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Construction and validation of a children's interpersonal trust belief scale

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A scale was constructed to assess children's generalized trust beliefs (CGTB) in four target groups (mother, father, teacher and peer) with respect to three bases of trust: reliability, emotionality, and honesty. The CGTB Scale was administered to 145 Year 5 and 156 Year 6 children (mean age = 10 years, 1 month) residing in the English Midlands, United Kingdom. Exploratory and confirmatory factor analyses yielded evidence for the expected factor structure of the CGTB Scale. The total CGTB Scale and subscales demonstrated acceptable internal consistency and expected levels of stability across time. As support for validity, Year 6 participants' scores on the CGTB peer subscale were correlated with their trust beliefs in classmates, assessed a year earlier. As hypothesized, children's helpfulness to their classmates was correlated with the CGTB Scale and subscales. Girls displayed greater trust beliefs and helpfulness to classmates than did boys.

Interpersonal trust has been regarded by various authors as the cornerstone of society, the 'glue' that maintains social order (Rotenberg, 1991, 1995; Rotenberg & Cerda, 1995; Rotter, 1967). Trust is one of the personality attributes that is linked to individuals' well-being (DeNeve & Cooper, 1998) and associated with health and longevity (Barefoot et al., 1998). According to Erikson's (1963) psychosocial theory, basic trust versus mistrust is the critical stage of development during infancy that affects social functioning throughout the course of development. Various authors have recognized the significance of trust for children (Bernath & Feshbach, 1995; Rotter, 1967). Bernath and Feshbach argued that children need to be able to trust that their caregivers will protect and support them and believe that their peers will be honest, cooperative and benevolent. The resulting trust was postulated to be necessary for children to develop healthy self-esteem, creative intellect, and adequate peer relationships. In support of these views, interpersonal trust has been found to be associated with children's moral behaviour (Wright & Kirmani, 1977), friendship (Rotenberg, 1986), social competence (Buzzelli, 1988; Wentzel, 1991), and academic achievement (Imber, 1973; Wentzel, 1991).

Trust Belief Scales

In order to investigate children's trust and its implication, researchers have constructed scales to assess children's generalized trust beliefs (CGTB) in others. There are two empirically based scales reported in the literature: Hochreich's (1973) Children's Interpersonal Trust Scale (HCITS), and Imber's (1973) Children's Trust Scale (ICTS). The HCITS is composed of 22 items designed to depict frequently occurring promise-making in situations towards significant others. Children answer each item on the scale by selecting one from four alternatives. The HCITS was piloted with 36 sixth, seventh, and eighth graders, and its reliability and validity were assessed with 77 children from Year 6. In support of the consistency of the HCITS, its split-half reliability was .88 and, in support of the validity of the scale, the scores were associated with children's choice of a delayed rather than an immediate reward.

The ICTS is composed of 40 items designed to assess generalized trust in four target groups: father, mother, teacher, and peer. Children answered each item by selecting one of two alternatives. The development of the ICTS was guided by Imber's (1973) definition of trust beliefs as children's confidence 'in an individual's words and actions, and an expectancy that a person will do what he promises to do, dependability, responsibility, trustworthiness, confidentiality, and a security that arises from a communication of those variables' (p. 145). The ICTS was administered to 95 fourth graders, predominately White, rural, lower-middle class children from the north-eastern Connecticut (USA) area. Sex differences were found such that girls scored higher on the total trust, mother-trust subscale, and teacher-trust subscale than did boys. It was found that trust beliefs in the four target groups were intercorrelated but that only children's trust in teacher subscale was correlated with their academic performance on reading and social studies. Also, children's trust beliefs were correlated with teachers' rating of the trust, trustworthiness, security, and dependability of the children, although evidence for these relations varied by subscale.

Limitations with HCITS and ICTS

There are six limitations with HCITS and ICTS that prompted revision of those scales for current use. Firstly, there is considerable ambiguity in the conceptualization of trust in test construction which results in uncertainty about the expected factor structure of the scales. For example, the ICTS items assess an apparently diverse and heterogeneous set of beliefs. Furthermore, it is often unclear in the ICTS who children are judging. Here are three of the items posed to children that exemplify those problems.

(1) 'A mother discovers that some cookies are missing from the cookie jar. She asks the child if he took any. The child says "no". (a) The mother will believe the child or (b) the mother will not believe the child.' This item is limited because it appears to require children to judge how trusting mothers are in their children, rather than how much they (the participants) trust mothers.

(2) 'When teachers give grades (marks) they: (a) are usually fair or (b) seem to be pretty unfair.' This item is limited because it is unclear what aspect of teachers children are judging (e.g. what is fairness?) and whether the qualities of the teachers are being judged at all (i.e. the assignment of marks may reflect general school biases).

(3) 'A friend loans another friend a dollar to buy a game. (a) He should not have loaned him the money since he might not get it back, or (b) he can expect to get the money back.' This item is limited because children need to infer that the friend is a peer (as was the case in all the peer trust items) and if they do so, the children are judging

a peer friend as distinct from peers in general. Furthermore, the alternatives confuse issues: the children may not believe that it was wrong to loan a friend a dollar even if he (or she) might not get it back.

It should be mentioned that conceptualization of the HCITS is clearer but the structure of the scale has not been established. Given these limitations, there is a need to develop a scale predicated on a clearly defined construct; one that represents a comprehensive account of children's trust.

Secondly, the alternative answer format used by the ICTS and HCITS poses several problems. The ICTS is particularly limited because the two alternatives are often not orthogonal choices and provide a very restricted range of answers. Also, the trusting choice is very socially desirable, especially so for test-wise children in contemporary society (see Bernath & Feshbach, 1995). Hochreich (1973) reported difficulty in constructing equally viable trusting and distrusting choices for the HCITS.

Thirdly, the ICTS and HCITS were constructed three decades ago. Inspection of the ICTS, for example, confirms that the names of the children (e.g. Oscar) and the situations (e.g. buying hot wheels) depicted in the items are out of date and culturebound. Fourthly, ICTS and HCITS were administered to modest numbers of American children (ns = 77 and 95). The usefulness of the scales for the population of children, including those from other cultures such those residing in the United Kingdom is uncertain. Fifthly, the internal consistency coefficient was not provided for the ICTS subscales, although it was provided for the HCITS (Cronbach's α = .88).

