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Lucy Amelia James* and Claire Louise Fox

Children's perceptions of others' humor: does context matter?

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Abstract: Research suggests that those using adaptive forms of humor are perceived more positively compared to those using maladaptive forms of humor. Research of this nature, however, is yet to consider children. The present research involved presenting 357 children aged 9–11 years, with one of eight vignettes portraying either a male or female child using one of the four humor styles: affiliative, self-enhancing, aggressive, and self-defeating. Participants then completed a questionnaire to assess their perceptions of the child in the vignette. In a second study, context was also investigated, with 386 children from the same age group, by describing the humor as having taken place in either the playground or classroom. Findings of study one showed that children using maladaptive forms of humor were viewed less positively than those using adaptive forms of humor. Findings from study two supported those from study one, and further showed that the context in which humor takes place may not be important. Overall, the findings of the current study are supportive of previous findings with adults and highlight the potential importance of humor use in children's perceptions of their peers.

Keywords: children; experimental; humor; humor styles; vignettes

1 Introduction

It is proposed by Martin et al. (2003) that there are four main styles of humor. In contrast to previous approaches which consider humor to be solely positive, two humor styles are considered to be adaptive and two are thought to be maladaptive.

*Corresponding author: Lucy Amelia James, School of Psychology, Keele University, Staffs, ST5 5BG, UK, E-mail: l.a.james@keele.ac.uk

Claire Louise Fox, Education and Social Research Institute, Manchester Metropolitan University, Manchester, UK, E-mail: Claire.fox@mmu.ac.uk

The first of the adaptive humor styles, affiliative, can be described as using humor to amuse others and to enhance interpersonal relationships. Self-enhancing on the other hand, is referred to as the use of humor to cope with a difficult situation or to maintain a positive outlook. In comparison to the adaptive humor styles, the first of the maladaptive humor styles, aggressive humor, can be described as the use of humor at the expense of others. Conversely, self-defeating humor can be described as the use of humor at the expense of the self. Demonstrating the importance of this approach, whilst positive associations have been found between the adaptive humor styles and adjustment, the maladaptive humor styles have been found to be associated with poorer adjustment (e.g. Kuiper et al. 2004).

In recent years, a number of studies mainly utilizing student samples have also examined how perceptions of an individual may be influenced by their use of different styles of humor. For example, using descriptions of individuals who used high or low rates of each of the four humor styles, Kuiper and Leite (2010) collected ratings of several desirable and undesirable personality attributes for the individuals described. Individuals using the adaptive humor styles, particularly affiliative, were rated positively, whereas users of the maladaptive humor styles, particularly aggressive, were rated more negatively. Similarly, using short scenarios representing each of the four humor styles, Kuiper et al. (2010) found that use of aggressive and self-defeating humor in others, made recipients feel less positive about themselves, as well as being less likely to want to continue an interaction. Adaptive uses of humor on the other hand led to participants feeling more positive about themselves and being more likely to want to continue an interaction. When the individuals were also described as being either socially anxious or not socially anxious, findings suggested that self-defeating humor may be particularly detrimental in interactions when an individual is also socially anxious (Kuiper et al. 2014).

It may be that humor acts as an interpersonal signal to others. Zeigler-Hill et al.'s (2013) work was based on implicit theories, whereby if a person has a belief that two characteristics are associated, they may ascribe a second characteristic to an individual in recognizing the first characteristic. Findings of their work showed that participants using adaptive styles of humor were rated more positively by their friends and family in terms of a number of personality features. These findings were again supported when using written descriptions of individuals. It was suggested that a good sense of humor may be viewed as being associated with a likeable and healthy personality and therefore a number of positive characteristics may be attributed to 'funny' people. For example, those with a good sense of humor may be seen as intelligent, emotionally stable, pleasant and interesting (Cann and Calhoun 2001).

Cann and Matson (2014) collected social desirability ratings for a hypothetical, potential friend or partner who was described as using behaviors representing the four humor styles. They found that not only were the adaptive humor styles rated as desirable, the maladaptive humor styles were judged to be undesirable. This again clearly highlights the importance of differentiating between positive and more negative uses of humor.

Research examining the functions of humor in children is noticeably lacking, although some studies have highlighted links between children's humor and adjustment (see Freiheit et al. 1998; Masten 1986; Sherman 1988). Furthermore, in more recent years, research with both older and younger children has identified links between different styles of humor and aspects of psychosocial adjustment (Fox et al. 2013; James and Fox 2016b). Whilst Fox et al. (2013) found links with an adolescent sample, James and Fox (2016b) found links in younger children aged 8–11 years. Consistent with adult samples, noticeable gender differences were also observed in children with males being found to use the maladaptive humor styles more in comparison to females (James and Fox 2016b).

If children are more familiar with boys displaying the maladaptive humor styles it is possible that these humor styles may be viewed as more acceptable when used by boys compared to girls. Coyne et al. (2008) found that even relational aggression was found to be viewed as more justified when used by boys compared to girls. Carter and McCloskey (1984) suggested that the behavior of adults and peers is important for children when learning about appropriate sex typed behavior. They found that the majority of children in their study would prefer not to associate with others who violate gender role norms, suggesting that behaviors not consistent with those expected for a certain gender may be viewed more negatively. Similarly, it is possible that children of different genders may appreciate different forms of humor which could influence their perceptions of a humorist. It could be for example that males appreciate hostile forms of humor more (Crawford and Gressley 1991).

