

## PROSOCIAL BEHAVIOUR

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# Individual Differences in Prosociality: The Roles of Parenting, Temperament, and Genetics

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### Introduction

Children differ in how likely they are to perform prosocial behaviours (voluntary behaviours intended to benefit others, such as sharing, helping, and consolation.)<sup>1</sup> Researchers have been debating the presence of a "prosocial" personality, in light of meaningful influences of the situation on individuals' tendency to help others.<sup>2,3</sup> Researchers accepting the notion of meaningful individual differences in prosociality also investigate the origin of these differences.

### Subject

Although prosocial behaviours tend to increase with age and with children's socio-cognitive skills,<sup>1</sup> and despite the finding that situational variables (such as recipients' need and relationship with the recipient) also affect the likelihood of prosocial behaviour,<sup>4,5,6</sup> substantial individual differences in prosociality are found at all ages. Three main domains in which researchers have

tried to understand individual differences include socialization, temperament and genetics. Many researchers have focused on how children's socialization environment (for example, home, school, and peers) is related to children's tendency to help and share (this chapter focuses on parenting; school and peers are discussed elsewhere<sup>7</sup>). Another approach takes a dispositional perspective to prosociality: are there personality (or temperament) effects on prosocial behaviour? Finally, researchers ask: is prosociality affected by genetic factors?

## **Problems**

Many different behaviours fall under the above formal definition of prosocial behaviours, but in many cases the associations among such behaviours are modest at best.<sup>8</sup> For example, compliant and self-initiated (respectively, following a request and without request) prosocial behaviours are not correlated with each other,<sup>9</sup> and sharing, helping and comforting may have different developmental patterns.<sup>10</sup> In addition, individual differences in prosociality may be situation-dependent, with some children consistently more prosocial than others, while others' prosocial behaviour may be expressed in some, but not all, situations.<sup>11</sup> Thus, prosocial behaviours are often seen as a family of behaviours that are loosely connected. On the other hand, there is enough evidence for some agreement between raters about children's prosociality,<sup>12</sup> for meaningful correlations between mother-reported sharing and helping,<sup>13</sup> and for longitudinal stability in prosociality.<sup>14,15,16</sup> This evidence enables asking what causes such stable, and in part cross-situationally consistent, individual differences.

Socialization research, showing the relationship between parenting and prosocial behaviour, is often hard to interpret because the direction of influence is not always clear, and much of the social influence taking place in families is bidirectional.<sup>17</sup> Genetic research, on the other hand, can provide evidence for the overall effect of genes on prosocial behaviour, but progress has been slower with regards to identifying specific genetic effects.

## **Research Context**

Children's prosocial behaviour is typically measured by reports of teachers or caregivers, by observation of naturally occurring behaviours in a social setting such as kindergarten, or by experimental probes enabling children to help (for example, an experimenter drops objects and children's helping behaviour is noted).

To understand the role of parenting and temperament, typically parents' reports (using

questionnaires) are used, and often temperament or parenting are observed from children's behaviour in a lab setting.

Genetic effects can be estimated by comparing behavioural similarity among family members depending on their degree of genetic relatedness (for example, comparing adoptive and biological siblings, or identical and fraternal twins). When behavioural similarity is higher in the case of high genetic relatedness (such as identical, monozygotic twins), a genetic effect is estimated. Researchers often estimate heritability, the proportion of variance in a certain population and context attributed to genetic variation in that population. Molecular genetic studies use DNA to compare individuals with different variants of specific (or many) genes to see whether these variants are associated with higher tendency for prosocial behaviour.<sup>18</sup>

### **Key Research Questions**

Many questions can be asked regarding individual differences in prosocial behaviour. First, researchers have examined the different contributions of heredity and environment to individual differences in prosocial behaviour, and whether prosociality is related to children's temperament. Second, researchers try to isolate specific genes that are related to prosocial behaviour, therefore influencing individual differences. Third, there are attempts to understand the specific characteristics of the environment that influence the development of prosocial behaviour. In addition, there are interesting attempts to understand how specific genes and characteristics of the environment interact together to influence prosocial behaviour.

