Empathy, Anger, Guilt: Emotions and Prosocial Behaviour.

William Roberts

Thompson Rivers University

Janet Strayer

Simon Fraser University

Susanne Denham

George Mason University

Canadian Journal of Behavioral Science, 2014, **46**, 465-474. doi: 10.1037/a0035057

Author note

William Roberts, Psychology Department, Thompson Rivers University; Janet Strayer, Psychology Department, Simon Fraser University; Susanne Denham, Psychology Department, George Mason University.

This article may not exactly replicate the final version published in the CPA Journal. It is not the copy of record. Portions of this paper were presented by the first two authors in Katja Kokko & Sylvana Côté (Chairs), *Prosocial and Aggressive Behaviours over the Life Course*. Symposium conducted at meetings of the Society for Research in Child Development, Tampa, Florida, April, 2003. This research was funded by grant 410-97-1387 from the Social Sciences and Humanities Research Council of Canada. We would like to express our gratitude to the parents, children, and teachers whose generous cooperation made this project possible.

Corresponding author: William Roberts, Psychology Department, Thompson Rivers University, 900 McGill Drive, Kamloops, BC V2C 5N3, Canada. Phone: (250) 374-5516. E-mail: wroberts@tru.ca

Abstract

Along with anger, the social emotions of empathy and guilt influence children's social behaviours in important ways, and are also implicated in broader aspects of behaviour such as self regulation (ego control). Despite their importance, few studies have assessed these emotions simultaneously or across sources. We obtained measures from 99 children (mean age = 9.7 years, range 6 to 13.3; 66% girls), their fathers, mothers, teachers, and best friends. As expected, more empathic children scored higher on adaptive guilt and lower on anger. In path models, emotions were strongly related to behaviours in expected directions. Empathy and adaptive guilt accounted for over 50% of the variance in friendly behaviour, independently of anger. Adaptive guilt and anger predicted 42% of the variance in bullying behaviours, 51% of the variance in cooperative behaviour, 33% of the variance in persistence (a measure of ego over-control), and 44% of the variance in ego undercontrol. Present findings help differentiate the contributions of empathy, guilt, and anger to various social behaviors and suggest important links between emotions, self-regulation, and prosocial behavior.

Keywords: Empathy, guilt, shame, anger, prosocial behaviour

Empathy, Anger, Guilt: Emotions and Prosocial Behaviour

Emotions have consequences for behaviour because they compel actions (Campos, Mumme, Kermoian, & Campos, 1994) and are components of evaluations about the situations in which we find ourselves (Bowlby, 1982). Their role in regulating human social adaptation was recognized by Smith (1759/2000) and Rousseau (1754/2002) well before Darwin (1872/1998) emphasized their action-orienting functions. Despite their importance, few studies have considered empathy, guilt, and anger simultaneously or in relation to broad aspects of behavioural functioning as well as to prosocial behaviours specifically. We do so in the present study by assessing constructs across contexts and sources, thus assessing emotions as consistent individual differences in behavioural expression. Moderate to high levels of empathy, for example, indicate feeling an underlying similarity and security with others (Sroufe, Egeland, & Carlson, 1999). Moderate levels of adaptive guilt suggest frequent and appropriate evaluations of responsibility (Radke-Yarrow, Zahn-Waxler, & Chapman, 1983). Moderate to high levels of anger indicate frequent evaluations of others as hostile and provoke corresponding behaviours (Lang, 1984).

Empathy

Empathy is not so much an emotion as an emotional-cognitive process (Strayer, 1987, 1993) that results in understanding and "feeling with" others. As such, empathy has important implications for prosocial behaviour with peers (e.g., Findlay, Girardi, & Coplan, 2006; Hoffman, 1975, 1987; Litvack-Miller, McDougall, & Romney, 1997; Padilla-Walker & Christenson, 2011; Roberts & Strayer, 1996) and, conversely, for antisocial behaviour (e.g., Cohen & Strayer, 1996; Robinson, Roberts, Strayer, & Koopman, 2007; Stavrinides, Georgiou,

& Theofanous 2010; Warden & Mackinnon, 2003). In the current study, we extended earlier findings by assessing prosocial and hostile behaviours with peers and cooperative behaviour with adults across sources – teachers, fathers, mothers, and best friends – using Q-sort descriptions from adults and questionnaire responses from best friends.

Guilt

From a functionalist view (Barrett, 1995), guilt is an important regulator of self and social development, signaling that a proscription across social and moral domains has occurred or is imminent. Guilt is focused on specific incidents and behaviours, and entails a sense of personal agency and control. In our view, it operates along an adaptive-maladaptive continuum (Ferguson, Stegge, Eyre, Vollmer, & Ashbaker, 2000; Lewis & Michalson, 1983; Luyten, Fontaine, & Corveleyn, 2002), in contrast to views that consider guilt as always adaptive (Tangney, 1990, 1996).

Although high levels of guilt can lead to inappropriate attributions of responsibility and self-blame, at adaptive levels, guilt inhibits or mitigates harm to others, leading to approach behaviours in order to make reparation (Caprara, Barbaranelli, Pastorelli, Cermak, & Rosza, 2001). Thus, we expect positive relations for guilt and prosocial behaviour. Guilt also helps children acquire knowledge of the self-as-agent by focusing on one's responsibility for wrongdoing and its reparation, and thus has implications for self regulation.