Klein and Kuiper (2006) considered how the four humor styles are related to children's peer relationships. In terms of how they may be perceived by others, they proposed that affiliative humor may be particularly valued and enjoyed by other children. Similarly, children using self-enhancing humor may appear confident and self-assured leading to them achieving a desirable position in their peer group. Use of these adaptive humor styles may therefore add to children's ongoing popularity and acceptance in their peer group. For the maladaptive humor styles on the other hand those using self-defeating humor may reflect feelings of low self-worth, whilst using aggressive humor may not be accepted by the peer group. Use of these maladaptive humor styles may therefore be damaging to children's popularity and social status. Based on the findings of the experimental

studies with adults discussed previously, Zeigler-Hill et al. (2013) stated it would now be beneficial for future work to include additional age groups. In view of the suggestions above it seems relevant to consider perceptions of humor styles in children.

The approach used in the experimental studies is one which could be adapted for use with younger children. Firstly, it offers an alternative to relying on survey methods which require children to accurately self-report their own humor use and enables us to address the question of negative consequences in a different way. For example, Fox et al. (2013) raised concerns about the use of self-report with younger children, particularly in terms of the maladaptive humor styles and children's awareness of their own use of humor. Secondly, little is known about the age at which children might be able to recognize that whilst positive uses of humor may lead to positive outcomes, more negative uses may be related to less desirable outcomes. As found by James and Fox (2016a) in their study with 8–11 year olds, individual differences were evident in younger children's understanding of the self-focused humor styles. This study could therefore allow for more to be known about understanding of the consequences of using different humor styles in this age group.

The current research involved adopting an experimental approach to assess children's perceptions of a written description of a boy or girl using one of the four styles of humor. Based on the research which has suggested that teachers may view humor in the classroom negatively, a second study also investigated the context by varying whether humor was described as occurring in the playground or classroom. Using teacher ratings, Damico and Purkey (1978) found that those perceived to be class clowns were also perceived to be more unruly. Similarly, Fabrizi and Polio (1987) conducted a naturalistic observation of humorous behaviors in classrooms, finding that humorous events often occurred less frequently when teachers were in a position to react. Moreover, in some cases, children who used humor frequently were often reprimanded by their teachers. It is therefore possible that if teachers are seen to view incidences of humor in the classroom negatively, children may begin to consider context in their perceptions of others' humor. Social learning theory proposes that children's life experiences shape their behavior and that learning can occur by imitation and reinforcement from others (O'Connor et al. 2013). The modelling/reinforcement hypothesis of humor development for example suggests that parents can act as humorous role models and reinforce their children's attempts at using humor (Martin and Ford 2018). Learning from others, including teachers could also be how children learn about contexts in which different forms of humor may be appropriate.

As stated by Martin and Ford (2018) the impact of humor on impression formation depends on a number of factors including social context. It may be for example that play environments are viewed as more appropriate for humor use

(Derks and Berkowitz 1989). Derks and Berkowitz (1989) found differences in ratings of friendliness of a joke teller depending on whether the joke was described as being told at work or at a party. This also suggests an audience may consider the setting when forming perceptions of a humorist.

It was hypothesized that there would be more negative perceptions of those using the maladaptive humor styles (particularly aggressive humor), in comparison to those using the adaptive humor styles. Interactions with the participant's gender, the gender of the humorist, and the context (an addition to study two) were also explored. We predicted that girls using the maladaptive humor styles would be perceived more negatively, because this is contrary to gender roles. In addition, we expected that the context would make a difference, with smaller positive effects of the adaptive humor styles in the classroom, as opposed to the playground.

2 Study one: method

The main purpose of this study was to investigate children's perceptions of either a male or female child described in a vignette as using one of the four humor styles.

2.1 Participants

Participants were 357 children from four large primary schools in England aged 9–11 years with a mean age of 10.08 years ($SD = 0.70$). They were in school years five and six and the sample consisted of 176 males and 181 females.

2.2 Materials

Eight short vignettes (see Appendix) based on the statements used in the Reactions to Humorous Comments Inventory (Kuiper et al. 2010), were developed by the researchers to present either a male or female child using one of the four humor styles proposed by Martin et al. (2003). This approach is similar to those utilized with adult samples.

Kuiper et al. (2010) presented statements to participants describing a friend making a humorous comment representing each of the four humor styles. Participants were then asked to indicate how much they would want to continue interacting with the friend and also how positive and negative the friend would make them feel about themselves. Kuiper and Leite (2010) provided participants with descriptions of an individual displaying each humor style and were asked to rate the

individual on a number of personality attributes. In addition, Zeiglar Hill et al. (2013) developed descriptions of individuals who possessed each of the four humor styles and asked participants to rate the romantic desirability of these targets. They also provided single item measures to determine the participant's beliefs about the impact of the target's humor style on others and on the target themselves.

