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CHILD DEVELOPMENT

COMMENTARY

Rejoinder: Spanking and externalizing problems: Examining within-subject associations

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In a commentary responding to Pritsker (2021), Lansford and Rothenberg (2021) offered two methodological criticisms, as well as a discussion on the ethical appropriateness of the reporting and research question. They voiced three primary research-focused criticisms:

1. Missing data were inadequately accounted for.
2. The results may be a statistical artifact arising from inappropriately partialling out between-subject variance.
3. The question itself is inappropriate, being "outdated" and "roundly rejected as useful."

Additionally, they brought up ethical concerns with the research question and reporting. The present rejoinder is, hence, split into four parts, with the first three addressing each research-focus criticism in turn, and the final part addressing the ethical concerns. A concluding section is included thereafter.

ACCOUNTING FOR MISSING DATA

Lansford and Rothenberg (2021) noted that Pritsker (2021) inadequately accounted for missing data. In Pritsker (2021), I based my analyses upon published maximum-likelihood (ML) covariance matrix estimates from Lansford et al. (2011, 2012). In response, Lansford and Rothenberg (2021) noted "it is wholly inappropriate to use the ML estimate of the covariance matrix estimated from missing data as the unit of analysis." They pointed out that the standard method of accounting for missing data—full-information maximum-likelihood (FIML) estimation—can dynamically weight variables to account for the uncertainty resulting from missing data. In contrast, although the parameter estimates will equal those from FIML estimates (Enders & Peugh, 2004), using the ML covariance matrix as the unit of analysis does not provide a clear way to calculate standard errors. To calculate the standard errors for analyses based on ML covariance matrices, a representative sample size must be picked. If the full sample size is used, as it was in Pritsker (2021), the standard errors may be deflated—resulting in over-confident *p*-values and confidence intervals.

To address their concern, I have recalculated the *p*-values and confidence intervals from Pritsker (2021) using a minimum sample size. Utilizing a minimum sample size prevents overconfidence from missing data (Enders & Peugh, 2004). Instead, it may actually result in *underconfidence*, but doing so retains error control. Lansford et al. (2011) noted "The coverage matrix showed <25% missing data for all parameters except those involving physical discipline at age 9," suggesting a reduction of the sample size by 25% (age 9 data were not used), from 258 to 193. Recalculating with this sample size, the resulting *p*-value for the effects of limited spanking on subsequent externalizing changes from 0.018 to 0.021, a small change resulting in a *p*-value that remains traditionally significant but is less striking. The true *p*-value perfectly adjusted for missing data would be somewhere between this one and the one reported in Pritsker (2021). The 95% confidence intervals for the standardized coefficients become [−.34, −.00] for the effect of limited spanking at age 6 to externalizing at age 7, and [−.41, −.02] for age 7–age 8.

With this recalculation, the interpretation changes to data-supported effect sizes for age 7–8 ranging from very large to negligible, and data-supported effect sizes for age 6–7 ranging from large to effectively null. Given the increased uncertainty, these results suggest that the effect of limited spanking may range from anywhere between having nearly no effect to having a large decreasing effect.

ON REMOVING BETWEEN-SUBJECT VARIANCE

Lansford and Rothenberg (2021) suggested that the results of Pritsker (2021) are explained by the existing

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theory. They argued that these effects are predicted by "behaviorally based parenting theory"—seemingly referring to coercion theory and its derivatives. Coercion theory proposes that aggressive behavior is promoted by cycles of coercive behavior from the parent and child, where parent and child aggressive behavior are mutually reinforced. Within each disciplinary encounter, both parental and child aggressive behavior will escalate until the other party gives up (e.g., a child is spanked and gives up on the behavior, or a parent gives into the child's requests), resulting in the "winning" party having their behavior negatively reinforced due to the other party stopping their behavior. This can result in aversive behaviors being increased overtime on both sides, where each side continuously increases its aversiveness in response to the increased aversiveness of the other side.