Sixthly, the stability of the scores of the ICTS and HCITS are unknown. This issue warrants some discussion. Group-administered scales assessing psychosocial functioning during childhood have been found to be modestly stable across time which probably reflects modest stability of children's psychosocial functioning. The correlations across a 4-month to a 1-year period range: (a) from .31 to .61 (M = 0:44) on measures of children's beliefs about their academic ability (Pomerantz & Saxon, 2001; (b) from .56 to .82 on measures of children's racial beliefs (see Aboud & Doyle, 1997), and (c) from .43 to .65 on measures of depression (Boivin, Hymel, & Bukowski, 1995; Nolen-Hoeksema, Girgus, & Seligman, 1992). Because of the changing nature of children's psychosocial functioning, modest stability across time would be expected in measures of children's trust beliefs.

Scale construction and person perception

Children's person perception should be considered when constructing scales designed to assess children's trust beliefs, as well as related psychosocial domains. For example, the method used to assess trust beliefs is similar to the method employed to assess children's use of dispositions in person perception. In person perception research, children are described a protagonist in a short story and then required to predict his or her future behaviour. The children's use of dispositions in person perception is inferred from their prediction of the disposition-consistent behaviour (see Alvarez, Ruble, & Bolger, 2001; Rotenberg, 1982). In the ICTS and HCITS, children are required to report the likely subsequent trust versus distrusting behaviour of given protagonists (e.g. mother, father, teacher, and peer) depicted in a brief story. In these scales, however, children are implicitly required to spontaneously generate the underlying disposition of the protagonists and make predictions based on those inferences alone.

Research indicates that by 9 years of age, children are able to infer underlying dispositions of persons (i.e. traits) as shown by their prediction of disposition-consistent

future behaviour (see Alvarez et al., 2001). There is evidence, however, that there are limitations with children's use of dispositions and that such an ability continues to develop though to adolescence and adulthood. Subsequent to childhood, individuals become increasingly inclined to spontaneously infer dispositions of others (Livesley & Bromley, 1973) and develop a coherent and comparative basis for inferring multiple dispositions of others (see Barenboim, 1981; Heller & Berndt, 1981). The limitations in children's inference of the dispositions of others should be considered in a revision of the ICTS and HCITS, particularly in the development of a multidimensional scale.

Broadly, the problems with previous Trust Belief scales for children were eloquently expressed by Bernath and Feshach's (1995) who concluded, 'In sum, self-report scales provide flexibility, brevity, and convenience, but scale development has been meagre. The few scales that have been devised do not demonstrate adequate measurement properties, to be regarded as of significant scientific or practical use' (p. 4). Thus, a trust belief measure that directly addresses the conceptual and methodological limitations of prior measures is needed.

A framework for developing the scale

The purpose of the current study was to construct and validate a measure of children's trust beliefs that was based on a clear conceptual framework. Construction of the scale was guided by Rotenberg's (1994, 2001) 3 (bases) £2 (domains) £2 (target dimensions) theoretical framework (shown in Fig. 1).

Bases of trust

According to the framework, there are three fundamental bases of interpersonal trust: (a) reliability, which refers to the fulfillment of word or promise (Hochreich, 1973; Johnson-George & Swap, 1982; Rotenberg, 1980, 1986, 1995; Rotter, 1967, 1971, 1980; Schlenker, Helm & Tedeschi, 1973); (b) emotional, which refers to the reliance on
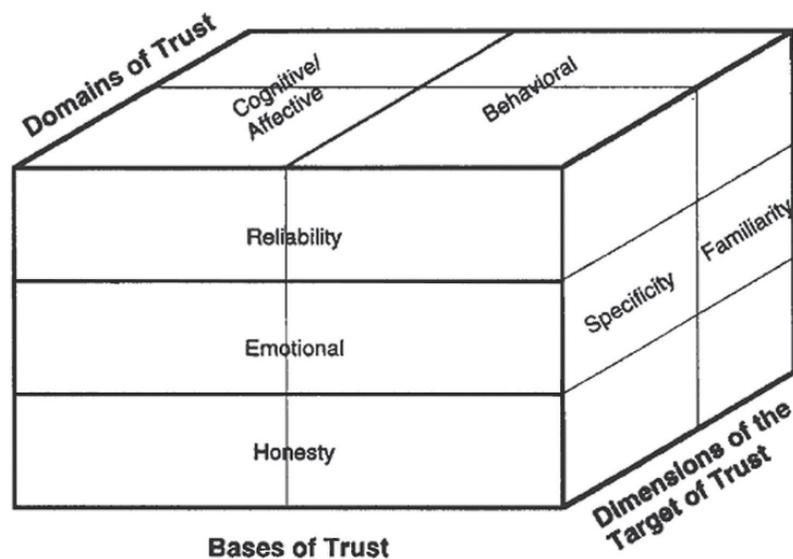

Figure 1. The 3 bases x 2 domains x 2 target dimensions framework of interpersonal trust.

others to refrain from causing emotional harm, such as being receptive to disclosures, maintaining confidentiality of them, refraining from criticism, and avoiding acts that elicit embarrassment (Johnson-George & Swap, 1982; Rotenberg, 1986, 1995); and (c) honesty, which refers to telling the truth and engaging in behaviours that are guided by benign rather than malicious intent and by genuine rather than manipulative strategies (Giffin, 1967; Rotenberg, 1991).

Domains of trust

The preceding bases of trust are further differentiated with respect to two domains: cognitive/affective and behavioural. The cognitive/affective domain pertains to individuals' beliefs/attributions concerning the three bases of trust or of trust per se, and the emotional experiences accompanying those beliefs or attributions. The behavioural domain pertains to individuals' behavioural tendencies to rely on others to act reliably, in an emotional, trustworthy fashion, and honestly (Rotenberg, 1995).

Dimensions of the target of trust

The bases and domains are differentiated by dimensions of the target of trust, comprising specific qualities of trusted–distrusted persons. The dimensions of the target of trust are (a) specificity, which ranges from generalized to a specific person, and (b) familiarity, which ranges from somewhat unfamiliar to very familiar. Children may hold trust beliefs in generalized and modestly familiar targets such as mother and father on the ICTS, and hold trust beliefs in familiar and specific targets such as close friends (see Rotenberg, 1986).