As with empathy, we assessed adaptive guilt across sources – teachers, fathers, mothers, and best friends – using Q-sort descriptions from adults and questionnaire responses from best friends.

Anger

Anger, too, can be considered along an adaptive-maladaptive continuum. At low levels, it may serve to strengthen attachments and friendships by communicating needed adjustments or signaling violations of personal rights. Empathic anger (anger shared with another at his/her plight) is also possible (Smith, 1759; Strayer, 1993). However, moderately intense, frequent, or prolonged anger tends to disrupt or even sever social relationships (Bowlby, 1982).

Anger and its regulation have long been implicated in aggression and antisocial behaviour (Maccoby, 1980; Patterson, DeBaryshe, & Ramsey, 1989; Orobio de Castro, Slot, Bosch, Koops, & Veerman, 2003; Sullivan, Helms, Kliewer, & Goodman, 2010) as well as in the cognitive distortions of aggressive children and bullies (Camodeca & Goossens, 2005; Coie & Dodge, 1998; Garner & Hinton, 2010). In addition, Rydell, Berlin, and Bohlin (2003) found that 5- to 8-year-olds' anger was negatively related to prosocial behavior concurrently and across time, at school and home.

Like empathy and guilt, anger was assessed across sources – teachers, fathers, mothers, and best friends – using Q-sort descriptions from adults and questionnaire responses from best friends.

Relations between Empathy, Guilt, and Anger

In general, anger, empathy, and guilt should relate to each other because they are influenced by similar socialization experiences (e.g., Saarni et al., 2006; Zahn-Waxler & Robinson, 1995). More specifically, we expected moderately strong positive relations between empathy and guilt because guilt is a social emotion that entails an appraisal of self in relation to others (e.g., Saarni, Campos, Camras, & Witherington, 2006), and so is likely affected by

differences in empathy, a process linking self with others. For example, empathy may help initiate guilt and also enhance the relief associated with reparation. Thus empathy is thought to be aligned with or even necessary for adaptive guilt in normal development (Hoffman, 1975; Zahn-Waxler & Robinson, 1995). In contrast, at moderate or high levels, anger is thought to preempt empathic responses, as well as those characterized by adaptive guilt. Therefore, we expected to find moderately strong negative relations between anger and the social emotions. As will be seen below, our path models were consistent with these expectations.

Behavioural Outcomes

Prosocial and antisocial behaviours. Prosocial behaviours maintain interactions and relationships, whereas antisocial behaviours disrupt or terminate them. Within these broad sets of behaviours, we focused on those that are salient for school-age children: friendly behaviours with peers, hostile behaviours (including bullying), and cooperative behaviour with adults.

Although friendly behaviour has sometimes been conceptualized as the positive end of a dimension that has hostile, aggressive behaviour at its negative end (e.g., Baumrind, 1971), it is probably better to consider the two as separate dimensions. Children with avoidant attachment histories, for example, can be aggressive with their friends, that is, they are both friendly and hostile (Sroufe, Egeland, Carlson, & Collins, 2005). Among school-age children, social aggression is practiced by children who are friendly with many peers, but aggress against a select few (Pepler & Craig, 2005). In the current study, both teacher- and parent-reported items assessing friendly and hostile behaviours formed separate factors, indicating the empirical independence of these constructs.

Cooperation, that is, willing compliance with parents and teachers, is critical during

middle childhood. Cooperative children are able to focus on learning tasks at school and to participate in structured activities with peers. Cooperation during social interactions is characteristic of well-functioning children at this age (Sroufe et al., 2005). In contrast, resistant, defiant, non-compliant behaviour, whether at school or at home, is considered problematic.

Self regulation. We believe that emotions, or rather the evaluative processes of which they are components, shape behaviours of many types, not just prosocial and antisocial behaviours (Bowlby, 1982; Roberts & Strayer, 1987, 2003). Among these behaviours, self regulation, or *ego control*, is central (Block & Block, 1980).

Ego control, which varies along a continuum from undercontrol (impulsivity) to over-control (inhibition), has well-established empirical relations with the behaviour of children and adolescents (see Block & Block, 2006, for a review). The ability to vary one's level of ego control according to circumstances (i.e., *ego resilience*) is critical for competence, as some situations call for spontaneity, others for persistence and focus (Block & Block, 1980). Flexibility is essential.

Although no one level of ego control is always optimal, Block and Block (1980) argued that competent individuals are characterized by moderate levels of ego control. Children who are characteristically impulsive (under-controlled) or characteristically inhibited (over-controlled) are both exhibiting styles of behaviour that are likely to be problematic in many environments.

Given these characteristics, we expected moderate ego control to be associated with higher levels of adaptive guilt, which requires the ability to respond in behaviourally well-regulated ways. Empathy, too, should be highest for moderate ego control, although this relation should be less strong than that for adaptive guilt, as empathy is less dependent on behavioural

regulation. Finally, anger should show a strong relation with undercontrol, because impulsiveness of behaviour includes impulsiveness of emotional expression.

The Current Study

To summarize, our goal was to assess relations between empathy, adaptive guilt, and anger, and their relations with prosocial behaviours and ego control, assessing all constructs across sources. In path models, we expected that empathy and adaptive guilt would be strong predictors of both friendly and hostile behaviours, and that hostile behaviour would also be predicted by anger. Guilt and anger, but not empathy, were expected to predict cooperative behaviour with adults. We expected that empathy and adaptive guilt would be positively related to moderate levels of ego control, because flexible, adaptive self-regulation should enhance the balance between self and others that results in empathic responses and a willingness to accept responsibility and make amends. Finally, we expected anger and undercontrol to be related, given an association between behavioural and emotional dysregulation.