It was considered that the use of vignettes would seem more realistic and be more appropriate for younger children. The same neutral information describing the child was included in each vignette with only the information relating to humor varying depending on the humor style being described. The vignettes had an average Flesch reading ease score of 85.79 (Flesch Kincaid grade level 4.6) with advice from teachers suggesting that all materials were appropriate for the relevant age group to comprehend.

A questionnaire was used to assess participants' perceptions of the children described in the vignettes. The first three questions asked children how much they would like to 'work with', 'play with' and be 'friends with' the child in the vignette and were based on Kuiper et al.'s (2010) question of how likely participants were to continue interacting with the friend described and assessed the dependent variables 'play with', 'work with' and 'friends with'. As single item measures had been utilized in previous studies as described, they were deemed to be appropriate to provide a simple questionnaire for children. For the current study, a four point response scale consisting of 1 'not at all', 2 'not much', 3 'a bit' and 4 'a lot' was used for each question. A four point response scale was implemented to avoid the potential tendency for younger children to opt for a neutral mid-point response should one be available (Borgers et al. 2004). The fourth question asked children 'how popular do you think the child is' on a four point response scale consisting of 1 'not at all popular', 2 'not popular', 3 'a bit popular' and 4 'very popular' to measure the dependent variable 'popularity'. A further question again based on the Reactions to Humorous Comments Inventory (Kuiper et al. 2010) asked 'how would being around the child make you feel about yourself' on a scale from 1 'very bad', 2 'bad', 3 'good' to 4 'very good'. This measured the dependent variable 'feel like'.

In addition to single item questions, a semantic differential scale adapted from the PANAS (Watson et al. 1988) was used to further assess general perceptions of the child in the vignette, this was the sixth dependent variable. In their study of personality impressions associated with different styles of humor, Kuiper and Leite (2010) asked participants to provide ratings on several personality attributes. In the current study, participants were presented with eight pairs of words and were required to indicate on a scale from one to five where in their opinion the child would fall on the scale between each of the eight pairs of words for example, unfriendly-friendly, boring-fun and mean-caring. This approach was used with children of the same age group by Fox et al. (2014). A higher mean score on the

scale indicated a more positive rating. The subscale was found to have acceptable reliability being above the 0.70 level considered satisfactory ($\alpha = 0.90$).

2.3 Design

A 2 (gender of humorist) \times 2 (gender of participant) \times 4 (humor style) between participants design was used to ensure that participants were blind to the aims of the study. Participants were randomly allocated to one of eight conditions and were presented with one vignette describing either a male or female child using one of the four humor styles. To ensure this was the case an equal number of each of the eight vignettes were thoroughly mixed prior to data collection.

2.4 Procedure

Anticipating small to medium effects sizes (partial eta squared = 0.03) with alpha set at 0.05 and power 0.80, G Power indicated that we needed 357 participants. Ethical approval was gained from the university ethics committee. A letter and consent form detailing the research was emailed to a number of primary schools. Agreement to take part was received from four schools with parental consent being gained using an opt-out method. During sessions of data collection the researcher used a standardized preamble (see Appendix) to ensure instructions were delivered to children consistently on each occasion. Data collection was paper based and required approximately 15–20 min. After the children had been encouraged to fill out their details they were then asked to silently read the vignette described to them as a 'description of a child' without reference to names. School staff were on hand to provide reading to support to a small number of children. The children were then talked through each of the following questions and semantic differential scale. As the materials were deemed to be appropriate for this age group by teachers, it was not thought to be necessary to include comprehension questions.

When the questionnaires had been collected the children were fully debriefed. The children were asked if any of them had realized that other children had different vignettes to them and if they had guessed that the descriptions were fictitious. The children seemed unaware of this and were unconcerned by the mild deception. Finally, the children were thanked for their participation.

3 Results

A 2 (gender of humorist) \times 2 (gender of participant) \times 4 (humor style of humorist) MANOVA was carried out taking into account all six dependent variables; see Table 1 for the means (and SDs). There was a significant main effect for gender of participant [Pillais' Trace = 0.38, $F(18,855) = 6.95$, $p < 0.001$, $\eta^2p = 0.13$] and humor style [Pillais' Trace = 0.06, $F(6,283) = 3.09$, $p = 0.006$, $\eta^2p = 0.06$]. There were also significant two way-interactions for humor style and gender of humorist [Pillais' Trace = 0.13, $F(18,855) = 2.10$, $p = 0.005$, $\eta^2p = 0.04$], and gender of participant and gender of humorist [Pillais' Trace = 0.05, $F(6,283) = 2.37$, $p = 0.03$, $\eta^2p = 0.05$], although the latter did not reveal any significant differences when followed up.

If we consider the main effects for gender first, females wanted to play with the humorist significantly more than males, $F(1,288) = 7.11$, $p = 0.008$, $\eta^2p = 0.02$ (females: $M = 2.90$, $SD = 0.80$; males, $M = 2.53$, $SD = 0.90$). In addition, females wanted to be friends with the humorist more than males, $F(1,288) = 5.03$, $p = 0.026$, $\eta^2p = 0.02$ (Females: $M = 2.96$, $SD = 0.89$; Males, $M = 2.60$, $SD = 1.05$).