Construction of the scale

The current scale was designed to assess the cognitive/affective domain of Rotenberg's (1994) theoretical framework, primarily the former facet of trust (i.e. beliefs). The resulting CGTB Scale was constructed to assess: (a) the three bases of trust beliefs; (b) trust beliefs for four generalized and modestly familiar target groups (mother, father, teacher, and peer) across the three bases of trust; and (c) generalized trust beliefs reflecting beliefs across the target groups and bases. The scale included names of children and situations that were contemporary, with particular attention to those suitable for children residing in the United Kingdom. Children answered the items on a Likert Scale in order to yield a consistent and adequate range of responses. Because of the potential limitations in children's person perception, the children's trust scale was designed to include two exemplars (i.e. two parallel items) for each combination of basis and target. This strategy was guided by the principle that children's judgment across two exemplar items (aggregates) would increase the likelihood of assessing their inference of a specific disposition of a given target person and a more coherent set of dispositions. In the context of scale construction, it was expected that assessing children's judgment of the aggregates would result in a more reliable estimation of the factors underlying their trust beliefs.

In this study, the construct validity of the peer trust subscale of the CGTB was assessed by children's trust beliefs in their classmates – a measure taken 1 year prior to administration of the CGTB. Children's trust beliefs in their classmates represents a more familiar and specific target group than children's generalized trust in peers, but it

was expected on the basis of generalization, that the two measures would be associated. The study was also designed to assess the consistency and stability of the CGTB Scale and subscales.

Target and sex differences

Research indicates that elementary school children are more likely to engage in intimacy and companionship with mothers, fathers and peers than with teachers (Buhrmester & Furman, 1987; Reid, Landesman, Treder, & Jaccard, 1989). Because emotional trust is linked to the sharing of intimacies (i.e. depending on others to keep secrets) and reliability trust is linked to companionship (i.e. depending on others to cooperate in activities as promised), it was expected in the current study that children would demonstrate greater trust beliefs in mothers, fathers, and peers than in teachers. Based on Imber's (1973) findings, it also was expected that girls would display on the CGTB greater general (total) trust beliefs, trust beliefs in mother, and trust beliefs in teacher, than would boys.

Trust and prosocial behaviour

In order to examine predictive validity of the CGTB Scale, the present study was designed to examine the relation between children's trust beliefs and their prosocial behaviour. There are at least three reasons to believe that there should be a link between trust beliefs and prosocial behaviour. First, prosocial behaviour often occurs in the context of exchanges of behaviours that frequently entail one person explicitly or implicitly promising to help others. An individual may be inclined to help others during such exchanges if the individual believes that others will honour their promises to help (reliability trust) and believes that those actions are guided by benign intent (honesty trust). Second, children's socio-cognitive skills, notably their perspective-taking of others' thoughts and feelings, has been found to promote prosocial behaviours (e.g. Carlo, Knight, Eisenberg, & Rotenberg, 1991) and such socio-cognitive skills could promote trust beliefs. One might expect that trust beliefs are facilitated when individuals are more understanding of others' perspectives. Third, individuals who are relatively sympathetic (i.e. feel sorrow or concern) and emotionally sensitive towards others are inclined to engage in prosocial behaviour (e.g. Eisenberg et al., 1989). Such sympathy and sensitivity could promote children's trust beliefs in others.

There is evidence for the relation between trust beliefs and prosocial behaviour but it is limited. Rotter (1980) outlined some studies demonstrating a link between trust beliefs and what Rotter regarded as 'prosocial behaviour.' Rotter referred to prosocial behaviour with respect to trustworthiness (e.g. not stealing, not lying, not invading the privacy of an experimenter, working hard without apparent monitoring) and social adjustment (as assessed by a sentence-completion task). Rotter reported studies demonstrating significant relations between trust beliefs and such measures of prosocial behaviour. The relations were attributed to the notion that individuals who had low trust beliefs experienced little moral pressure to adhere to moral principles. Presumably, individuals who were low in trust functioned according to the principle that, because other people are not trustworthy, then it is acceptable for them to behave in a similar fashion. In a more recent study, Wentzel (1991) found that sixth and seventh grade children's interpersonal trust was correlated with a measure of their social responsibility that included a sociometric measure of helpfulness to other children.

Although the research reviewed by Rotter (1980) showed some support for the link between trust beliefs and related aspects of prosocial behaviour (i.e. moral transgressions and social competence, respectively), the research was not directly relevant to what scholars conventionally regard as prosocial behaviour; an action designed to aid or benefit others (see Eisenberg & Fabes, 1998). Wentzel's (1991) study more closely addressed that issue but the measure of prosocial behaviour was embedded in a broader measure of social responsibility. Thus, to our knowledge, there is no existing direct examination of the link between trust beliefs and prosocial behaviour (such as helpfulness) *per se*.

The present study was designed to examine the preceding hypothesis using the CGTB Scale. It was expected that children's trust beliefs, specifically reliability and honesty beliefs, would be associated with their helpfulness to others. The study included measures that were designed to examine the differential predictability of the trust belief subscales. Helpfulness to classmates and helpfulness to teachers were assessed guided by the expectation that the former would be distinctly associated with children's trust beliefs in peers whereas the latter would be distinctly associated with children's trust beliefs in teachers. Nevertheless, it was expected that helpfulness to both target groups would be associated with children's trust beliefs in mother and father. This hypothesis was derived from the previously observed significant relations between parenting styles and children's prosocial behaviour (e.g. Baumrind, 1987; Dekovic & Janssens, 1992). Mothers and fathers who exhibit authoritative/democratic parenting styles (being warm and supportive) tend to have children who exhibit high levels of prosocial behaviour. Assuming that mothers and fathers with those parenting styles promote children's trust beliefs in them, it was expected that children's trust beliefs in mother and father would be associated with helpfulness. Finally, because it has been found that girls engage in more prosocial behaviour than boys during middle childhood, (e.g. Eisenberg & Fabes, 1998; Fabes, Carlo, Kupanoff, & Laible, 1999), such sex differences were expected on helpfulness in the current study.

Method

Participants

The participants were 145 from Year 5 (74 boys, 65 girls, and 6 not identified) and 156 from Year 6 (66 boys, 76 girls, and 14 not identified) enrolled in government-funded schools located in low to middle socio-economic status neighbourhoods in the English Midlands, United Kingdom. The children had an average age of 10 years 1 month and ranged from 9 years to 11 years. Participation was secured by permission from school and parents.