We expected that these relations would be at least moderate in strength, with relations between social emotions and prosocial behaviours somewhat stronger than those between social emotions and ego control (given the domain-specific implications mentioned above). In contrast, persistent anger suggests general difficulties with self-regulation, and so relations with anger should be strong for both social behaviours and ego control.

Method

Participants

Families were recruited through elementary schools in a medium-sized community located in southwestern British Columbia. Of the 104 families initially enrolled, 99 completed

data collection. In the final sample, children (66% female) had a mean age of 9.7 years (SD = 2.0, range 6.0-13.3), and, on average, one sibling (range 0-6). Mothers were 37.8 years old (SD = 5.0, range = 25-50); fathers, 40.2 years (SD = 7.1, range = 27-61). Over 93% were European Canadian; the balance were Chinese Canadian or Indo-Canadian. Parents were well educated (59% of mothers and 61% of fathers reported post-secondary diplomas or degrees) and most were well off (median family income was $60,000, interquartile range = $50,000 to $70,000, range = $10,000-$130,000).

Procedures

Data collection took place during two home visits approximately six weeks apart. During the first, children were individually administered the Interpersonal Reactivity Index (IRI; Davis, 1983; items were read to the youngest children) and parents completed the Child Description Q-sort, designed for this study. During the second visit, same-sex best friends ($N = 91$) described participating children using a questionnaire based on the parent Q-sort.

After family measures were collected, children's teachers ($N = 93$) completed the Child Description Q-sort. Honoraria were given to parents ($50) and teachers ($25). Children received $10 gift certificates for their participation.

Measures

Using procedures adapted from Block (1965), the Child Description Q-sort was completed by mothers, fathers, and teachers. It contained 99 items evenly distributed over 9 categories from least (= 1) to most (= 9) descriptive of the child. Items were selected from the California Child Q-set (Block & Block, 1980; items for anger, antisocial behaviour, guilt, positive emotions, and ego control), the Preschool Q-set (Baumrind, 1968; items for empathy,

friendly to peers, and cooperative with adults) and the Child Rating Questionnaire (Strayer, 1985; items for anger and empathy). Fourteen new items assessed empathy, guilt, and anger.

Best friends described children using a questionnaire based on the Child Description Q-sort, rating 39 items on four-point scales (1 = *not at all like my friend* to 4 = *a lot like my friend*).

Items for the IRI Empathic Concern scale (Davis, 1983) were scored from 1 (= *not at all like me*) to 4 (= *a lot like me*).

For all instruments, scales were formed by taking conceptually defined sets of items and confirming their unidimensionality (i.e., that there was only one eigenvalue > 1.0 and that all item loadings were .40 or higher). Items were deleted as necessary in order to meet these criteria. This insured that scales had a straightforward interpretation, and that we replicated the original factor structure of older scales, such as IRI Empathic Concern.

After unidimensionality was confirmed, scale scores were calculated by averaging items. We then aggregated scales within domains using principal components analysis (PCA). PCA, in contrast to factor analysis, maximizes the predictability of the original scores, which is desirable for data aggregation. Moreover, it is possible for a set of variables with small intercorrelations to show moderate to strong relations with the component derived from them. Thus, a set of measures that show weak convergence among themselves (as assessed by correlations) can still show acceptable convergence on a shared component (as assessed by communalities).

This approach has two other important advantages, which follow from the fact that PCA, like factor analysis, summarizes shared variance (Rummel, 1970). The first component extracted does not include error variance, which is random. Thus reliability is higher for the component than for the original scales. Second, when extracted across sources, the first component does not

include source variance. Thus the components assessing emotions and behaviours in this study reflect a shared view of the child's emotions and behaviours independent of source. We now consider the scales in detail, grouped by domain, and the components derived from them.

Empathy. Adults (mothers, fathers, and teachers) sorted such items as "is sensitive and responsive to others' sadness, fear, or anxiety" and "is aware of the feelings of others". For teachers, a nine-item scale emerged. Scales for mothers and fathers each contained seven items. The five-item best-friend scale included "when I'm sad, it makes my friend feel sad too" and "my friend usually knows how I feel, even if I don't tell her/him". One item was deleted from the set of seven comprising the IRI Empathic Concern scale (Davis, 1983), as it defined a second factor. Cronbach α coefficients were acceptable for all scales (see Table 1).

As shown in Table 2, empathy measures defined a single principal component with strong loadings for best friends, mothers, and teachers.[1] The loading for self-reported empathy was marginal, but it was retained because of its theoretic interest. Father-rated empathy, in contrast, was discarded: it was negatively correlated with best-friend rated empathy, $r(90) = -.20$ (95% CI = -.39 to .01). We preferred a component with best friends and one parent to a component with two parents, because the former better exhibited cross-source variability.

. **Guilt.** Adults rated such items as "accepts responsibility for misbehaving or for actions

[1] PCA requires complete data, so missing values were estimated within domains if no more than one measure was missing. For example, if one measure of empathy was missing, it was estimated by maximum likelihood procedures (BMDP AM, Dixon, 1992) using the other four empathy measures. Although this strategy inflates coherence within domains, it does not affect relations across domains.

that contribute to an accident" and "apologizes to others when appropriate". A five-item scale emerged for teachers and four-item scales for fathers and mothers. The best-friend scale comprised six items, such as "if my friend does something wrong, s/he lets people know s/he is sorry" and "my friend sees when something is his/her fault, and doesn't try to push it off on other people".