Table 1: Means (and SDs) for male and female humorists displaying different humor styles (study one).

		Aff	Agg	SEn	SD	Overall
Play	Male H	2.79(0.94)	2.20(0.93)	2.86(0.76)	3.00(0.51) ^e	2.73(0.85)
	Fem H	3.08(0.81)	2.17(0.75)	3.05(0.75)	2.41(0.89) ^e	2.71(0.88)
	Overall	2.93(0.89) ^b	2.19(0.84) ^{bcd}	2.96(0.76) ^c	2.73(0.77) ^d	2.72(0.87)
Work	Male H	2.51(0.96)	2.03(0.79)	2.58(0.91)	2.56(0.99)	2.43(0.94)
	Fem H	2.62(0.91)	2.17(0.82)	2.88(0.82)	2.32(0.94)	2.52(0.91)
	Overall	2.56(0.93) ^f	2.10(0.80) ^{fg}	2.75(0.87) ^g	2.45(0.97)	2.48(0.92)
Friends	Male H	2.88(1.00)	2.17(1.12)	3.17(0.77)	2.87(0.70)	2.78(0.97)
	Fem H	3.10(0.99)	2.00(0.87)	3.16(0.90)	2.76(0.85)	2.79(0.99)
	Overall	2.99(1.00) ^j	2.09(1.00) ^{kl}	3.16(0.84) ^k	2.82(0.77) ^l	2.79(0.99)
Pop	Male H	2.56(0.82)	2.29(0.99) ^p	2.14(0.90)	2.18(0.79)	2.30(0.88)
	Fem H	2.82(0.85) ^{mno}	1.77(0.73) ^{mp}	2.37(0.72) ⁿ	2.18(0.83) ^o	2.30(0.86)
	Overall	2.68(0.84)	2.03(0.90)	2.27(0.81)	2.18(0.80)	2.30(0.87)
Feel	Male H	3.86(0.77)	2.34(0.94)	3.14(0.59)	2.92(0.74)	2.82(0.82)
	Fem H	2.95(0.79)	2.00(0.77)	3.26(0.54)	2.76(0.61)	2.77(0.82)
	Overall	2.90(0.78) ^{qt}	2.17(0.87) ^{qrs}	3.20(0.56) ^{rtu}	2.85(0.68) ^{su}	2.80(0.81)
GP	Male H	3.85(0.82)	2.77(1.12)	3.73(0.65)	3.67(0.71)	3.53(0.93)
	Fem H	3.77(0.95)	2.4 (0.99)	4.11(0.66)	3.62(0.81)	3.54(1.04)
	Overall	3.81(0.88) ^v	2.63(1.06) ^{vwx}	3.93(0.68) ^w	3.65(0.75) ^x	3.53(0.99)

Aff, affiliative; Agg, aggressive; SEn, self-enhancing; SD, self-defeating; Play, play with; Work, work with; Friends, friends with; pop, popularity; Feel, feel like; GP, semantic differential scores (general perceptions). Means in a row or column sharing a superscript are significantly different.

For the main effects for humor style, a significant main effect of humor style was found for 'play with', $F(3,288) = 11.64$, $p < 0.001$, $\eta^2p = 0.11$, with post hoc tests revealing that participants would like to play with humorists using aggressive humor significantly less than all other remaining humor styles ($ps < 0.001$).

This was qualified by a significant two-way interaction between humor style and gender of the humorist, $F(3,288) = 3.82$, $p = 0.01$, $\eta^2p = 0.04$. Follow-up analyses identified a significant difference between male and female humorists for self-defeating humor, $F(1,288) = 8.97$, $p = 0.003$, $\eta^2p = 0.03$, with participants wanting to play with girls using self-defeating humor less than boys using self-defeating humor.

For the 'work with' variable, a significant main effect of humor style was found, $F(3,288) = 5.81$, $p = 0.001$, $\eta^2p = 0.06$, with post hoc tests revealing that participants would like to work with humorists using aggressive humor significantly less than those using affiliative ($p = 0.009$) and self-enhancing humor ($p < 0.001$).

A significant main effect of humor style was also found for 'friends with', $F(3,288) = 16.97$, $p < 0.001$, $\eta^2p = 0.15$, with post hoc tests demonstrating that participants would like to be friends with a humorist using aggressive humor significantly less than all other styles of humor ($ps < 0.001$).

For popularity, a significant main effect of humor style was found, $F(3,288) = 8.50$, $p < 0.001$, $\eta^2p = 0.08$, with post hoc tests revealing that participants rated humorists using affiliative humor as significantly more popular than those using aggressive, self-defeating ($ps < 0.001$) and self-enhancing humor ($p = 0.009$).

A significant two-way interaction between humor style and gender of humorist was also discovered $F(3,288) = 3.82$, $p = 0.01$, $\eta^2p = 0.04$, with follow-up analyses identifying that these differences were significant for female humorists only: $F(3,288) = 10.23$, $p < 0.001$, $\eta^2p = 0.01$. A significant difference between male and female humorists for aggressive humor was also found: $F(1,288) = 7.16$, $p = 0.01$, $\eta^2p = 0.02$, with participants rating females using aggressive humor as significantly less popular than males using aggressive humor.