Measures

The Children's Generalized Trust Belief Scale

Based on Imber's (1973) scale, 48 items were written by four undergraduate students, two of whom were teachers-in-training. The items were revised by the first author (an expert in trust research) and last author (an expert in prosocial behaviour research) of this paper to secure clarity of the content. The items constructed for the reliability basis were primarily designed to assess beliefs that the target groups kept their promises. The items constructed for the emotional basis were primarily designed to assess beliefs that

the target groups kept secrets confidential. The items constructed for the honesty basis were primarily designed to assess beliefs that the target groups were truthful. Answers to each item were provided on a Likert five-point scale composed of: 1 = *very unlikely,* 2 = *somewhat unlikely*, 3 = *neither likely or unlikely*, 4 = *somewhat likely*, and 5 = *very likely*. As additional clarification, the somewhat point on the scale was equated to sort of. The story protagonists in the items are underlined and the participants are asked to imagine that they were the children so indicated and to answer accordingly. The items depicted protagonists and peers who were the same sex as the participants.

Trust beliefs in classmates

Trust beliefs in classmates were assessed by a variation of measures developed by Rotenberg (1986) and Wentzel (1991). Rotenberg assessed trust beliefs in classmates by requiring children to report the number of secrets and promises kept by classmates. Wentzel similarly assessed children's trust by requiring that they nominate classmates who matched the description 'keeps promises and is someone you can trust' (p. 1,070). The current measure of children's trust beliefs in classmates entailed presenting them with a list of classmates and requesting that they rate on five-point scales (ranging from never to always; (a) how often each classmate keeps secrets he/she had been told, and (b) how often each classmate keeps promises he/she had made.

Prosocial behaviour

Helpfulness was assessed by sociometric methods in which children nominated classmates who were helpful to other classmates and those who were helpful to the teacher. The sociometric method of assessing prosocial behaviour has been used in other studies that establish its validity (e.g. Carlo, Koller, Eisenberg, Da Silva, & Frohlich, 1996; Dekovic & Janssens, 1992; Wentzel, 1991).

Procedure

The CGTB

The participants were administered the CGTB Scale in their classes during school. The CGTB Scale was administered by three testers – authors of this paper. The participants were instructed to provide their own responses to the questions and were informed that there were no right or wrong answers. Year 5 participants (four classes from each school) were administered the CGTB after a 4-month span to examine the stability of the measure.

Sociometric ratings

Because of complexities in the school schedules, only Year 6 participants were administered the sociometric measures of helpfulness. After completing the CGTB, Year 6 participants were required to nominate up to three classmates who were most helpful to other classmates and up to three classmates who were most helpful to the teacher. The frequency with which each participant was nominated for helping classmates and the frequency with which each participant was nominated for helping the teacher served as the measures. These frequencies (with 1 added) were divided by

the number of classmates who were nominating, in order to adjust for class size, and are expressed as proportions.

Trust beliefs in classmates

A sample of Year 6 participants was administered the trust beliefs in classmates measure 1 year prior, as part of a previous investigation. The participants were administered that measure three times, with 3 months between each successive test. The participants' judgments that classmates kept promises and kept secrets were coded such that larger values reflected greater trust beliefs. For each participant, his or her judgment scores were summed across classmates and then divided by the number of classmates in order to obtain average scores for promises kept and secrets kept. Those scores were combined to yield a trust beliefs in classmates measure for each of the three testings. There was modest stability of this measure of children's trust in their peers as indicated by the correlation between the first and last testing, $r(38) = .36$, $p = .02$. Finally, the scores were summed across the three testing times to yield an overall measure of trust beliefs in classmates.

In summary, Years 5 and 6 participants were administered the CGTB Scale. Subsamples of Year 5 participants were administered the scale again after a 4-month span. Year 6 participants completed the sociometric nominations of helping. A subsample of them had been administered a trust belief in classmates measure over the course of the previous year.

Results

Structure of the scale: Exploratory factor analyses

Initially, items were eliminated that were problematic for the participants, as revealed by omissions of the item or confusion in answering (items in which many participants apparently changed their answers). This procedure was guided by an attempt to obtain an adequate sampling of items for the three bases of trust and the four target groups and by the correlations between the items and the total scale score; only items with intercorrelations greater than .20 were included. This resulted in an initial scale composed of three items for the 12 combinations of target group and basis (36 items) with nine items for each of the four target groups and 12 items for each of the three bases subscales.

The structure of the CGTB Scale was first examined by subjecting the 36 items to an exploratory factor analysis with principal component extraction and a varimax rotation.[1] The factor analysis yielded three factors: reliability, emotional, and honesty that had eigenvalues of 3.16, 2.84, and 2.80, respectively, and accounted for 9%, 8%, and 8% of the systematic variance, respectively.

The items selected for the final version of the scale were selected in the second step. The items were selected if they had weightings on the expected factors equivalent to .30 or greater. Specifically, pairs (A & B) of items were selected for each target group (mother, father, teacher, peer) that had loadings on each of the expected factors (bases of

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[1] *One of the items was reassigned from an honesty to an emotional trust item on the basis of the preliminary analyses. The item depicts mothers' disclosing an accidental harmful act directed towards the child (ripping a blouse/shirt) to the child protagonist. This item slightly broadens the emotional trust domain to include the disclosure of personal information to another when it is appropriate.*

trust). If more than two of the desired items had a weighting of .30 or greater, then the items with the greater weightings were selected. The resulting 24 items were subjected to factor analysis with principal component extraction and a varimax rotation. This yielded the three expected factors: honesty, emotional, and reliability with eigenvalues of 3.66, 2.15, and 1.70, respectively, accounting for 15%, 9%, and 7% of the systematic variance, respectively, and 31% of the systematic variance in total. The eigenvalues of 22 of the items were greater than .40 and all items had the greatest weighting on the intended factor than the other factors (differences greater than .22). All items had interitem correlations equivalent to .20. The items comprising the final scale are shown in Appendix and their means, standard deviations, inter-item correlations and loadings are shown in Table 1.

In the final step, the A and B pairs of items were combined (aggregates) and these were subjected to a principal component extraction and a varimax rotation. This yielded the three expected factors: reliability, emotional, and honesty, eigenvalues = 3.16, 2.45, and 1.23, respectively, accounting for 26%, 12%, and 10%, of the systematic variance, respectively. The factors accounted for 49% of the total systematic variance. The means, standard deviations, inter-item correlations, and factor loadings of the aggregates are shown in Table 1 (in bold). There was a general tendency for the aggregates to have higher loadings on the expected factors than did single items.