Lansford and Rothenberg (2021) suggested that the temporary "wins" occurring from spanking are within-subject effects, while long-term consistent increases in externalizing problems due to the coercive cycle are between-subject ones. However, both appear to be within-subject effects, albeit at different time lags. Notably, both of these processes describe events that occur within individual parent-child dyads over time, rather than between different parent-child dyads. Indeed, typical examples of the processes are described in terms of individual children, as was done in Lansford et al. (2011). However, Lansford and Rothenberg (2021) characterize the processes described by coercion theory as having effects that occur relative to a child's peers rather than to the child themselves. For instance, a child might observe their peers, and adjust their externalizing level relative to their peers after being spanked, independent of their own externalizing level. This seems generally theoretically implausible, and coercion theory does not appear to provide any special support to the idea. In contrast, it seems far more plausible that the effects are simply relative to the child themselves, as would be typically expected of causal effects (Berry & Willoughby, 2016).

With regard to time lags of the effects, it seems implausible that the 1-year time lag used in Pritsker (2021) and Lansford et al. (2011, 2012), would align better with the immediate "wins" described in coercion theory than the general increase in coercive behaviors via negative reinforcement. The immediate "wins," as described by Lansford and Rothenberg (2021), refer to immediate behavior changes due to the child giving up on the interaction after a particularly aversive response (viz., spanking). Such temporary changes would not be noticeable in behavior the next year. Indeed, evidence of such immediate effects of corporal punishment has focused on time lags as low as 5 s (Gershoff, 2002).

In the process of arguing that the long-term effects are between-subject ones, Lansford and Rothenberg (2021) suggested that removing between-subject variance also removes cumulative effects over time. However, cumulative effects over time may be recovered by simple path tracing rules as in any other cross-lagged panel model. All that is removed when partialling out between-subject variance, is static variance across subjects that does not change over time, for which one cannot determine causal direction. The inclusion of this variance prevents making any conclusion on the direction of causality in the final effects.

IS THE QUESTION ITSELF OUTDATED?

Beyond critiquing the methods of Pritsker (2021) and Lansford and Rothenberg (2021) alleged that the research question itself is outdated. Lansford first noted that many professional organizations have decided on a consensus against corporal punishment, and have issued guidelines against it. However, this misses the primary point of Pritsker (2021): The research on which these professional recommendations are based on utilize methods that fail to properly disaggregate between-subject variance; therefore, reverse-causality cannot be ruled out. Indeed, research utilizing within-subject lagged methods has so far consistently failed to reproduce the effects found in previous research (Berry & Willoughby, 2016; Larzelere et al., 2018; Pritsker, 2021).

Lansford and Rothenberg (2021) go on to cite clinical experiments, in which some alternative methods were found to be equally effective as spanking as a backup for if a child refuses to comply with a time-out procedure (Day & Roberts, 1983; Roberts, 1988; Roberts & Powers, 1990). Particularly, the only procedure to consistently be as effective as a barrier condition, in which the child was placed in a 4 × 5 in. room with a barrier to prevent escape (Roberts & Powers, 1990). It is worth noting that the authors stated that for all the children in the last trial, *either* the spanking or barrier condition worked well (Roberts & Powers, 1990). That is, if the child was resistant to the barrier method, they were accepting of the spanking method, and vice versa. More importantly, these trials were conducted on clinic-referred children who were subsequently selected specifically for low baseline compliance—resulting in a sample that is highly unrepresentative of the general population. From this sample, the trials only had 8–9 children per condition. Arguing that the research question itself is "outdated" or "roundly rejected as useful" on the basis of such trials is unmerited. They go on to argue that these trials were found so persuading to some, that they subsequently excluded spanking from their parent-training programs which previously included it. However, in a similar vein, the author of the very trials that Lansford and Rothenberg (2021) cite has more recently co-authored a series of papers arguing that the evidence against spanking is insufficient for broad injunctions against spanking (Larzelere et al., 2017, 2019).