A significant main effect of humor style was found for 'feel like': $F(3,288) = 23.42$, $p < 0.001$, $\eta^2p = 0.20$, with post hoc tests revealing that participants believed that aggressive humor would make them feel significantly less good about themselves than all of the remaining styles of humor ($ps < 0.001$), whilst self-enhancing humor would make them feel significantly better about themselves than affiliative and self-defeating humor (affiliative $p = 0.044$, self-defeating $p = 0.015$).

Finally, when using mean scores from the semantic differential scale (measuring general perceptions), a significant main effect of humor style was found: $F(3,288) = 31.28$, $p < .001$, $\eta^2p = 0.25$, with post hoc tests revealing that participants perceived humorists using aggressive humor more negatively than those using the remaining humor styles ($ps < 0.001$).

4 Discussion

In sum, these findings are supportive of previous research with adults (e.g. Kuiper and Leite 2010). There were more negative perceptions of those using aggressive humor, in comparison to those using the three other humor styles. There were some interactions with the gender of the humorist, with girls using self-defeating humor and aggressive humor being perceived more negatively than boys (for play with and popularity). Perhaps if maladaptive humor styles are used less by girls in comparison to boys (see James and Fox 2016), they may be viewed more negatively when they are observed in girls. The differences between affiliative humor and the other humor styles in terms of popularity were significant for females, but not males. Self-enhancing humor was perceived as superior to the other humor styles, including affiliative humor, when asked about how it would make participants feel about themselves. As mentioned previously, manipulating the setting in which the humor takes place will allow for the importance of context in children's perceptions of humor to be investigated.

5 Study two: method

In addition to investigating children's perceptions of a boy or girl using one of the four humor styles, the main purpose of this study was to examine whether the setting (classroom or playground) in which the humor is used impacts on participants' perceptions of the child described.

5.1 Participants

Participants were 386 children from four primary schools in England aged 9–11 years with a mean age of 10.21 years ($SD = 0.68$). They were in school years five and six and the sample consisted of 190 males and 196 females.

5.2 Materials

Sixteen short vignettes (see Appendix) based on those used in study one were developed by the researchers to present either a male or female child using one of the four humor styles in either a classroom or playground setting. The neutral information describing the child included in each vignette in study one was removed so only the information relating to humor style was presented. This was to

ensure the children were not influenced by description not related to humor. This time the vignettes had an average Flesch reading ease score of 75.6 (Flesch Kincaid grade level 7.5), as with study one however, the vignettes were reviewed by teachers who agreed their suitability for the relevant age groups. The questionnaire used to assess participants' perceptions of the children described in the vignettes was the same as outlined in study one.

5.3 Design

A 2 (gender of humorist) \times 2 (gender of participant) \times 2 (context) \times 4 (humor style) between participants design was used to ensure that participants were blind to the aims of the study. Participants were randomly allocated to one of 16 conditions and were presented with one vignette describing either a male or female child using one of the four humor styles in either the classroom or the playground. To ensure this was the case an equal number of each of the 16 vignettes were thoroughly mixed prior to data collection.

5.4 Procedure

Based on the findings from study one, and anticipating small to medium effects sizes (partial eta squared = 0.03) with alpha set at 0.05 and power 0.80, G Power indicated that we needed 357 participants. The same procedures employed in study one were used for the recruitment of schools and data collection.

6 Results

The MANOVA identified only one main effect for humor style [Pillais' Trace = 0.61, $F(18,981) = 13.81$, $p < 0.001$, $\eta^2p = 0.21$], and follow up analyses identified significant differences across all of the dependent variables: Play with, $F(3,330) = 50.21$, $p < 0.001$, $\eta^2p = 0.32$; Work with, $F(3,330) = 23.86$, $p < 0.001$, $\eta^2p = 0.18$; Friends with, $F(3,330) = 43.89$, $p < 0.001$, $\eta^2p = 0.29$; Popularity, $F(3,330) = 17.71$, $p < 0.001$, $\eta^2p = 0.14$; Feel like, $F(3,330) = 54.34$, $p < 0.001$, $\eta^2p = 0.33$; and General Perceptions (using the semantic differential scale scores), $F(3,330) = 63.28$, $p < 0.001$, $\eta^2p = 0.37$, see Table 2 for the means (and SDs).

Follow-up analyses identified that participants were less likely to want to play with those using aggressive and self-defeating humor, in comparison to those using affiliative and self-enhancing humor ($ps < 0.001$). In addition, there was a significant difference between aggressive humor and self-defeating humor

Table 2: Means (and SDs) for male and female humorists displaying different humor styles (study two).