Test of scale structure: Confirmatory factor analysis

As an additional examination of the structure factor of the CGTB Scale, the aggregate items were subjected to a confirmatory factor analysis. The confirmatory factor analysis was carried out to contrast a one-factor bases model, a two-factor bases model, and the expected three-factor bases model (reliability, emotional, and honesty). The goodness of fit indexes for each model is shown in Table 2. Comparison of the models revealed that a two-factor model was a better fit than a one-factor model, $\Delta\chi^2(2) = 28.14$, $p < .001$, and the three-factor bases model was a better fit than the two-factor model ($\Delta\chi^2 = 61.11$).[2] The three-factor model is shown in Fig. 2. The three-factor structure met many of the requirements for a good fit, the RMSEA was at $p < .05$ and the NNFI and CFI exceeded .90. Nevertheless, the chi-square test attained significance indicating that the modelwas not a complete fit (see Bentler, 1990).

One additional confirmatory factor analysis was carried out composed of three-factor bases, the mother target and father target as factors. As shown in Table 2, the confirmatory factor analysis was not apparently a better fit on various indices than the three-factor model. Comparison of the models on the chi-square did show, however, a tendency for this combined basis and target model to be a better fit than the three-factor model alone, $\Delta\chi^2(11) = .17.16$, $p = .10$. As in the three-factor model, the chi-square remained significant. Including the teacher and peer targets as factors in the model did not increase fit.

[2] *Because the difference in the degrees of freedom of the two-factor basis and three-factor basis models is equivalent to zero, it is not possible to test the chi-square difference for significance. When changes in other indices of fit are considered, though, it is apparent that the chi-square difference reflects an appreciable increase in the fit by the three-factor basis model over the twofactor basis model.*

Table 1. Means, standard deviations, inter-item *r*s, and factor loadings of each item

Expected factor target		Statistic			
		Mean	SD	Inter-item *r*	Loading on factor
Reliability					
Mother	A	3.65	1.25	.35	.46
	B	3.32	1.54	.32	.59
	Aggregate	6.97	2.11	.41	.72
Father	A	3.54	1.18	.27	.43
	B	3.27	1.32	.31	.53
	Aggregate	6.81	1.87	.37	.69
Teacher	A	2.45	1.44	.43	.65
	B	3.39	1.33	.42	.69
	Aggregate	5.85	2.28	.48	.68
Peer	A	3.13	1.34	.20	.43
	B	3.17	1.27	.30	.54
	Aggregate	**6.40**	**2.03**	**.24**	**.63**
Emotional					
Mother	A	3.10	1.39	.24	.42
	B	2.99	1.41	.37	.38
	Aggregate	**6.08**	**2.12**	**.41**	**.51**
Father	A	3.08	1.69	.31	.55
	B	3.09	1.36	.27	.55
	Aggregate	**6.17**	**2.33**	**.37**	**.73**
Teacher	A	3.19	1.56	.25	.66
	B	3.36	1.46	.30	.54
	Aggregate	**6.54**	**2.38**	**.32**	**.75**
Peer	A	3.01	1.46	.24	.53
	B	3.11	1.35	.32	.38
	Aggregate	**6.12**	**2.11**	**.37**	**.62**
Honesty					
Mother	A	2.96	1.41	.26	.57
	B	2.75	1.44	.39	.45
	Aggregate	**5.41**	**2.05**	**.43**	**.52**
Father	A	2.79	1.47	.45	.52
	B	2.91	1.30	.27	.42
	Aggregate	**5.70**	**2.18**	**.47**	**.65**
Teacher	A	2.25	1.46	.20	.55
	B	2.34	1.22	.31	.51
	Aggregate	**4.58**	**2.09**	**.27**	**.77**
Peer	A	3.03	1.37	.24	.45
	B	2.80	1.30	.26	.48
	Aggregate	**5.84**	**2.02**	**.33**	**.61**

Internal consistency of the CTGB Scale

Two sets of subscales were constructed from the CTGB Scale: (1) three bases subscales (reliability, honesty, and emotional), and (2) four targets (mother, father, teacher, and peer). The descriptives (means and standard deviations) and the test of internal consistency (Cronbach's alpha coefficients) of the total scale and subscales are shown

Table 2. Tests of fit yielded by confirmatory factor analysis of the aggregates

Model	df	χ^2	p	RMSEA	NNFI	CFI
One-factor bases	53	167.36	<.001	.09	.69	.75
Two-factor bases	51	139.22	<.001	.08	.75	.81
Three-factor bases	51	78.11	= .01	.04	.92	.94
Three-factor bases and mother/father target	40	60.95	= .02	.04	.92	.95

in Tables 3 and 4.[3] There was acceptable internal consistency of the total CGTB Scale and the bases subscales. Consistent with expectation, there was modest stability of the total scale and subscales. There were significant correlations across the two points of measurement (i.e. 4-month span) for the total CTGB Scale, r(60) = .71, p < .001, reliability subscale, r(60) = .40, p < .001, emotional subscale, r(60) = .56, p < .001, honesty subscale, r(60) = .43, p < .001, mother subscale, r(60) = .40, p < .001, father subscale, r(60) = .57, p < .001, teacher subscale, r(60) = .40, p < .001, and peer subscale, r(60) = .47, p < .001.

Sex differences

Independent t tests were carried out to examine whether there were sex differences in the total CGTB Scale, three bases subscales and the four target trust subscales. There were sex differences in total CGTB Scale, $t(268)$ = 3.34, p < .001, reliability subscale, $t(268)$ = 4.50, p < .001, honesty subscale, $t(268)$ = 1.92, p = .055, mother subscale, $t(268)$ = 3.50, p < .001, and peer subscale, $t(268)$ = 3.77, p < .001. On each of those scales/subscales, girls demonstrated higher trust scores (Ms = 75.04, 27.60, 22.29, 19.33, and 19.26, respectively) than did boys (Ms = 69.86, 24.50, 20.90, 17.48, and 17.53, respectively).

Additionally, independent t tests were carried out to examine whether there were sex differences in helpfulness to classmates, and helpfulness to teachers. There were sex differences in helpfulness to classmates, $t(84)$ = 3.02, p = .01; girls displayed greater helpfulness to classmates (M = 0.24) than did boys (M = 0.14). The t test on helpfulness to teachers was not significant.

Target differences

The scores on the four target subscales were subjected to a four (target group) ANOVA with repeated measures. This yielded an effect of target group, $F(3, 266)$ = 18.09, p < .001 (η^2 = .169). Tukey *a posteriori* comparisons confirmed the expectation that scores on the mother, father, and peer subscales were greater than the scores on the teacher subscale (ps < .01; see Table 4 for the means).