Further, regardless of the strength of the trials, their focus was on a different outcome than Pritsker (2021). The trials that they cite focus on short-term compliance, rather than general externalizing as in Pritsker (2021), and are hence not immediately comparable. Even if the immediate effects of spanking are similar to an alternative method, this does not necessarily apply to long-term effects, a point that has been well acknowledged in professional statements (American Psychological Association, 2019; Sege et al., 2018).

ETHICAL CONSIDERATIONS

Lansford and Rothenberg (2021) further suggest that merely continuing to ask the question of if corporal punishment is harmful misses the point of human rights:

> The field of child development is missing the ethical and human rights point in continuing to ask the question of whether it is harmful to children if their parents hit them. (p. 11)

However, they miss that asking the question does not necessarily imply that we ought to support corporal punishment if the answer turns out to be "no." Knowing the answer to this question has utility even if we have alternative reasons to be against corporal punishment. The answer also has relevance in terms of how we should prioritize the reduction of corporal punishment in both broad policy and targeted interventions. Further, the answer is necessary for an informed conclusion on the topic given that the effects remain a common point. Additionally, the question has relevance in modeling the development of externalizing behavior in children, allowing us to develop more accurate theoretical frameworks.

Human rights discussions are important, but we ought to discuss these human rights problems while attempting to remain accurate in any statements made with regard to the effects. As researchers, it is imperative that we are accurate on any scientific claims that we make, even if an inaccurate statement would better promote an ethical point. The promotion of ethical points should be done independently while maintaining scientific integrity in research. Given that previous literature has made claims about the effects of corporal punishment based on erroneous statistical assumptions, it is important to correct these claims.

Lansford and Rothenberg (2021), in response to the use of the phrase "beneficial effects" in Pritsker (2021), suggested that such wording could be used to justify violence against children, and this makes the statement irresponsible:

> By including the statement that "spanking showed beneficial effects" in the Abstract, regardless of the caveats that were appropriately included in the body of the text, such as the focus only on externalizing behaviors and other methodological limitations, the Pritsker article can easily be misused to justify hitting children, which is both scientifically and ethically irresponsible. (p. 13)

The rationale for the wording of this statement was interpretability, as the typical wording of negative/positive correlation risks confusion with a moral negative/positive (i.e., adverse/beneficial effect). Again, it is important to aim for correctness in scientific statements, and confusing wording hinders this goal. Perhaps an alternative unambiguous term such as an increasing/decreasing effect would have been preferable, but it was not thought of at the time.

CONCLUSION

Lansford and Rothenberg (2021) validly noted that Pritsker (2021) did not handle missing data adequately. However, after recalculation to account for the additional uncertainty, the results remained traditionally significant—although the range of supported effect sizes widened substantiatively. They argued that theory suggests the relevant effects are actually at a between-subject level rather than a within-subject one, but theory instead seems to agree that the relevant effects are at a within-subject level. They also suggested that the research question itself is outdated, on the basis of several experimental studies conducted in the 1980s. However, the focus of these experiments was on immediate compliance rather than long-term effects on externalizing, and are hence not relevant to the research question of Pritsker (2021). Moreover, the quality of these experiments is questionable. They additionally brought up ethical concerns about Pritsker (2021), suggesting that merely asking if spanking leads to more externalizing problems ignores important human rights points. However, merely asking the question does not imply that we should ignore human rights arguments if the answer is "no." The question remains important for the prioritization of corporal punishment in policies and interventions, for understanding the development of externalizing problems, and for making informed decisions on the matter using the correct reasons. As stated in Pritsker (2021), and as discussed by Lansford and Rothenberg (2021), ethical discussions should go beyond simply discussing the effects of corporal punishment, and instead consider child rights points as well. However, the general conclusion from Pritsker (2021) remains unchanged: researchers and policymakers should be cautious in interpreting results that include between-subject differences, and care should be taken in generalizing results across forms of corporal punishment.

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