		Aff	Agg	SEn	SD	Overall
Play	Male H	3.15(0.73)	1.84(0.81)	3.26(0.79)	2.43(0.85)	2.68(0.98)
	Fem H	2.89(0.82)	1.82(0.78)	2.91(0.81)	2.41(0.76)	2.51(0.90)
	Overall	3.02(0.78) ^{ab}	1.83(0.79) ^{ac}	3.08(0.82) ^c	2.42(0.80) ^{bc}	2.59(0.94)
Work	Male H	2.52(1.07)	1.84(0.75)	2.93(0.86)	1.89(0.99)	2.19(0.95)
	Fem H	2.17(0.83)	1.62(0.65)	2.57(0.83)	1.98(0.88)	2.30(1.03)
	Overall	2.35(0.97) ^{de}	1.73(0.71) ^{df}	2.74(0.86) ^{fg}	1.94(0.93) ^{eg}	2.09(0.87)
Friends	Male H	3.26(0.83)	1.74(0.88)	3.23(0.84)	2.34(0.96)	2.65(1.08)
	Fem H	2.85(0.87)	1.84(0.93)	3.04(0.87)	2.53(0.96)	2.87(1.01)
	Overall	3.05(087) ^{hi}	1.80(0.90) ^{hi}	3.13(0.86) ^{jk}	2.44(0.96) ^{ji}	2.61(1.04)
Pop	Male H	2.80(0.91)	2.39(0.89)	2.19(0.79)	2.16(0.77)	2.39(0.87)
	Fem H	2.91(0.97)	2.11(1.13)	2.33(0.92)	2.17(0.72)	2.39(0.97)
	Overall	2.85(0.93) ^{lmn}	2.27(1.00) ^l	2.25(0.85) ^m	2.187(0.73) ⁿ	2.39(0.93)
Feel	Male H	3.07(0.61)	1.77(0.72)	3.00(0.76)	2.39(0.81)	2.56(0.89)
	Fem H	2.87(0.72)	1.89(0.73)	3.04(0.70)	2.31(0.74)	2.53(0.85)
	Overall	2.97(0.67) ^{op}	1.83(0.72) ^{oq}	3.02(0.72) ^q	2.34(0.77) ^{pq}	2.54(0.87)
GP	Male H	3.79(0.86)	2.21(0.78)	3.79(0.78)	3.05(0.94)	3.22(1.06)
	Fem H	3.70(0.75)	2.12(0.79)	3.58(0.98)	3.08(0.87)	3.12(1.05)
	Overall	3.74(0.81) ^{rs}	2.16(0.78) ^{rt}	3.68(0.89) ^t	3.07(0.90) st	3.17(1.05)

Aff, affiliative; Agg, aggressive; SEn, self-enhancing; SD, self-defeating. Play, play with; Work, work with; Friends, friends with; pop, popularity; Feel, feel like; GP, semantic differential scores (general perceptions). Means in a row or column sharing a superscript are significantly different.

($p < 0.001$), with participants wanting to play with those using aggressive humor less, compared to those using self-defeating humor.

For work with, follow-up analyses identified that participants were less likely to want to work with those using aggressive and self-defeating humor, in comparison to those using affiliative and self-enhancing humor ($ps < 0.001$, except between self-defeating humor and affiliative $p = 0.008$). There was also a significant difference between affiliative and self-enhancing humor with participants wanting to work with those using self-enhancing humor more than those using affiliative humor ($p = 0.014$). This shows some differentiation between the two adaptive humor styles.

For friends with, follow-up analyses identified that participants were less likely to want to be friends with those using aggressive and self-defeating humor, in comparison to those using affiliative and self-enhancing humor ($ps < 0.001$). In addition, there was a significant difference between aggressive humor and self-defeating humor ($p < 0.001$), with participants wanting to be friends with those using aggressive humor less compared to those using self-defeating humor.

The same pattern of results was also identified for the ‘feel like’ variable with more negative feelings about the self in response to those using aggressive and

self-defeating humor, in comparison to those using affiliative and self-enhancing humor (all $ps < 0.001$). In addition, there was a significant difference between aggressive humor and self-defeating humor ($p < 0.001$), with greater negative feelings for aggressive humor compared to self-defeating humor.

Similar to study one, for popularity, there were significant differences between affiliative humor compared to the other three humor styles ($ps < 0.001$), with those using affiliative humor being perceived as the most popular (for male *and* female humorists).

For the general perception scores, there were more negative perceptions of those using aggressive and self-defeating humor, in comparison to those using affiliative and self-enhancing humor (all $ps < 0.001$). In addition, there was a significant difference between aggressive humor and self-defeating humor ($p < 0.001$), with more general negative perceptions for aggressive humor compared to self-defeating humor.

In sum, there were more negative perceptions of those using aggressive humor, in comparison to the other humor styles. In contrast to study one, the effects did not vary depending on the gender of the humorist. No significant effects for context were found.

7 Overall discussion

To our knowledge this is the first study to investigate younger children's perceptions of the four humor styles proposed by Martin et al. (2003). In general, findings were supportive of studies carried out with adults and adolescents, providing evidence for Zeigler-Hill et al.'s (2013) implicit theory of humor and highlighting both the positive effects of adaptive forms of humor and the detrimental effects of maladaptive styles of humor.

Firstly, children rated those using affiliative humor as significantly more popular compared to other forms of humor. Affiliative humor may particularly enhance popularity as it is highly valued and enjoyed by other children (Klein and Kuiper 2006). In terms of children's general perceptions, wish to play with and be friends with the humorists, it was found that users of aggressive humor were rated more negatively. In addition, in study two, users of self-defeating humor were also rated more negatively in comparison to those using the adaptive humor styles.

