Reporting Effects

On the radio this morning I heard a story about a new study about breast feeding and cognitive abilities.

`https://www.mprnews.org/story/2017/03/27/npr-study-breast-fed-kids-may-be-less-hyper-but-not-necessari`

The first quote from the researcher was about statistical significance: "Overall, the breast-fed kids scored a tad higher. 'But [the difference] wasn't big enough to show statistical significance,' said .... In other words, the differences in scores were so small that researchers consider it a statistical wash." They did a good job talking about causality and confounding, what I want to focus on though is significance and the effect size.

The full paper doesn't seem to be out yet, there's an advance summary at `http://dx.doi.org/10.1542/peds.2017-0150`, but an earlier paper (`http://dx.doi.org/10.1001/archpsyc.65.5.578`) found an increase in IQ of 5.9 (95% CI: -1.0, 12.8), with a standard deviation of about 12.9 (after accounting for differences in site).

One way of doing this is with "Cohen's d", which is the difference divided by the standard deviation. Compute that for this case, and talk with your group about what it means. Does it give you a sense of how "worth it" it would be to breastfeed?

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Cohen also suggested using 0.2, 0.5, and 0.8 as "small", "medium", and "large" effect sizes. Many statisticians dislike this idea. Can you think of some reasons why? Can you think of a situation where it using Cohen's d would be totally unreasonable?

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There are several alternates to this; one is the "Common Language Effect Size", which is the probability that a randomly chosen individual from one group has a higher response than a randomly chosen individual from the other group. Does it give you a sense of how "worth it" it would be to breastfeed?

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See `http://rpsychologist.com/d3/cohend/` for an interactive graphic comparing these two, and a couple other effect size measures.

What about a prediction interval? Would that be appropriate here, or not? Does it give you a sense of how "worth it" it would be to breastfeed?

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Name: _____

What did you learn today about reporting and interpreting results, especially about effect sizes and proportions?

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