Values for Cronbach α (Table 1) ranged from acceptable to low. Nevertheless, measures of adaptive guilt showed satisfactory convergence, defining a single principal component with acceptable loadings for best friends, parents[2], and teachers (see Table 2).

Anger. Adults sorted such items as "minor frustrations lead to anger; is easily irritated" and "is not able to control his/her anger or temper". The teacher scale contained eight items; the mother scale, seven; the father scale, six. The two-item best-friend scale consisted of "my friend gets angry a lot at other kids" and "my friend gets angry a lot when we're playing".

Values for Cronbach α (Table 1) were strong for the adult scales and acceptable for the best-friend scale. As shown in Table 2, anger scales showed good convergence across sources.

Friendly with peers. Items taken from Baumrind (1971) defined two factors, one for hostile behaviour (see Bullies, below) and another for friendly behaviour. Examples of friendly

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[2] Within-domain aggregation was done in two stages. Mother and father scales were first aggregated by PCA to produce parent components for guilt, anger, etc., because if entered individually with teacher and best-friend scales, their strong correlations distorted the resulting factor structure (see Block, 1971). Parent components accounted for 60% to 84% of the original variance (factor loadings ranged from .77 to .92). In the second stage, PCA was used to aggregate the parent component with teacher and best-friend scales.

behaviours included “helps other children carry out their activities”. Teacher and father scales contained six items, the mother scale, five. The six-item best-friend scale included “my friend is very friendly and nice to me and other kids” and “my friend sometimes hurts my feelings, teases me, or makes me feel bad” (loaded negatively).

Cronbach α coefficients (Table 1) were acceptable except for mothers, who had a marginal value. All measures showed satisfactory convergence (Table 2).

Bullies. These four items included “bullies other children” and “teases or taunts other children (including siblings)”. Best friends did not describe aggressive behavior.

Values for Cronbach α (Table 1) were strong for teachers but marginal for parents. Nevertheless, as shown in Table 2, parent and teacher scales showed strong convergence.

Cooperative with adults (Baumrind, 1971). Adults sorted such items as “respects limits, rules and routines”. Scales for teachers, fathers, and mothers each contained six items.

Values for Cronbach α (Table 1) were strong for teachers and acceptable for parents. As shown in Table 2, parent and teacher scales showed strong convergence.

Ego Undercontrol. This scale and the next (Persistent), were derived by taking the least and most descriptive items from the criterion Q-sort for undercontrol developed by Block and Block for the California Child Q-sort (Block & Block, 1969). Adults sorted such items as “impatient: cannot delay or wait for gratification or satisfaction”. The teacher scale contained six items, the father and mother scales, five items.

Values for Cronbach α (Table 1) were strong for teachers and acceptable for parents. As shown in Table 2, parent and teacher scales showed strong convergence.

Persistent. Derived from criterion items for over-control, these items included “keeps

trying; persistent in activities". (Criterion items assessing lethargy and shyness formed a separate factor and were excluded). The teacher scale contained four items; the mother and father scales, three items.

Values for Cronbach α (Table 1) were strong for teachers and acceptable for parents. As shown in Table 2, parent and teacher scales showed strong convergence.

Results

We begin by describing our sample, including gender and age differences in emotions and behaviours. Next we consider relations within these domains, using correlations. Finally we consider relations between emotions and behaviours, using correlations and path models. The path models allowed us to examine both mediated and direct relations.

Descriptive Findings

On average, children were described as moderately high on empathy and adaptive guilt and moderately low on anger (see Table 1). Children did vary, however. Teachers rated 3% of children as low on empathy (scores ≤3, or *uncharacteristic*) and 4% as low on adaptive guilt; 6% of children were rated high on anger (scores ≥ 7, or *characteristic*).

Consistent with these values for emotions, children were described, on average, as friendly with peers, low on bullying behaviours, and cooperative with adults (Table 1). Again, children varied. Teachers rated 4% of children as low (or uncharacteristic) on friendly behaviour, 5% as high (or characteristic) on bullying, and 7% as characteristically uncooperative.

As Table 1 indicates, most children were reasonably well-regulated in their behaviour. Nevertheless, teachers reported that 16% were high on undercontrol (scores ≥ 7) and 45% were low (scores ≤ 3), that is, over-controlled. Similarly, 58% were high on persistence and 15% were

low. Thus, children in this community sample showed a wide range of emotions and behaviours.

Gender differences. Consistent, moderately strong differences in behaviours were found. Girls, compared to boys, were more friendly with peers, less bullying, more cooperative with adults, less under-controlled, and more persistent (see Table 3).

Gender differences in emotions were consistent with differences in behaviours. Compared to boys, girls were more empathic, higher on adaptive guilt, and marginally less angry (see Table 3). Although these differences were small, accounting for 4% to 7% of the variance, path models (below) indicated that gender differences in behaviours were almost always mediated by gender differences in emotions.

Age. No consistent age trends occurred (Table 3). Only one of eight comparisons reached statistical significance, and binomial tests retained the omnibus null hypothesis that all correlations were zero, $p = .34$. Consequently, age will not be considered further.