Correlations among the total CGTB Trust Scale, bases subscales, and helpfulness

As shown in Table 3, there were significant correlations between the total CGTB Scale score and the three bases subscales. Although the correlations among the

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[3] The internal consistency of the target subscales were designed to be composed of the three bases of trust, and thus were intended to be heterogeneous. Therefore, tests of internal consistency (alphas) of the items are not suitable.
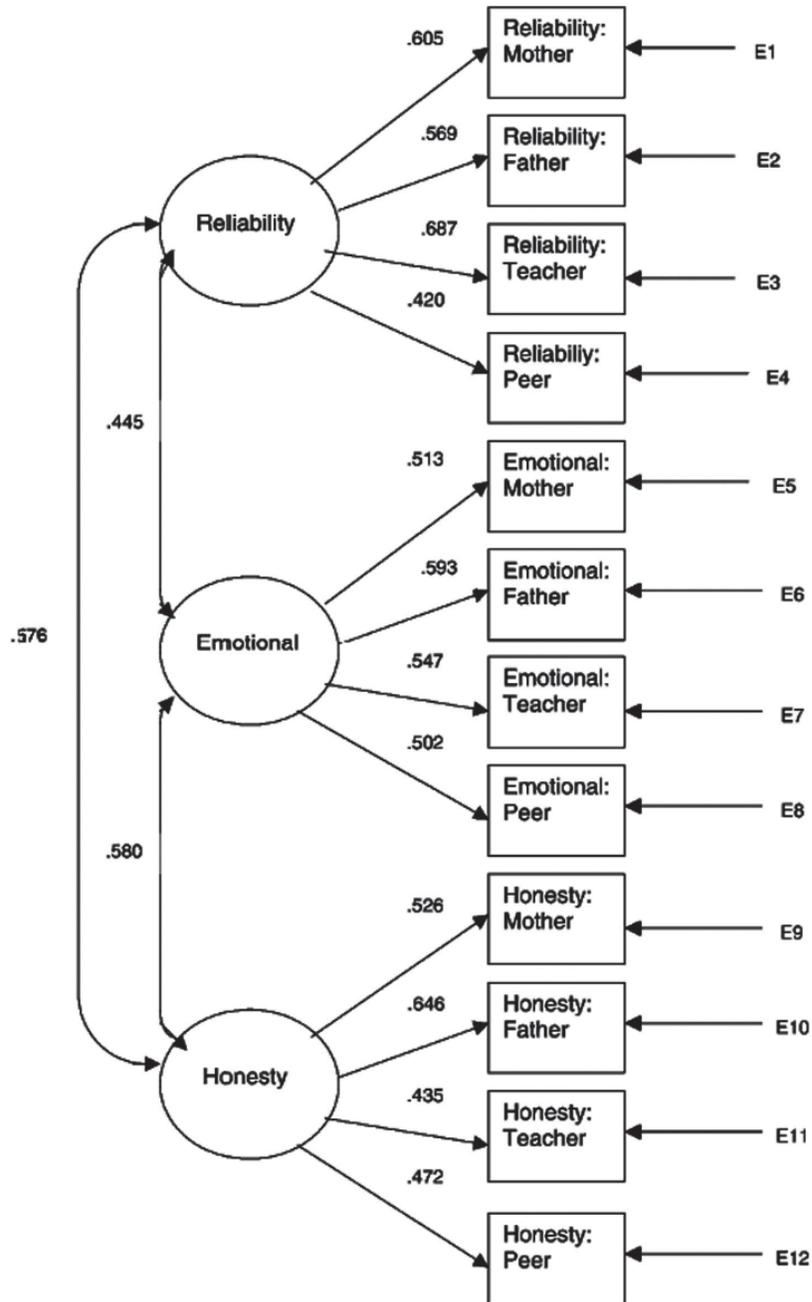
Figure 2. The three-factor basis model.

three trust bases subscales were substantial, each subscale had unique variance that contributed almost equally to the total scale score. Consistent with expectation, helpfulness to classmates was correlated with the total CGTB Scale, reliability subscale, honesty subscale, as well as the emotional subscale (see Table 3). Contrary

Table 3. Descriptives of the Total Scale score, the bases subscales, and correlations among the measures

Measure	Descriptives			Bases subscales			Helpfulness	
	Alpha	*M*	*SD*	Re	Em	Hon	CH	TH
CGBT total scale	.76	72.55	13.02	.73***	.75***	.75***	.41***	.06
Bases subscales								
Reliability (Re)	.67	26.22	5.92		.28***	.34***	.32**	−.15
Emotional (Em)	.62	24.96	6.14			.36***	.22*	.10
Honesty (Hon)	.65	21.54	5.82				.37**	.18
Helpfulness								
Classmate (CH)		2.15	1.77					.37***
Teacher (TH)		1.88	2.32					

Note. df s = 274 for correlations among the total scale and subscales, and *df* s = 84 for helping measures. Also, *p < .05, **p < .01 and ***p < .001 (two-tailed).

Table 4. Descriptives of the target subscales, correlations among the measures

Measure	Descriptives		Target subscales				Helpfulness	
	M	*SD*	Fa	Te	Pe	CT	CH	TH
Target subscales								
Mother (Mo)	18.42	4.43	.47***	.47***	.41***	2.02	.38**	.01
Father (Fa)	18.70	4.35		.53***	.43***	2.09	.25*	.07
Teacher (Te)	16.97	4.26			.40***	.10	.25*	.04
Peer (Pe)	18.42	3.88				.36**	.37**	.05
Classmate trust (CT) .							–	–
Helpfulness								
Classmate (CH)								.37**
Teacher (TH)								

Note. df s = 274 for correlations among the subscales, df s = 60 for stability, *df* s = 38 for classmate trust and *df* s = 84 for helping measures. Also, *p < .05, **p < .01 and ***p < .001 (two-tailed).

to expectation, helpfulness to teacher was not appreciably correlated with any of the scale/subscales.

Correlations among the CGTB target subscales, trust beliefs in classmates, and helpfulness

As shown in Table 4, there were substantial correlations among the CGTB target sub-scales; these were expected in particular, because each of the target subscales was com-posed of the three bases of trust. Nevertheless, the overlap in variance between the scales ranged between 16% and 28%, and therefore each target subscale had an unique vari-ance. As hypothesized, the peer subscale of the CGTB was correlated with trust be-liefs in classmates. In support of the differential predictiveness of the CGTB subscales, none of the other target subscales was appreciably correlated with the children's trust beliefs in classmates. Also, consistent with expectation, the peer, mother, father, as well

as teacher, subscales of the CGTB were correlated with helpfulness to classmates. Contrary to expectation, the teacher subscale of the CGTB was not appreciably correlated with helpfulness to teacher, even though helpfulness to teacher and helpfulness to classmates were significantly correlated.[4]

Discussion

The purpose of the research was to revise the Imber (1973) trust scale to develop a multidimensional scale of trust beliefs for children, particularly appropriate for children residing in the United Kingdom (the CGTB). The research was designed to examine the factor structure, internal consistency, and long-term stability of the CGTB Scale and subscales. In addition, to examine the construct validity of the measure, the research was designed to examine sex, and target differences in the scale and its relation to prosocial behaviour.

