

Prosocial and Aggressive Behavior: A Longitudinal Study

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Monographs of the Society for Research in Child Development
Lynn S. Liben, Editor

VOL. 86 | NO. 2 | 2021 | SERIAL NO. 341

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Society for Research in Child Development

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Dale F. Hay,¹ Amy L. Paine,¹ Oliver Perra,² Kaye V. Cook,³ Salim Hashmi,⁴ Charlotte Robinson,¹ Victoria Kairis,¹ and Rhiannon Slade¹

Abstract Developmental theorists have made strong claims about the fundamental prosocial or aggressive nature of the human infant. However, only rarely have prosocial behavior and aggression been studied together in the same sample. We charted the parallel development of both behaviors from infancy to childhood in a British community sample, using a two-construct, multimethod longitudinal design.

Data were drawn from the Cardiff Child Development Study (CCDS), a prospective longitudinal study of a volunteer sample of parents and their firstborn children. A sample of 332 mothers was recruited from National Health Service (NHS) prenatal clinics and general practice clinics in Wales, UK, between Fall of 2005 and Summer of 2007. Potential participants represented the full range of sociodemographic classifications of neighborhoods. Participating families were divided about equally between middle- and working-class families, were somewhat more likely to have sons than daughters, and the majority (90%) were in a stable partnership. In response to standard categories recommended for use in Wales at the time, the majority (93%) of mothers reported themselves as Welsh, Scottish, English, or Irish; most others named a European or South Asian nationality.

Of the 332 families agreeing to participate, 321 mothers ($M_{\text{age}} = 28$ years) and 285 partners ($M_{\text{age}} = 31$ years) were interviewed during the pregnancy and 321 of the families contributed data at least once after the child's birth. After an initial home visit at 6 months, data collection occurred in four additional waves of testing when children's mean ages were approximately 1, 1.5, 2.5, and 7 years. Data collection alternated between family homes and Cardiff Uni-

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Citation Information: Hay, D. F., Paine, A. L., Perra, O., et al. (2021). Prosocial and aggressive behavior: A longitudinal study. *Monographs of the Society for Research in Child Development*, 86(2).

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<https://doi.org/10.1111/mono.12427>

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versity. Of those families seen after the child's birth, 89% were assessed at the final wave of testing. Data collection ended in 2015.

Methods included direct observation, experimental tasks, and collection of reports from mothers, fathers, other relatives or family friends, and classroom teachers. Interactions with a familiar peer were observed at 1.5 years. Interactions with unfamiliar peers took place during experimental birthday parties at 1 and 2.5 years. At 7 years, parents were interviewed, parents and teachers completed questionnaires, and the children engaged in cognitive and social decision-making tasks.

Based on reports from parents and other informants who knew the children well, individual differences in both prosocial behavior and aggression were evident in children. Both types of behavior showed stability across the second and third years. The association between prosocial behavior and aggression changed over time: at 1.5 years, they were not significantly related (the association approached zero), but they became negatively correlated by 3 years.

Different patterns were seen when children played with familiar versus unfamiliar peers. At 1.5 years, when children were observed at home with a familiar peer, prosocial behavior and aggression were unrelated, thus showing a pattern of results like that seen in the analysis of informants' reports. However, a different pattern emerged during the experimental birthday parties with unfamiliar peers: prosocial behavior and aggression were positively correlated at both 1 and 2.5 years, contributing to a general sociability factor at both ages.

Gender differences in prosocial behavior were evident in informants' reports and were also evident at the 1-year (though not the 2.5-year) birthday parties. In contrast, gender differences in both prosocial behavior and aggression were evident by 7 years, both in children's aggressive decision-making and in their parents' and teachers' reports of children's aggressive behavior at home and school.

By age 7, children's aggressive decision-making and behavior were inversely associated with their verbal skills, working memory, and emotional understanding. Some children had developed aggressive behavioral problems and callous-unemotional traits. A few (12%) met diagnostic criteria for conduct disorder or oppositional-defiant disorders, which had been predicted by early angry aggressiveness and lack of empathy for other people.

Taken together, the findings revealed a gradual disaggregation of two ways in which children interact with other people. Individual differences in both prosocial behavior and aggression revealed continuity over time, with gender differences emerging first in prosocial behavior, then in aggression.

Restrictions in the participant sample and the catchment area (e.g., all were first-time parents; all were drawn from a single region in the United Kingdom) mean that it is not possible to generalize findings broadly. It will be important to expand the study of prosocial behavior and aggression in other family and environmental contexts in future work. Learning more about early appearing individual differences in children's approaches to the social world may be useful for both educational and clinical practice.

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Postmaster: Send all address changes to MONOGRAPHS OF THE SOCIETY FOR RESEARCH IN CHILD DEVELOPMENT, Wiley Periodicals LLC, C/O The Sheridan Press, PO Box 465, Hanover, PA 17331.

THE MONOGRAPHS OF THE SOCIETY FOR RESEARCH IN CHILD DEVELOPMENT, (ISSN 0037-976X (print), ISSN 1540-5834 (online)) is published quarterly, on behalf of The Society for Research in Child Development, Inc., by Wiley Periodicals LLC, 111 River St., Hoboken, NJ 07030-5774.

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Printed in the USA by The Sheridan Group

ISSN 0037-976X (Print)

ISSN 1540-5834 (Online)

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Developmental scientists have only rarely studied the development of prosocial and aggressive behaviors in the same sample. In this monograph, Dale Hay and colleagues traced parallel pathways of both behaviors by using longitudinal data collected in Wales between 2005 and 2015 from 321 volunteer parents and their firstborn children. Families were about evenly divided between middle- and working-class; almost all reported themselves as Welsh, Scottish, English, or Irish. Children's social behavior was studied at 6 months and at approximately 1, 1.5, 2.5, and 7 years. Measures included direct observation, parents' and teachers' responses to questionnaires, experimental tasks, and a clinical interview. At young ages, prosocial and aggressive behaviors were positively associated, later became unrelated, and still later, became negatively correlated. Prosocial behavior occurred more often than aggressive behavior at all ages, but a pattern of angry aggressiveness in infancy predicted aggressive behavioral problems at 2.5 and 7 years. The authors note that testing the replicability and generalizability of the current findings will require conducting additional research in a broader range of family and environmental contexts.