Emotions and Behaviours: Relations within domains

Relations Between Emotions. As shown in Table 3, expectations for empathy, adaptive guilt, and anger were supported. Children who were described as having higher levels of empathy were also described as having higher levels of adaptive guilt and lower levels of anger.

Relations Between Behaviours. As found in many samples (e.g., Roberts & Strayer, 1996), children who were more friendly with peers were also more cooperative with parents and teachers (Table 3). They were also more persistent and less undercontrolled. In contrast, bullying behaviours were associated with greater undercontrol, lower persistence, and lower levels of friendly behaviour, a pattern found for aggressive children (e.g., Dodge, Coie, & Lynam, 2006).

Relations Between Emotions and Behaviours

Correlations. The broad patterns we expected were evident in Table 3. Empathy, adaptive guilt, and anger were related consistently, strongly, and in expected directions with friendly behaviour with peers, bullying behaviours, and cooperative behaviour with adults (median absolute $r = .56$). They were also consistently but less strongly related to measures of ego control (that is, to persistence and undercontrol), median absolute $r = .42$.

Path models. In order to clarify the patterns in Table 3, we conducted a series of exploratory path analyses using an approach developed by Lohmöller (1984). According to Falk and Miller (1992), this method is particularly appropriate when relations between theoretical constructs cannot be specified exactly, when empirical measures have some degree of unreliability, when there are many manifest and latent variables, and when sample sizes are moderate or small.

Lohmöller's approach does not generate standard errors for path coefficients (and hence tests of significance), on the grounds that this entails assumptions about multivariate distributions that are difficult to test and unlikely to be true (Falk & Miller, 1992; Wold, 1980). However, paths with coefficients < .20 were pruned from our models because such relations contributed relatively little explained variance (always less than 4%).

Three points apply to our path models. First, we used the component measures of emotions and behaviours described in Table 2 to insure that variables in the path models did not share source variance. Second, because we specified the components, the usual measures of model fit (which index how well latent variables summarize manifest variables) were not available. Finally, we emphasize that our path models are not causal models. They summarize patterns of direct and mediated relations implicit in Table 3, reflecting our expectations regarding

relations between emotions and our expectation that gender differences in behaviours would be mediated by gender differences in emotions. These expectations were tested by alternative path models, including models with gender x emotion interactions. These models were evaluated by variance accounted for and strength of path coefficients.

***Friendly with peers*.** As shown in Figure 1, higher levels of empathy and adaptive guilt and (to a lesser extent) lower levels of anger accounted for over half the variance in friendly behaviours with peers. The approximate 95% confidence interval for this R^2 value ran from .38 to .65 (Steigler & Fouladi, 1992), indicating a strong link in the population between these emotions and friendly peer interactions.

In a supplementary model excluding anger, empathy and adaptive guilt predicted 51% of the variance in friendly behaviours (95% confidence interval = 35% to 63%) and had path coefficients of .46 and .36, respectively. Thus, in Figure 1, anger independently accounts for only 3% of the variance in friendly behaviours, in contrast to 21% shared variance in Table 3.

Links between emotions, as expected, were sometimes substantial. Empathy and anger jointly accounted for 28% of the variance in guilt (95% confidence interval = 13% to 42%). Empathy was moderately related to gender and anger, which jointly accounted for 15% of its variance (95% confidence interval = 4% to 29%). Thus there was a small gender difference in empathy that couldn't be accounted for by gender differences in anger.

Other supplementary models indicated that gender differences in friendly behaviours were mediated by empathy, and that empathy completely mediated gender difference in adaptive guilt. Consistent with its marginal status in Table 3, the relation between gender and anger failed to meet criteria for inclusion in Figure 1. However, the 95% confidence interval for this relation,

with an upper R^2 value of .14, suggested that gender differences in anger might be of greater strength in the population.

Given that the same component emotion variables were used in all path models, the relations and values just described for emotions and gender also hold in the models below. Our descriptions of these models will therefore focus on the outcome variables and their direct predictors. We omit the path diagrams due to space limitations.

Bullying behaviours. Lower levels of adaptive guilt and higher levels of anger strongly predicted bullying behaviours (path coefficients were -.44 and .35, respectively). Together, they accounted for 42% of the variance (95% confidence interval = 26% to 56%).

Empathy did not enter this model as a direct predictor, as it accounted for less than 1% of the variance in bullying independently of adaptive guilt and anger. Nevertheless, as in Figure 1, the path from empathy through guilt completely mediated gender differences in bullying behaviors.

Cooperative with adults. Lower levels of anger and higher levels of adaptive guilt jointly accounted for 51% of the variance in cooperative behaviours (95% CI = 35% to 63%). Path coefficients were -.46 and .40 respectively. As in Figure 1, the path from empathy through guilt completely mediated gender differences in cooperative behavior.

Ego undercontrol. Higher levels of anger and (to a lesser extent) lower levels of adaptive guilt jointly accounted for 44% of the variance in ego undercontrol (95% CI = 28% to 58%). Path coefficients were .56 and -.21 respectively. As in Figure 1, the path from empathy through guilt completely mediated gender differences in ego undercontrol.

Persistent. As shown in Figure 2, greater persistence was associated with lower levels of

anger, higher levels of adaptive guilt, and a small gender difference favouring girls. Together, these three variables predicted over a third of the variance in persistence (95% CI = .21 to .51).