Structure of the CGTB

The exploratory factor analyses yielded evidence supporting the conclusion that the CGTB was a multidimensional scale comprising the three expected bases factors: reliability, emotional, and honesty. The three factors were evident in the factor analyses of individual items and, as expected, more clearly in the aggregate items. The confirmatory factor analysis yielded evidence for the advantage of the three-factor basis structure over simpler factor structures. The three-factor structure represented an acceptable fit of the data based on a number of indices: the chi-squared test was an exception. The inclusion of mother and father targets of trust resulted in a modest increase in the fit of the model, indicating as expected that the target is a part of the overall model of children's trust.

There was specific evidence for validity of the peer trust subscale of the CGTB. It was found that scores on peer subscale, but not the other target subscales, were correlated with children's beliefs in their classmates. This provides evidence for the differential predictiveness of the CGTB subscales. Not only does this finding yield evidence for the validity of the peer subscale but it evidenced long-term stability: the children's trust beliefs in classmates were assessed 1 year prior to administration of the CGTB Scale indicating that the relation spanned across time. The findings are consistent with the principle that children generalize their trust beliefs in classmates to their trust beliefs in peers.

Internal consistency and stability

The CGTB Scale and bases subscales of the demonstrated acceptable internal consistency, particularly when the modest number of items in the subscales is considered. The stability of the CGTB and the subscales were similar to those found for measures of children's beliefs about their academic ability (Pomerantz & Saxon, 2001), racial beliefs (Aboud & Doyle, 1997), and depression. For example, the 24-item CGTB Scale demonstrates a level of stability similar to the well-regarded 27-item Child Depression Inventory (see Nolen-Hoeksema et al., 1992).

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[4] *The correlations between trust in classmates and the helping measures were omitted in these analyses because the sample of participants who were jointly assessed on those measures was small (N = 10).*

Sex differences

In the present study, girls' demonstrated higher scores on the total CGTB Scale, reliability subscale, honesty subscale, mother subscale, and peer subscale/subscale than did boys. The findings replicate Imber's (1973) sex differences on total trust and trust beliefs in mother, although the observed sex differences in trust beliefs in teacher were not found. The difference in the findings may be attributable to a range of factors, including the fact that the trust beliefs scales differed.

Also, expected sex differences in helpfulness to classmates were found such that girls demonstrated more helpfulness to classmates than did boys. These findings are consistent with a number of studies indicating that girls are more likely to engage in prosocial behaviour than are boys (Fabes et al., 1999), especially in late childhood and adolescence. It is interesting to note, though, that there were no corresponding sex differences in helpfulness to teachers. This latter finding might be attributed to the overt demands and expectations when an authority figure (i.e. teacher) requests assistance. It is likely that other personal and situational variables are better predictors of helpfulness to teachers (see Eisenberg & Fabes, 1998).

Target differences

Consistent with expectation, children demonstrated higher generalized trust beliefs in mother, father, and peer than in teacher. The pattern of trust beliefs is consistent with the finding that intimacy exchanges and companionship during middle childhood are more prevalent in children's interactions with mothers, fathers, and peers than with teachers (Buhrmester & Forman, 1987; Reid et al., 1989). There are some complicated issues concerning differences in children's trust beliefs in different target groups. The items selected for the different target groups in the CGTB Scale were designed to be ecologically representative and therefore the items differed in content among the four target groups. In that sense, the findings reflect differences in children's trust beliefs in the target groups as depicted in typical situations. Nevertheless, it could be argued that the observed differences in trust beliefs may be due to differences in children's trust beliefs or to children's evaluation of trustworthiness in different situations. This issue could be addressed in future by examining children's trust beliefs in the different target groups when those target groups are depicted or engaged in identical but appropriate situations (e.g. a delay of gratification task).

Structure of the CGTB Scale and person perception

Children's person perception bears on the structure of the CGTB Scale. As reported, children show limitations in the extent to which they spontaneously infer the dispositions of others and hold a coherent and comparative basis for inferring multiple dispositions of others (see Barenboim, 1981; Heller & Berndt, 1981). The CGTB was developed to take into account some of children's person perception limitations by including pairs of items designed to assess each combination of bases and target of trust beliefs. Consistent with expectation, analyses of pairs of items (aggregates) yielded clearer evidence of the three expected bases factors of the scale: the factor loadings of the aggregates on the expected factors were greater than those yielded by the analyses of single items. The aggregate items optimized the likelihood of detecting the factors/dimensions underlying children's trust judgments.

The three-factor bases model was found on most indices to a fit the data. It was the case, however, that the chi-square test remained significant indicating that the fit was not complete. There are several factors that could account for this outcome. It has been found, in general, that achieving non-significance with the chi-square is difficult, especially with large samples (see Bryant & Yarnold, 1995). Additionally, the various limitations in children's person perception development may have contributed to the finding. Children show distinct limitations in the multiple classifications of the dispositions of others. Because the CGTB Scale reflects, in part, children's person perception abilities it may not completely account for the variation in their judgment. It is also worthwhile to note here that children are likely judging in the CGTB items their own mother, father, teacher and peers as part of, or an exemplar, of the broader categories of persons. Judgments of trust in those persons are affect-laden and there is an affective domain of trust as outlined in Rotenberg's (1994) framework. It is reasonable to speculate that the children's trust judgment of their mother in a given situation may be guided by a different level of emotionality than in their judgments of other targets in other situations, resulting in some heterogeneity of scale items.

Trust and prosocial behaviour

The current study also was designed to investigate the relation between children's trust beliefs and their prosocial behaviour, specifically helpfulness. The findings partially confirmed the hypotheses. As expected, children's helpfulness to classmates was correlated with their total CGTB Scale, the three bases trust subscales, and the peer, mother, and teacher-trust subscales. A relation between trust beliefs in mothers and helpfulness was expected on the basis of the finding that mothers' and fathers' authoritative style, warmth and support, predict children's prosocial behaviour (e.g. Baumrind, 1987; Dekovic & Janssens, 1992). The findings are consistent with the notion that children's trust beliefs in mothers and fathers foster the tendency to be helpful to classmates. Also, a relation between children's helpfulness to classmates and trust beliefs in teachers was found. This relation may be attributable to generalization across the target subscales because these were composed of the three bases of trust, and helpfulness was associated with the bases of trust. The observed relation may, however, reflect another process. Specifically, children helping classmates most likely occurs in interactions during school when teachers are present and, consequently, children's trust beliefs in teachers may foster helpfulness to classmates.