### **Recent Research Results**

Twin studies of children's prosocial behaviour have all (with one exception<sup>19</sup>) shown that both genetic and environmental factors contribute to individual differences in prosocial behaviour (for reviews<sup>20,18</sup>). Genetic effects were found with prosocial behaviour observed at home or at the lab<sup>21,9</sup> and with questionnaire reports by parents, teachers, and children themselves.<sup>22,16,23,24</sup>

A recent study of 7-year old twins,<sup>13</sup> found that the associations of five prosociality facets (mother-reported sharing, social concern, kindness, helping, and empathic concern) were largely due to the overlap of genetic factors common to these facets. Nevertheless, each facet showed unique genetic contributions, meaning that some genetic factors are only relevant to sharing or helping, for example.

Evidence for the involvement of specific genes in prosociality is mainly based on adult studies, suggesting a role for genes regulating the activity of brain molecules involved in transferring information (neurotransmitters and hormones such as dopamine, serotonin, oxytocin, and vasopressin).<sup>18</sup> Only a handful of studies have looked at specific genes and their association with children's prosocial behaviour (for reviews<sup>18,25</sup>). Some research has linked children's prosocial behaviour to variations in the OXTR and AVPR1a genes.<sup>26,27</sup> However, results of molecular genetic studies are often hard to replicate, possibly because they are age-specific and because genes interact with environmental variables and with other genes.<sup>18</sup>

One study of preschool-age twins found that differences in the dopamine receptor D4 gene (DRD4) are related to twins' sharing with each other (but not with unfamiliar peers<sup>28</sup>). In two lab studies,<sup>29,9</sup> DRD4 had no direct association with sharing, but a gene-environment interaction was found as carriers of a certain variant of DRD4 showed stronger associations between prosocial behaviour and their attachment security or the parenting they received (a finding not replicated in children 9-12 years old<sup>30</sup>).

Temperament may be important for understanding genetic effects on children's prosociality. In one of the above mentioned twin studies, when children were 3 years old, prosocial behaviour related positively to sociability and activity, and negatively to shyness and negative emotionality. These associations were largely due to genetic factors common to these temperament dimensions and to prosocial behaviour.<sup>2</sup> Other research also suggests that temperament is related to prosocial behaviour. It was found, for example, that prosocial behaviour is related positively to self-regulation and negatively to emotional reactivity.<sup>31,32</sup> In contrast, no association was found between social fear and shyness-fearfulness and children's prosocial behaviour.<sup>33</sup> Of specific interest are person-centered approaches, which look at the joint contribution of different traits to prosociality. For example, children with a combination of low levels of self-regulation and high levels of negative emotionality tend to be less prosocial than other children.<sup>34</sup>

Twin studies distinguish between the environment shared by siblings growing together, leading to behavioural similarity that cannot be accounted for by shared genetic background, and the non-shared environment, which includes non-genetic factors leading to differences even between monozygotic (genetically identical) twins growing up together. Research has shown that the shared environment effects on children's prosociality are generally weak and tend to decrease with age.<sup>18</sup> In contrast, non-shared environment effects are pervasive and may increase throughout development.

As a more direct way to understand the effects of the environment, many researchers have looked at the role of parents in prosocial behaviour. First, parents' modeling of prosocial behaviour and providing hands-on experience in different prosocial behaviours was found to be related to children's behaviour.<sup>1</sup>

In addition, warm, responsive, and sensitive parenting styles were all found to be related to either prosocial behaviour or empathy.<sup>35,36</sup> Furthermore, in longitudinal research it was found that there are bidirectional relationships between children's prosocial behaviour and the mother's sensitivity.<sup>37</sup>

Second, disciplinary styles are related to prosocial behaviour. Mostly, parents' tendency to provide explanations about requests towards the child or consequences of her behaviour, were found to be related to prosocial behaviour, as did emphasizing the emotional states of others in need.<sup>38</sup> Physical punishment and privilege deprivation, however, are generally found to be negatively correlated with prosocial behaviour.<sup>1,39</sup> These relations may vary according to culture and temperament of the child.<sup>40</sup>