As indicated by path coefficients, the strongest predictor of persistence was anger. In a supplementary path model excluding gender as a direct predictor, anger and adaptive guilt jointly accounted for 33% of the variance in persistence (95% CI = 17% to 47%), with path coefficients of -.40 and .29, respectively. Thus, in Figure 2, gender independently accounts for only 4% of the variance in persistence.

Discussion

To briefly summarize our findings, path models indicated that empathy and adaptive guilt were strong predictors of friendly peer behaviour, and that adaptive guilt and anger were strong predictors of bullying and (inversely) of cooperative behaviour with adults. Anger, and to a lesser extent, adaptive guilt, were also associated with self regulation – the modulation of impulse (undercontrol) and the application of attention and effort (persistence). Finally, gender differences in behaviour shown were mediated by gender differences in emotions. (Persistence, where gender accounted for 4% of the variance, was an exception). We now consider other implications of our findings.

Empathy

We found (as did Roberts & Strayer, 1996) that empathy and friendly behaviour were strongly related when assessed across sources. In the current study, this relation held even when adaptive guilt and anger were considered, supporting the importance placed on empathy by past theorists (e.g., Eisenberg & Miller, 1987; Hoffman, 1975, 1987; Smith, 1759/2000; Strayer, 1987).

In contrast to friendly, prosocial behaviours, empathy was not related to bullying independently of anger and adaptive guilt. This finding was surprising, given substantial negative links between empathy and observed physical aggression (Strayer & Roberts, 2004a), conduct disorder (Cohen & Strayer, 1996), and incarceration in juveniles (Robinson et al., 2007). These studies used the Empathy Continuum, a laboratory measure of responsive empathy (Strayer, 1993), as one of their multiple indicants of empathy. It may be that this measure of children's responsive empathy is capturing some aspect of behaviour that is missed by trait assessments, which necessarily reflect summary judgments over many situations.

Another possibility is that some of the cognitive skills needed for empathic responses (e.g., emotion recognition and perspective taking) may, in the absence of "fellow feeling" with others, actually facilitate some forms of bullying (character assassination and exclusion, as ends in themselves or preludes to physical harassment – cf. Strayer, 1987). Thus, our measures of empathy include processes that could be used for social aggression, attenuating a negative association between empathy and bullying.

Like bullying, empathy was not related to cooperative behaviour independently of adaptive guilt and anger. Although the pattern is similar, the reasons, we believe, are different. Children do not cooperate with adults because they empathize with them, but because they respect them and perceive their demands as reasonable and fair (Bugental & Grusec, 2006; Piaget, 1997). Thus, it makes sense that in our path model, cooperation was strongly associated (negatively) with children's anger and (positively) with their sense of personal agency and responsibility (i.e., with adaptive guilt), but not directly with empathy. This is consistent with conclusions that committed compliance and cooperativeness are due primarily to parental

affection, guidance, and encouragement of autonomy (Grolnick & Farkas, 2002), factors that plausibly affect adaptive guilt and anger more strongly than empathy.

Anger

Anger not only predicted behaviour that was hostile to peers and resistant with adults, it also had negative associations with self-regulation (undercontrolled behaviour and lower persistence). This pattern is consistent with suggestions that anger and aggression represent different aspects of dysregulation (in contrast to the view that anger causes aggression). For example, Strayer and Roberts (2004a) reported that, although angry children were also aggressive, observations of weekly play sessions indicated that anger could decline while aggression increased and vice versa.

Our findings substantially replicated earlier reports that anger, mediated by empathy, is indirectly related to friendly behaviours (e.g., Roberts & Strayer, 1996; Strayer & Roberts, 2004b). In the current sample, correlations indicated that anger accounted for 21% of the variance in friendly behaviour, but in the path model, this direct relation, mediated by empathy and guilt, was reduced to 3%.

Overall, relations with friendly and hostile behaviours differed for the three emotions we examined. Empathy and adaptive guilt were the strongest predictors of friendly behaviours, whereas adaptive guilt and anger were the strongest predictors of bullying. Understanding these relations is complex, in part because some children are both friendly and aggressive (Eisenberg, Fabes, & Spinrad, 2006). But current results contribute to evidence that friendly behaviours and bullying behaviours are distinct dimensions of behaviour and have different relations with other variables.

Guilt

The importance of adaptive guilt in our path models suggests the importance of internalization and self-regulation for both friendly and hostile behaviour with peers and for cooperative behaviour with adults (Grolnick & Farkas, 2002). The development and regulation of guilt may be an important link between self-regulation of emotions and self-regulation of behaviour. As expected, guilt (and empathy) were more important for social behaviours than for more general behavioural characteristics such as undercontrol and persistence. Nevertheless, our findings suggest that both guilt and anger have important associations with self regulation – associations that need to be investigated and understood.

Limitations and Conclusions

Shared source variance is a serious problem, especially when assessing constructs (like empathy and prosocial behaviour) that are closely related in the everyday understanding of parents and teachers. However, as we argued earlier, the problem of shared source variance was minimized by our data analytic strategy. By using PCA to aggregate across sources, source variance, unique to each measure, was left behind.

The halo effect of shared source variance and the related problem of social desirability were also minimized by our initial decision to use Q-methodology. The forced distribution of the Q-sort means that not all favourable items can be placed high – nor can all unfavourable ones be placed low. Biases are constrained, while at the same time cross-source agreement is enhanced (Block, 2008).

