 6% other methods)



(N=20,821)

Results

Coefficient Alpha comparing ASQ-3 and ASQ-4 domains

Domain	Average Cronbach's alpha	
	ASQ-3	ASQ-4
Communication	0.740887	0.7385519
Fine Motor	0.676084	0.6632785
Gross Motor	0.670141	0.6600401
Problem Solving	0.680111	0.6652179
Personal-Social	0.614677	0.5703569

Comparison by interval and domain of ASQ-3 and ASQ-4

Test-Retest Reliability

Intraclass Coefficient and percentage of agreement

Overall agreement 97.5% on classifications of children as risk/nonrisk

Questionnaire interval	Communication (ICC = 0.908)	Gross Motor (ICC = 0.928)	Fine Motor (ICC = 0.905)	Problem Solving (ICC = 0.885)	Personal-Social (ICC = 0.89)
2 (n=11)	100%	100%	82%	91%	100%
4 (n=19)	100%	95%	84%	89%	100%
6 (n=10)	90%	90%	100%	100%	100%
8 (n=17)	88%	94%	94%	100%	94%
10 (n=11)	100%	100%	100%	91%	100%
12 (n=12)	100%	100%	100%	100%	92%
14 (n=8)	100%	100%	100%	100%	100%
16 (n=5)	100%	100%	100%	100%	100%
18 (n=8)	100%	100%	100%	88%	100%
20 (n=6)	83%	83%	100%	100%	67%
22 (n=10)	100%	100%	100%	100%	100%
24 (n=9)	100%	100%	100%	100%	100%
27 (n=13)	100%	100%	100%	100%	100%
30 (n=16)	100%	100%	100%	100%	100%
33 (n=16)	100%	100%	100%	100%	100%
36 (n=25)	100%	100%	92%	100%	100%
42 (n=35)	100%	100%	100%	100%	100%
48 (n=17)	100%	100%	100%	100%	94%
54 (n=35)	100%	100%	100%	100%	100%
60 (n=28)	100%	100%	100%	100%	100%
72 (n=21)	100%	100%	100%	100%	100%
Overall	98%	98%	98%	98%	97%

(N=332)

Implications

Websites should be caregiver friendly—easy to navigate and use

Online advertising funds aimed at specific target populations are needed

Search terms should be carefully chosen
- Negative terms may yield more caregivers of children with disabilities *(Worried about…)*
- Positive terms attract more caregivers of younger children, with fewer developmental concerns *(Learn about…)*

Offering incentives can increase sample size and diversity

Providing research staff contact information may assist in accurate and timely data collection

Collecting print data from the target normative sample is necessary