Finally, different aspects of parents' emotionality are related to prosocial behaviour.<sup>41</sup> Children's prosociality is positively related to parental expression of positive emotions, discussion of emotions and supplying constructive ways for children to cope with their emotions.<sup>42</sup> Parental expression of negative emotions was found to be negatively related to prosocial behaviour, and maternal depression may be involved in children's tendency to behave prosocially for the purpose of pleasing a parent or reduction of guilt feelings.<sup>43</sup>

## **Research Gaps**

Despite convincing evidence for the role of genetics in prosocial behaviour, little is known about the specific genes involved in individual differences, and through which brain processes they operate.<sup>44,45,46</sup> There is also convincing evidence for the role of the environment, but research on parenting tends to be correlational. The association of parenting with prosocial behaviours could reflect the effect of children on parents and not the opposite, and possibly the effects of genetic tendencies shared by parents and children (passive gene-environment correlations<sup>39</sup>). There is need for more longitudinal research that could help clarify the causal role of parenting. One such study has demonstrated that maternal sensitivity, warmth and responsiveness at age 54 months predicted prosociality at 3rd grade, which in turn, predicted maternal sensitivity in 5th grade.<sup>37</sup> This shows the complexity of such relations and the importance of longitudinal data. An important

question is whether parenting relates similarly to different aspects of prosocial behaviour, like sharing, helping and comforting.<sup>10,33,47</sup>

Another gap concerns the seemingly contrasting findings showing the meager shared environment effects on prosocial behaviour, and those showing associations with parenting. Within-family genetic or temperamental differences between children may be moderating the effects of parenting. For example, mothers' reasoning and ignoring the child in boring tasks, requiring the child to play with uninteresting toys predicted later moral behaviour (part of which was prosocial behaviour) in inhibited children, whereas redirection and commands from mothers in tasks requiring kids not to approach appealing toys predicted moral behaviour in exuberant kids.<sup>48</sup> More research on such childXenvironment and geneXenvironment interactions is needed. Finally, most of the research has been performed in Western cultures. Although heritability estimates have been shown to be similar across several cultures,<sup>20</sup> environmental effects were quite different. Specifically, it would be important to study how parenting relates to prosocial behaviour in different cultural contexts.

## **Conclusions**

There are stable and meaningful individual differences in children's prosocial behaviour. These differences are accounted for, in part, by genetic differences among children, possibly reflected also in their temperament. Children's environment is also important. In addition to the effects of the school context and peers,<sup>7</sup> parenting is an important factor in prosocial development, although more longitudinal research is needed. The way parenting, genes, and temperament interact in affecting prosocial development is an important path for future research. Finally, children's socio-cognitive abilities and moral emotions,<sup>49,50</sup> and empathy<sup>21</sup> are important for prosocial behaviour. An integrative model including individual differences in these variables and accounting for their joint and separate genetic and environmental factors,<sup>51</sup> is needed to improve our understanding of prosocial development.

## **Implications for Parents, Services and Policy**

Temperamental, genetic and environmental factors are all related to prosocial behaviour in children and adolescents. One important implication is that substantial differences exist within the normal range of children's development. Although at the extreme end prosocial behaviours could signify that a child is behaving prosocially for the wrong reasons, perhaps at a price of

being taken advantage of,<sup>43,52</sup> children's prosocial behaviour is often considered a positive aspect of behaviour, and as such it is encouraged.

As parents, modeling prosocial behaviour at home, exhibiting warm and responsive parenting, explaining to your children reasons and consequences of behaviours and emotions can all encourage prosocial behaviour among your child. However, children's tendencies (affected by their temperament) may result in different types of prosociality and may require different socialization strategies. Temperament could interact with parenting to induce prosocial behaviour in different ways, such as some children will benefit from one kind of parenting, whereas others will not. Therefore, future interventions designed to encourage prosocial behaviour should consider children's temperamental traits.

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