Are low values of Cronbach α a concern? Low values of Cronbach α indicate that correlations between scale items are low. This occurred for a few of our measures. However, we

believe that this is not a serious concern for three reasons. First, we confirmed the unidimensionality of all scales by factor analysis, ensuring their fundamental coherence and meaning. Second, we aggregated scales using PCA, an approach that increases reliability by reducing error variance. Finally, low reliability is a concern because it attenuates relations (e.g., Block, 1971), and our findings are strong enough and frequent enough to indicate that the reliability of our component variables was acceptable. Whatever the shortcomings of the individual scales in a given domain, together they evidently formed reasonably good aggregated measures.

Similar considerations suggest that the Q-sort developed for this study had satisfactory validity. Items were selected on the basis of their face validity. Expected relations emerged between emotions, and between emotions and behaviours. Expected gender differences were found. Finally, convergence between mothers and fathers, and between parents and teachers, indicate that the Q-sort reflects an objective reality, the child's behaviour.

In contrast to Q-sort measures, self-reported empathy showed modest convergence with adult and best-friend measures of empathy, as indicated by its factor loading. This finding could not be attributed to the age of our youngest participants, as across-source correlations were small even for older participants. Given that levels of self-reported empathy are high for conduct disordered and even for incarcerated youth(Cohen & Strayer, 1996; Robinson et al., 2007), notably anti-empathic populations, it may be that the validity of self-reported empathy is problematic. This possibility increases the need for assessments that cut across sources and methods (Cook & Campbell, 1979).

In conclusion, our results add to the growing body of evidence that empathy strongly

influences friendly behaviour with peers. Our findings also indicate the importance of anger and adaptive guilt for children's self-regulation, as well as for their social behaviours with peers and adults. These are issues that merit further study.

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Table 1.

Scales Before Aggregation: Means, (Standard Deviations), and Cronbach Alphas with 95% CIs

Scale	Source				
	Teachers	Mothers	Fathers	Best Friend	Child
Empathy	6.2 (1.2)	6.8 (1.0)	6.6 (1.1)	3.1 (0.6)	3.5 (0.4)
α [95% CI]	.87 [.83 to .91]	.68 [.58 to .77]	.69 [.59 to .78]	.73 [.65 to .82]	.70 [.60-.79]
Guilt	6.4 (1.3)	6.3 (1.2)	5.9 (1.5)	2.8 (0.5)	
α [95% CI]	.73 [.64 to .82]	.55 [.41 to .69]	.60 [.48 to .73]	.62 [.51 to .74]	
Anger	3.1 (1.5)	3.3 (1.3)	3.3 (1.4)	1.6 (0.6)	
α [95% CI]	.89 [.85 to .92]	.81 [.75 to .87]	.82 [.77 to .87]	see note *a*	
Friendly	6.8 (1.3)	7.2 (1.0)	6.6 (1.2)	3.5 (0.4)	
α [95% CI]	.83 [.77 to .88]	.59 [.47 to .72]	.69 [.60 to .78]	.74 [.65 to .82]	
Bullies	2.5 (1.6)	2.4 (1.1)	2.4 (1.2)		
α [95% CI]	.81 [.75 to .87]	.63 [.51 to .75]	.55 [.41 to .69]		
Cooperative	7.3 (1.6)	6.8 (1.1)	6.5 (1.4)		
α [95% CI]	.88 [.84 to .92]	.64 [.53 to .75]	.77 [.70 to .84]		
Undercontrol	4.1 (1.9)	4.7 (1.4)	4.6 (1.6)		
α [95% CI]	.86 [.82 to .91]	.67 [.57 to .77]	.71 [.61 to .80]		
Persistent	6.3 (2.0)	6.0 (1.5)	5.7 (1.8)		
α [95% CI]	.82 [.77 to .88]	.61 [.47 to .74]	.71 [.61 to .81]		

Note. Adult scales rated 1 to 9; best friend and child empathy, 1 to 4.

Friendly = Friendly with peers.

[a] For the two items in this scale, $r(89) = .46$, 95% CI = .28 to .61.

Table 2.

Aggregation Across Sources: Factor Loadings for Component Variables, N = *99.*

	Components (constructs)							
Source	Empathy	Guilt	Anger	Friendly with peers	Bullies	Cooperative with adults	Under-controlled	Persistent
Child	.44							
Best Friend	.66	.74	.71	.57				
Parents[a]	.70[b]	.51	.76	.79	.83	.82	.83	.84
Teacher	.69	.70	.66	.70	.83	.82	.83	.84
Variance summarized	.40	.43	.51	.48	.69	.67	.69	.71

Note. Variance summarized = proportion of the variance in the original scales summarized by the first principal component.

[a] Within domains (empathy, etc.), scales for mothers and fathers were aggregated by PCA, and this parent component was aggregated with the other scales, as described in the text.

[b] Mother ratings were used in this analysis, as father ratings of empathy failed to converge across sources (see text).

Table 3.

Correlations Between Age, Gender, and Component Variables for Emotions and Behaviours, N = *99.*

Variables	1	2	3	4	5	6	7	8	9
1. age	1.00								
2. gender	-.12	1.00							
Emotions									
3. Empathy	-.19+	.27**	1.00						
4. Guilt	-.13	.22*	.48***	1.00					
5. Anger	-.06	-.19+	-.33***	-.36***	1.00				
Behaviours									
6. Friendly	-.22*	.36***	.64***	.59***	-.45***	1.00			
7. Bullies	.17+	-.27**	-.38***	-.56***	.51***	-.59***	1.00		
8. Cooperative	-.03	.32**	.35***	.57***	-.60***	.59***	-.68***	1.00	
9. Undercontrol	.00	-.27**	-.23*	-.41***	.64***	-.50***	.58***	-.75***	1.00
10. Persistent	-.09	.34***	.35***	.43***	-.51***	.58***	-.49***	.66***	-.60***

Note. +$p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$. Tests are two-tailed. For gender, 0 = boys, 1 = girls. Cooperative = cooperative with adults. Friendly = Friendly with peers.

