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Research article

Spanking and subsequent behavioral problems in toddlers: A propensity score-matched, prospective study in Japan

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ABSTRACT

Harsh or frequent spanking in early childhood is an established risk factor for later childhood behavioral problems as well as mental disorder in adulthood in Western societies. However, few studies have been conducted in Asian populations, where corporal punishment is relatively accepted. Moreover, the impacts of occasional spanking on subsequent behavioral problems remain uncertain. This study sought to investigate prospectively the association between the frequency of spanking of toddlers and later behavioral problems in Japanese children using national birth cohort data. We used data from the Longitudinal Survey of Newborns in the 21st Century, a population-based birth cohort data set collected by the Japanese Ministry of Health, Labour, and Welfare (N = 29,182). Frequency of spanking ("never", "sometimes" and "always") and child behavioral problems were assessed via a caregiver questionnaire when the child was 3.5 years old and again at 5.5 years. Propensity score matching was used to examine the association between frequency of spanking and child behavioral problems, adjusting for parental socioeconomic status, child temperament and parenting behaviors. Compared to children who were never spanked, occasional spanking ("sometimes") showed a higher number of behavioral problems (on a 6-point scale) (coefficient: 0.11, 95% CI: 0.07–0.15), and frequent spanking ("always") showed an even larger number of behavioral problems compared with "sometimes" (coefficient: 0.08, 95% CI:0.01–0.16). Spanking of any self-reported frequency was associated with an increased risk for later behavioral problems in children.

1. Introduction

Ongoing debate exists on whether physical punishment of children, including spanking (that is, hitting a child's buttocks with an open hand), should be legally prohibited. Fifty-one countries have already prohibited physical punishment at home, whereas countries including the US and Canada have yet to do so (Alford-Cooper, 1993; Gershoff, 2002; Global Initiative to End All Corporal Punishment of Children, 2017). Likewise, there is no law to prohibit physical punishment in Japan, whereas any kind of child abuse is legally prohibited. Physical punishment during childhood increases the risk for later behavioral and mental health problems (Brewin, Andrews, & Valentine, 2000; Fergusson, Boden, & Horwood, 2008; Gilbert et al., 2009; Lansford et al., 2002; Widom, 1999). However, substantial controversy remains on this topic. For example, non-abusive and customary use of physical punishment (i.e. spanking on the backside or hand slapping) as a way to discipline children has been reported to have no effects on emotional well-being (Larzelere, 1996, 2000), whereas other studies suggest that spanking has an adverse impact on children's cognitive

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development, leading to more aggressive behavior and mental health problems later (Afifi, Mota, Dasiewicz, MacMillan, & Sareen, 2012; Afifi, Mota, MacMillan, & Sareen, 2013; MacKenzie, Nicklas, Waldfogel, & Brooks-Gunn, 2013).

Some researchers suggest that the association between physical punishment and child behavioral problems varies according to cultural norms and parental beliefs as to whether spanking is an effective means of disciplining the child (Baumrind, Larzelere, & Cowan, 2002; Larzelere, 1996). In Japan, less severe physical punishment such as spanking is considered a socially acceptable behavior in the repertoire of parenting (Iwai, 2008). Compared to countries where physical punishment at home is prohibited, spanking among Japanese children is not reportedly associated with a strong adverse impact on behavioral problems (Tong et al., 2015). However, available data are extremely limited.

Moreover, little is known about whether the frequency of spanking matters. A US study reported that low frequency of spanking (defined by the authors as twice a week) did not increase the risk for childhood aggressive behavior (Tong et al., 2015). Recent meta-analysis concluded that the adverse impacts of childhood spanking have been overestimated due to inadequate adjustment of confounding variables, such as child traits or parental mental health (Baumrind et al., 2002; Ferguson, 2013; Morris & Gibson, 2011). A major methodological challenge in this topic is information bias. The exposure is self-reported by parents since the victims are too young to speak for themselves. Parents (especially more educated parents) might provide inaccurate information because of social desirability bias, or they may mis-remember the frequency of their behavior because spanking occurs during moments of anger or loss of control. The perceived definition of what constitutes "spanking" also likely varies by culture.

Causal inference is also challenging because parental discipline is more likely to be used when the child exhibits behavioral problems (i.e. reverse causation) or there are shared prior causes of spanking and child behavioral issues (e.g. confounding by stressful family circumstances). The "gold standard" for establishing causality would be to conduct a randomized experiment in which parents are either instructed to eschew spanking their children, or to spank *ad libitum* – based on the outcome of a coin toss. Obviously, such a trial would be ethically infeasible. We sought to approach causal inference via propensity score matching. In propensity score matching, the aim is to attempt to balance covariates across comparison groups (spanked versus non-spanked children) as closely as possible by *matching* them on their predicted probability of being spanked. That is, the propensity score matching approach mimics the randomized trial by creating comparisons between children who resemble each other with respect to their background probability of being spanked – except that one group *happens* to be exposed (spanked) while the comparison group happens to be unexposed (not spanked). Application of propensity score matching involves estimating propensity scores followed by matching the spanking behaviors to their estimated propensity score using possible factors that can be associated with spanking behavior (Gershoff, Lansford, Sexton, Davis-Kean, & Sameroff, 2012; Lansford, Wager, Bates, Dodge, & Pettit, 2012; Lee & Altschul, 2015).

In the present study, we conducted a propensity score-matched analysis to examine the association between frequency of spanking during toddlerhood and later childhood behavioral problems using Japanese national longitudinal data.

2. Method

2.1. Data and samples

We used data from the Longitudinal Survey of Newborns in the 21st Century, a population-based birth cohort data set collected by the Japanese Ministry of Health, Labour, and Welfare. Since 2001, yearly follow-up questionnaires have been sent to respondents from the previous year's survey, and the survey is still ongoing. The first survey was conducted by mailed questionnaires targeting parents of 53,575 newborns in Japan born between January 10th and 17th, or July 10th and 17th, 2001. The newborns were identified using birth records from Japan's national vital statistics. Data sets from 2001 to 2004, and 2006 were used in the analysis. A total of 47,015 caregivers responded to the first questionnaire (response rate: 87.7%). Out of 47,015 caregivers, 37,937 caregivers (follow-up rate: 80.7%) responded to the questionnaire in 2004 (i.e., when the child was 3.5 years old), and again in 2006 (i.e., when the child was 5.5 years old). Respondents who did not play a major role in child caregiving were excluded to improve the reliability of responses to questions about spanking and behavioral problems. The parents who "played a major role in child caregiving" were defined as the caregiver who spent the most time caring for and disciplining the child, and these caregivers were the main respondents included in this paper. A total of 29,182 newborns were eligible for our analysis (Fig. 1).

2.2. Measurement

2.2.1. Spanking

Frequency of spanking was ascertained by self-report when the children were 3.5 years old. In this questionnaire, caregivers were asked if they used spanking as a way to discipline their children for misbehavior and whether their children were spanked frequently ("Always"), occasionally ("Sometimes"), or not at all ("Never"). The same scale was adopted by Afifi et al. (2013), Afifi et al. (2012), although responses were categorized into three categories, "Always", "Sometimes", or "Never", rather than two categories.

2.2.2. Behavioral problems

Child behavioral problems were assessed using the following six questions with a "yes/no" response when the children were 5.5 years old: (1) "Is your child unable to obey instructions?"; (2) Is your child unable to behave in a group situation?"; (3) "Is your child unable to keep promises?"; (4) "Is your child impatient?"; (5) "Is your child unable to focus on a specific task?", and (6) "Is your child unable to express emotions?". These variables have previously been used as a set of measurements for behavioral problems (Kato