



## Social information influences trust behaviour in adolescents



Nikki C. Lee\*, Jelle Jolles, Lydia Krabbendam

Vrije Universiteit Amsterdam, Section of Educational Neuroscience and LEARN! Research Institute, Faculty of Behavioural and Movement Sciences, Van der Boechorststraat 1, 1081 BT Amsterdam, The Netherlands

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### ABSTRACT

Trust plays an integral role in daily interactions within adolescents' social environment. Using a trust game paradigm, this study investigated the modulating influence of social information about three interaction partners on trust behaviour in adolescents aged 12–18 ( $N = 845$ ). After receiving information about their interaction partners prior to the task, participants were most likely to share with a 'good' partner and rate this partner as most trustworthy. Over the course of the task all interaction partners showed similar levels of trustworthy behaviour, but overall participants continued to trust and view the good partner as more trustworthy than 'bad' and 'neutral' partners throughout the game. However, with age the ability to overcome prior social information and adapt trust behaviour improved: middle and late adolescents showed a larger decrease in trust of the good partner than early adolescents, and late adolescents were more likely to reward trustworthy behaviour from the negative partner.

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During adolescence social interactions become increasingly important. As they transition from childhood to adulthood, adolescents gradually spend more time with their friends than with parents or family members (Brown, 2004). Developing successful social relationships requires understanding and responding to the feelings and intentions of others, for example by trusting them. Interpersonal trust, defined as trust placed in others, plays an integral role in smooth and efficient social interactions by encouraging cooperative behaviour between individuals (King-Casas et al., 2005). Trust in others is present from an early age, and during childhood we learn not to trust all people equally (Fitneva & Dunfield, 2010; Harris & Corriveau, 2011). By the age of 3 children will place more trust in an adult who has previously given them accurate information than in an adult who has given them incorrect information (Corriveau & Harris, 2009). Experimental studies show that trust in others changes during adolescence, as adolescents become increasingly able to anticipate and interpret the behaviour of those they interact with (Derkx, Lee, & Krabbendam, 2014; Fett, Gromann, Giampetro, Shergill, & Krabbendam, 2014a; Fett et al., 2014b; Sutter & Kocher, 2007; van den Bos, Westenberg, van Dijk, & Crone, 2010). Many of these interpersonal exchanges involve communication partners the individual has prior social knowledge of, or has previously interacted with. Studies in adults have shown that this social context influences levels of interpersonal trust. For example, adults are more likely to share rewards with others if they know that the other has previously shown trustworthy behaviour (Bracht & Feltovich, 2009). Studies of the development of trust behaviour during adolescence have previously mainly focused on single interactions with anonymous partners. To increase the understanding of the development of interpersonal trust during adolescence, this study

\* Corresponding author. Section of Educational Neuroscience, Faculty of Behavioural and Movement Sciences, Vrije Universiteit Amsterdam, Van der Boechorststraat 1, 1081 BT Amsterdam, The Netherlands.

E-mail address: [n.c.lee@vu.nl](mailto:n.c.lee@vu.nl) (N.C. Lee).

examines the influence of social information about interaction partners on the development of interpersonal trust behaviour in repeated interactions.

### Trust in dynamic social interactions

In recent years application of game-theoretical approaches has enabled the development of behavioural paradigms to study interpersonal trust behaviour (Camerer, 2003; Glaeser, Laibson, Scheinkman, & Soutter, 2000; King-Casas et al., 2005). These paradigms require participants to engage in cooperative social interactions reflecting realistic 'real-life' and emotionally charged settings (Frith & Singer, 2008). An oft-used paradigm is the trust game, during which a player (the investor) allocates an amount of money between themselves and a partner (the trustee) within an interactive setting (Berg, Dickhaut, & McCabe, 1995). This invested amount is tripled and given to the trustee, who then decides how to share the investment between himself and the investor. Within the task trust is quantified by the amounts invested by the investor. In an iterated version of the trust game, the investor and trustee play multiple rounds together, thereby enabling examination of the effect of reputation building during the game (King-Casas et al., 2005). As the task is a direct behavioural measure of trust, it enables the manipulation of the social context within which trust occurs. This allows for more objective assessment of the effects of these manipulations on trust behaviour than traditional self-report measures. The trust game is also sensitive to behavioural changes which participants may not be able to verbalise or report (Delgado, Frank, & Phelps, 2005).

### The role of social information

A number of studies have examined the development of trust in anonymous partners using the trust game. Sutter and Kocher (2007) showed that trust increased almost linearly from childhood, stabilising in late adolescence. Others have also demonstrated continued improvements in trust from early to late adolescence (van den Bos, van Dijk, Westenberg, Rombouts, & Crone, 2011; van den Bos et al., 2010), as well as finding that adolescents show greater flexibility in strategy use over the course of a repeated trust game than children (van den Bos, van Dijk, & Crone, 2012). Little is known about the influence of prior social information on trust during adolescence. A study in a small sample of adolescents with and without externalizing behaviour problems, found that adolescents showed more trust in real-life peers they had previously described as kind than in peers they had described as mean (Sharp, Burton, & Ha, 2011). Studies in adults have shown that prior social knowledge of interaction partners influences trust game behaviour. The better an individual knows their interaction partner, the more they trust them, especially in situations with high potential losses (Goto, 1996). Initial impressions also influence trust. People invest more in partners whose face they previously rated as trustworthy (van't Wout & Sanfey, 2008), or in individuals they have been informed are trustworthy (Fett et al., 2012). Delgado et al. (2005) found that information about interaction partners influenced trust in two ways: first, prior social information about interaction partners affected the initial trust individuals placed in these partners: participants were more likely to trust a trustee who they had received positive information about than a trustee they had received negative information about. Secondly, they showed that feedback about the interaction partner during the game failed to completely alleviate these differences, despite both partners showing equal amounts of reciprocation during the game.

It seems that two types of social information can be distinguished which influence trust behaviour: prior information about interaction partners' reputation and feedback information based on behaviour during the trust game. Adolescence is a particularly interesting developmental period during which to study these effects. During adolescence, emotional responsiveness to social stimuli and socially related events is amplified, and social information becomes highly salient within decision-making contexts (Crone & Dahl, 2012; Nelson, Leibenluft, McClure, & Pine, 2005). At the same time, adolescents are often unable to self-regulate their behaviour when attention-grabbing socially and emotionally evocative events occur (Monk et al., 2003). As a result, social and emotional information strongly influence adolescent behaviour (Silk et al., 2009). During adolescence the integration of cognitive and emotional networks increases. This leads to a rise in levels of goal-directed behaviour, as the cognitive control network becomes increasingly able to overrule the heightened activation of the emotional network, thus decreasing the influence of social and emotional stimuli on behaviour (Hare & Casey, 2005; Nelson et al., 2005; Somerville & Casey, 2010). However, as the aforementioned study by Delgado et al. (2005) shows, adjusting behaviour in certain social contexts still poses difficulties for adults, for example when faced with incongruent feedback about an positively-viewed interaction partner's behaviour.

### The current study

The increased salience of social and emotional stimuli during adolescence makes it likely that adolescent trust behaviour will be particularly affected by social knowledge of interaction partners. Therefore, the present study was designed to examine the influence of social knowledge of interaction partners on trust behaviour during adolescence. A group of 852 adolescents aged 12–18 years played an iterated version of the trust game against three fictitious partners who they received information about prior to playing the game. One partner was trustworthy ('good' partner), one was not trustworthy ('bad' partner) and the information about the third partner was not related to their trustworthiness ('neutral' partner). In line with previous research we expected:

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