Contrary to expectation, children's trust beliefs in teacher (or any other trust scale/subscale) were not correlated with helpfulness to teachers. This lack of relation was found even though helpfulness to teachers was associated with helpfulness to classmates which was associated with trust beliefs. One possible reason for this pattern is that children may help teachers because of authority related motivations, notably the need to seek adult approval. Trust beliefs may not be a factor in such approval motivated behaviour. In addition, there may be differences in the extent to which children invest in their relationships with teachers versus their peers and the status of these relationships may vary from year to year as children transfer from one teacher to another through the grades. Nonetheless, the current findings are consistent with Rotter's (1980) notion that interpersonal trust is linked to prosocial behaviour, with the proviso that the relation may prevail for children's equal status rather than unequal (authority) status interactions.

The present study was designed to address the limitations of prior measures of trust beliefs by establishing a measure of trust beliefs that demonstrated adequate psychometric properties. The construction of CGTB Scale was guided by Rotenberg's (1994, 2001) theoretical framework of interpersonal trust. Developing a multidimensional scale of trust beliefs for children that assesses the expected three bases of trust across different targets of trust yields support for the utility of Rotenberg's theoretical framework. The study presented direct evidence for an association between trust and prosocial behaviour in children. Clearly, trust is a complex phenomenon that has important implications for the development of positive behavioural outcomes.

With the CGTB, researchers can assess the role of interpersonal trust in various domains of children's social relationships. For example, researchers could assess potential changes in children's trust beliefs as a function of divorce and changes in family composition. Also, children's trust beliefs may be predictive of their adjustment to being members of new peer groups. With continued usage of the CGTB, researchers will be able to answer Bernath and Feshach's (1995) request for a trust belief scale for children that has significant scientific and practical use.

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Appendix

The 24 CGTB scale items by basis and target

Reliability
Mother
A. *Sarah's* Mother said that if she cleans her room she can go to bed half-an-hour later. Sarah cleans her room. How likely is it that Sarah's Mother will let Sarah go to bed half-an-hour later?
B. *Cindy's* Mother said that she would buy sweets for Cindy if Cindy behaved well on their shopping trip. Cindy behaved well during the shopping trip. How likely is it that Cindy's Mother will buy the sweets for Cindy?
Father
A. *Lorraine's* father said that he would take her to the cinema on Saturday. How likely is it that Lorraine's father will take her to the cinema?
B. *Jasmine's* Father said that he would play cricket with her after Jasmine has finished her homework. Jasmine finishes her homework very quickly. How likely is it that Jasmine's Father will play cricket with Jasmine?
Teacher
A. The teacher told *Suzy's* class they were going to watch a video instead of doing their maths lesson. The teacher said that the video was lost. How likely is it that the video was lost?
B. A teacher said that she will show *Melissa's* class a film if they stay quiet during reading time. The class was quiet during reading time. How likely is it that the teacher will show the class the film?

Peer

A. Louisa says that she will share her chocolate bar with *Claire* at lunchtime. How likely is it that Louisa will share the chocolate bar with Claire?

B. Rita said she will meet *Lauren* after school to help Lauren with her homework. How likely is it that Rita will meet Lauren after school to help her with her homework?

Emotional

Mother

A. *Tina* tells her Mother that she held hands with a boy at school, but asks her Mother not to tell anyone. How likely is it that Tina's Mother will not tell others about it?

B. *Hayley's* Mother accidentally rips Haley's favourite blouse. Hayley wonders what happened to her blouse. How likely is it that Hayley's Mother will tell Hayley about what happened?

Father

A. *Paula* made a present for her Mother for her birthday. Paula asked her Father not to tell her Mother what she had made. How likely is it that Paula's Father will not tell her Mother about the present?

B. *Ria* tells her Father that she is struggling with her school work, but asks her Father not to tell others about it. How likely is it that Ria's Father will not tell others about it?

Teacher

A. *Lucy* tells her teacher that she saw two other children fighting in the playground. She asks the teacher not to let the other children know who told her about the fighting. How likely is it that the teacher will not tell the children?

B. *Martina* told her teacher she is worried about something at home, but asks the teacher not to tell anyone. How likely is it that Martina's teacher will not tell anyone?

Peer

A. *Gaby* brings some sweets to school. Gaby asks her friend not to tell anyone about the sweets so she does not have to share them with all of the other children. How likely is it that Gaby's friend will not tell the other children about the sweets?

B. *Sophie* buys her teacher a present as a surprise. Sophie asks her friend not to tell the teacher about the surprise. How likely is it that the friend will not tell the teacher about the surprise?

Honesty

Mother

A. *Martha's* mother said she would lend her, her new music CD. However, Martha's Mother is enjoying having it whilst in the car. How likely is it that Martha'a Mother will lend the music CD to Martha?

B. *Jane* is finding her maths homework hard and her Mother sometimes helps her. One day Jane asks her mother to help her on her maths homework. The Mother said that she couldn't help Jane because she had a headache. How likely is it that Jane's Mother had a headache?

Father

A. *Charlotte* asks her Father if she can borrow his fishing rod. Her Father has said he has lent it to someone else. How likely is it that her Father has lent the fishing rod to someone else?

B. *Daria* asked her Father to play football with her after school. When she got home, her Father said that he was too tired to play football. How likely is it that Daria's Father was too tired to play?

Teacher

A. The school netball team has just been formed. *Michelle* volunteers to be part of the team but teachers and classmates know that Michelle is not good at netball. The games teacher tells Michelle that there are no longer any places left on the team. How likely is it that there are no places left on the team?

B. The teacher told *Beverley's* class they can finish half-an-hour early on the last day of school. On the last day of school, the teacher finds that she is behind on her lessons. How likely is it that the teacher make will let the class out half-an-hour early?

Peer

A. *Karen* asks Nicola to go to the cinema. Nicola says she can not go because she feels tired. How likely is it that Nicola is tired?

B. Janet asks *Brenda* to lend her £1 and she does. The next day, Brenda sees Janet with a new bracelet. How likely is it that Janet will pay Brenda back?