These findings are in line with those of Kuiper and Leite (2010) who found that whilst maladaptive humor had strong detrimental effects on impressions formed by others, the adaptive humor styles enhanced personality impressions. Moreover, Zeigler-Hill et al. (2013) stated that aggressive humor may act as an indicator of other aggressive qualities. Children may be particularly cautious of playing with

others using aggressive humor as they fear that the humor could be used at their expense. Klein and Kuiper (2006) for example, stated that aggressive humor can be used by indirect bullies to exclude children from the peer group whilst less socially skilled bullies may use aggressive humor in a less sophisticated way which may jeopardize their own status. As highlighted by Klein and Kuiper (2006), self-defeating humor can represent a neediness which may not be a welcome characteristic of a playmate.

Friendships play an important part in both children's social and emotional development (Newcomb and Bagwell 1996). The current findings however suggest that aggressive humor could be particularly detrimental to forming and maintaining close friendships. For example, James and Fox (2016b) found a negative association between aggressive humor and closeness in friendship and a positive association with conflict. Moreover, Yip and Martin (2006) found that users of aggressive humor may struggle to perceive emotions, provide emotional support and manage conflicts. On the other hand, Yip and Martin (2006) found positive associations between the adaptive humor styles and initiating relationships, whilst Martin et al. (2003) suggested that the ability to laugh with others may be particularly related to higher levels of intimacy in relationships. In terms of the lower scores for wish to be friends with for self-defeating humor, James and Fox (2016a) suggested that children often feel the need to refute self-defeating comments in an attempt to bolster others' confidence. A regular requirement to do this may put strain on a friendship therefore having negative consequences.

Findings also showed that participants would like to work with users of aggressive humor less than those using the adaptive forms of humor. Aggression has previously been found to have disruptive effects in task orientated groups (Baysinger et al. 2014). Similarly, in study two, participants also wanted to work with users of self-defeating humor less which could suggest that making fun of one's own weaknesses may also not be welcome in a work-based situation. In study two it was found that children would like to work with those using self-enhancing humor more than affiliative. This may suggest that children find self-enhancing humor particularly appealing in workmates, perhaps for example when a task is challenging.

In support of Kuiper et al.'s (2010) findings, children indicated that the maladaptive humor styles would make them feel significantly worse than the other humor styles, whilst in study one it was found that self-enhancing humor would make them feel significantly better than both self-defeating humor and affiliative humor. Considering teasing as a common form of aggressive humor in children, Jones et al. (2005) found that early adolescents predicted that teasing could generate negative emotions. Furthermore, Janes and Olson (2000) suggested that just witnessing teasing may have an effect on the observer. For self-defeating

humor being in the presence of another person drawing attention to their flaws may result in an individual becoming increasingly focused on their own flaws. Self-enhancing humor on the other hand may be particularly beneficial to people's feelings. As stated by Martin et al. (2003), users of self-enhancing humor tend to have a generally humorous outlook on life.

When considering gender, further analysis in study one showed that participants would like to play with a female using self-defeating humor significantly less than a male using self-defeating humor. Similarly, follow-up analysis for study one showed that the significant effect of humor style for popularity was significant for female humorists only, suggesting that for girls, humor may play a bigger part in their popularity than it does for boys. Children also rated males using aggressive humor as significantly more popular than girls using aggressive humor. It should however be noted that these findings were not replicated in study two. Research has found that males tend to use maladaptive humor more than females (Martin et al. 2003). Humor of this nature may therefore be seen as more commonplace and therefore more acceptable in boys; however, in girls it may be seen as less acceptable as they are seen to be straying away from appropriate gender roles (Coyne 2008). Underwood (2003) mentions the idea of the "gender paradox" whereby those less affected by something (in this case girls using maladaptive humor less), are more likely to be impacted by it. Fox et al. (2013) found that aggressive humor was associated with higher internalizing symptoms for girls but not boys. The current findings may provide some evidence to support the view that use of maladaptive humor could have different effects for boys and girls.

Fabrizi and Polio (1987) found that teachers can rate children who use humor as disruptive. It was therefore proposed that children may have concerns that certain forms of humor may be inappropriate in a classroom environment. There may be a number of reasons why context was not found to be significant in study two. Firstly, it could be that children may not yet have reached an age where this is taken into consideration. This perhaps supports the view that children of this age do not have a 'fully mature theory of mind'. It has been argued that social cognition, how people process, store, and apply information about people and social situations continues to develop through childhood (Richardson et al., 2018). Further research could replicate our study with older children, as well as examine how children use social cues such as context to understand social situations involving humor.

Similarly, it should be noted that the studies referred to which suggest teachers may view humor in the classroom negatively were conducted a number of years ago (e.g. Fabrizio and Polio 1987). Perhaps teachers may now view humor more positively or utilize humor in the classroom themselves. Van Praag et al. (2017)

found that whilst humor varied across classrooms in Belgium, it typically characterizes daily classroom interactions and is used to facilitate learning and relationships. Lastly, Derks and Berkowitz (1989) found that adults did not actually view joke telling at work as less acceptable than at a party. Humor within a work or educational context may therefore not be viewed as less appropriate.