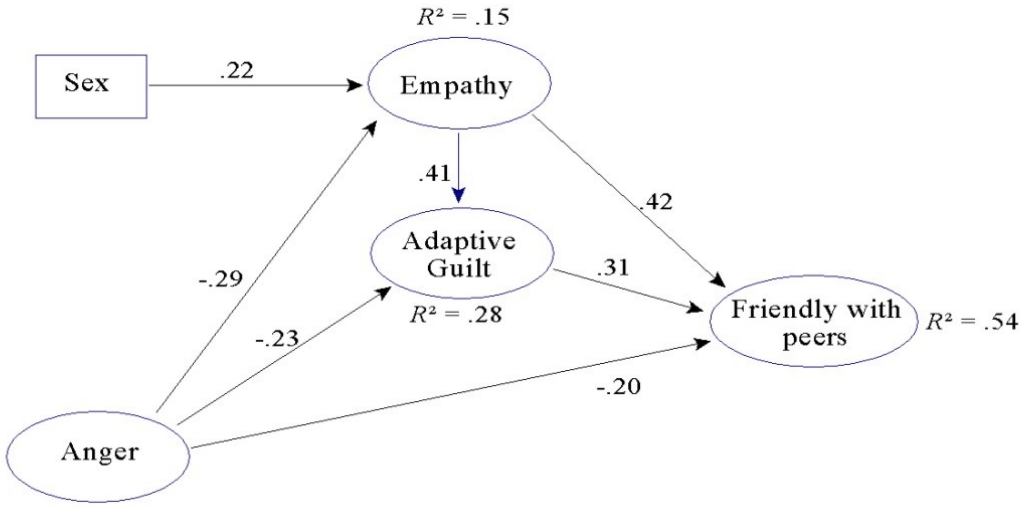

Figure 1. Path model predicting friendly behaviour with peers from component measures of emotions (see Table 2 for loadings of latent variables). All R^2 values are significant, ps < .001.

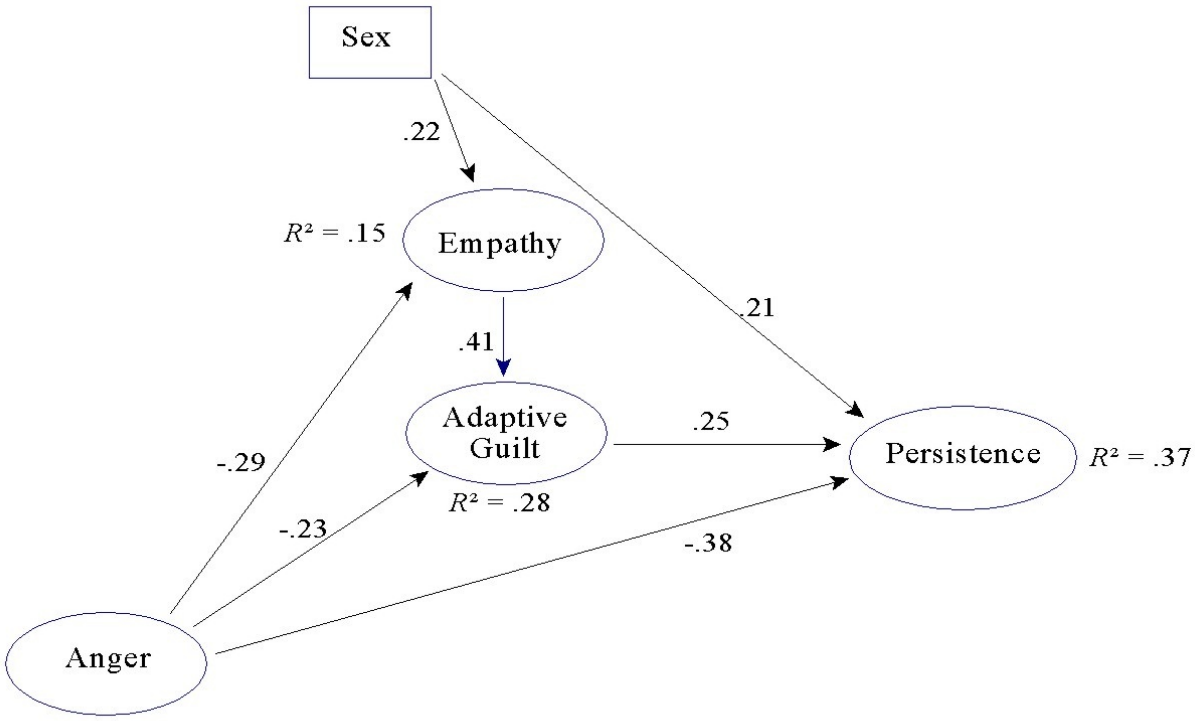

Figure 2. Path model predicting persistence from component measures of emotions (see Table 2 for loadings of latent variables). All R^2 values are significant, ps < .001.