In terms of the main limitations of the current study, Kuiper and Leite (2010) argued that providing a written description does not represent the more complex way that personal information is processed in real life. Study one also drew attention to the need to carefully consider the neutral information presented together with the vignette and ensure that its influence is minimal. For example, on reflection, presenting a child who 'loves reading' and 'has a dog' could have influenced the perceptions formed by children and diluted the effect of the manipulation. The neutral information was therefore removed in study two. In addition, it could be that the experimental manipulation in the vignettes was not strong enough. The word playground or classroom for instance was only referred to once. Perhaps participants did not absorb this key piece of information in the vignette. In future, studies utilizing some form of manipulation check to ensure that participants had read and understood the information may be advisable. It can be considered a strength of the current study however that the use of an unrelated design meant that participants were kept blind from the aims of the study.

Future research could also consider the use of audio or video clips presenting different forms of humor which may seem more realistic to children (Kuiper and Leite 2010). Furthermore, Kuiper and Leite's (2010) work involved providing participants with descriptors of individuals with both low and high rates of each of the four humor styles, as well as a descriptor which included no mention of humor. Overall, the research again highlights the need to consider humor as both adaptive and maladaptive rather than as just a single positive construct (Kuiper and Leite 2010).

By investigating younger children's perceptions of humor, not only has knowledge been gained with respect to the outcomes of using humor in different ways, more is also known about the extent of children's understanding of different styles of humor. From these findings it seems that even younger children may have an understanding of different forms of humor and of the consequences that can arise from using humor in different ways. The need for further research is however highlighted by some findings from study one which did not carry across to study two. Notably, gender of the humorist was not found to be significant in study two, whilst for self-defeating humor significant differences were found in the latter study.

8 Conclusion

In conclusion, this is the first study to adopt an experimental approach to investigate children's perceptions of the four humor styles proposed by Martin et al. (2003). In support of previous research with young adults, findings suggested that compared to maladaptive humor styles, adaptive humor styles are perceived more positively by others. This adds further support to the view that humor serves as an important interpersonal signal (Zeigler-Hill et al. 2013). Whilst it suggests that children seem to understand that humor can be both adaptive and maladaptive it suggests that children might not consider context in their perceptions of others' humor. The experimental approach taken in the current research should act as a precursor to further work which should take into account the fact that children do not tend to use just one form of humor (see Fox et al. 2016). Vignettes used to investigate perceptions in future studies could include combinations of different humor styles.

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Appendix

Example vignettes

Study one – Rose/Tim is 10 years old and loves reading. She/he has one brother and an older sister who takes her/him swimming every week. Rose/Tim has a dog called Rex and enjoys going to the park to play with him. When Rose/Tim is with her/his friends, she/he often gets carried away making jokes about herself/himself to try and make people laugh. She/he also talks a lot about things she/he is not very good at in a funny way/When Rose/Tim is at school she/he often tells jokes about other children in front of their classmates without thinking about how they might feel. Sometimes she/he also makes fun of or teases her/his friends in a nasty way/When Rose/Tim is with her/his friends she/he likes to tell a lot of jokes and funny stories to make other people laugh. She/he has always found it is easy to make other people around her/him laugh./When Rose/Tim is feeling sad or worried, she/he thinks about funny things to make herself/himself feel better. She/he also likes to think back to funny times when she/he is by herself/himself.

Study two – Imagine that you are in the playground/classroom and a child called Rosie/Tom gets carried away making jokes about herself/himself to try and

make people laugh. She/he also talks a lot about things she/he is not very good at in a funny way/tells jokes about other children without thinking about how they might feel. She/he also laughs at other children to make them look silly/likes to tell a lot of jokes and funny stories to make other people laugh. She/he seems to find it easy to make other people around her/him laugh/is feeling a bit sad about something and so she/he makes a joke about it. She/he says that being a funny person stops her/him from feeling too sad.

Preamble

At the top of the page, you will see a short description of someone. I would like you to spend a few minutes reading it, but remember not to talk about it with anyone else. If you would like some help with reading, just put your hand up. Now we are going to do the questions together to make sure we are all at the same place.

Now you will see a grid with some words on the left hand side and some words on the right hand side. Could you put a tick in the box you think best describes the person? So for the first one, if you think they are bad then you would put a tick in the first box or if you think they are good then you would put a tick in the last box, or you might think they are somewhere in the middle.

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Bionotes

Lucy Amelia James

School of Psychology, Keele University, Staffs, UK
l.a.james@keele.ac.uk

Dr. Lucy Amelia James is a Lecturer in Psychology at Keele University, UK. Her research interests include the development of humor styles and associations between the use of different forms of humor and psychosocial adjustment. Lucy is also interested in how humour may impact our perceptions of others including in the context of Higher Education.

Claire Louise Fox

Education and Social Research Institute, Manchester Metropolitan University, Manchester, UK
Claire.fox@mmu.ac.uk

Dr. Claire Louise Fox is a Reader in Educational Psychology. Claire is committed to conducting applied social psychological research, which has both theoretical and practical implications. She is particularly interested in the problems of school bullying, teenage relationship abuse, and children's humor. A current project with the Proud Trust is examining school bullying and mental health problems of LGBT + youth and the role of school contextual factors.