Journal of European Psychology Students, 2013, 4, 1-15

efpsa journal of european psychology students

The Relationship Between Prosocial Music and Helping Behaviour and its Mediators: An Irish College Sample

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Received: 04.11.2011 | Accepted: 24.08.12

abstract

Previous research based on the General Learning Model (GLM) found that exposure to prosocial music increased helping behaviour. The present research aimed to test the effects of prosocial music from current music charts and popular television series. An initial experiment determined the themes of four prosocial and four neutral songs; the second experiment then found that prosocial music significantly increased helping behavior, relative to neutral music. The findings indicated no statistical difference on affect or arousal between the samples exposed to either prosocial or neutral music. These results are consistent with previous research and indicate the importance of prosocial music in creating cooperative social scenarios. Suggestions for future research including the necessity for field and longitudinal studies were discussed.

Keywords: prosocial behaviour, general learning model, music lyrics, helping

Over the last 50 years, much attention has been given to the negative effects of violent and aggressive media, leading to a widely accepted conclusion that violent media can increase violent and aggressive behaviour in children, adolescents and adults (Anderson, Gentile, & Buckley, 2007). However, relatively little research has looked at the positive effects of media. The children's television programme *Sesame Street* inspired some initial research on the effects of prosocial messages in media (e.g., Coates, Pusser, & Goodman, 1976) as the show aimed to teach basic academic and social skills through 'modelling' behaviour (Lesser, 1975). This technique was found to be very effective for increasing grades, reading levels, creativity, and, most relevant to this study, lowering aggression (Anderson, Huston, Schmitt, Linebarger, & Wright, 2001).

Eagly (2009) defined prosocial behaviour as "behaviours regarded as beneficial to others, including helping, sharing, comforting, guiding, rescuing and defending" (p. 644). Prosocial behaviours of a number of different varieties have been studied in the past; for

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instance, Stewart-Williams (2007) classified helping behaviours as either low (e.g., emotional support), medium (e.g., help during illness, providing financial support) or high cost (e.g., donating a kidney). Fitzgerald, Thompson, and Whitaker (2010) attempted to measure helping behaviour directed towards kin and non-kin based on cost of helping. To assess high-cost helping, participants were asked how willing they would be to donate a kidney to their kin or to save them from a burning building. They found that we are more likely to help kin than non-kin for high-cost helping behaviours, although it is very difficult to actually test this beyond hypothetical scenarios and self-report.

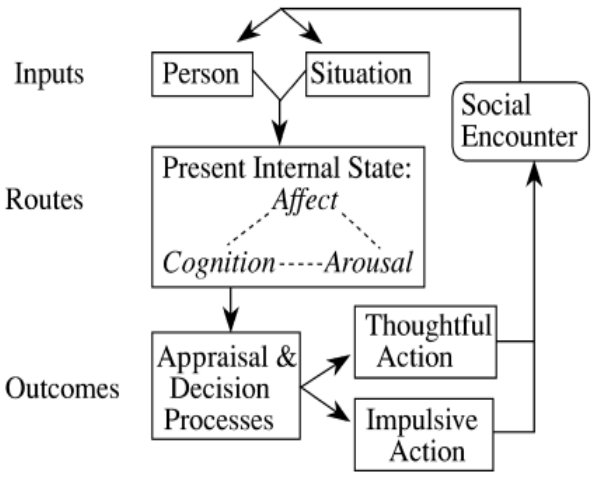
In relation to the effects of media on prosocial behaviour, much more research has been conducted in the last few years, with studies looking at the effects of prosocial video games (Greitemeyer & Osswald, 2010; Greitemeyer, Osswald, & Brauer, 2010), television (Mares & Woodard, 2005), and music (Greitemeyer, 2009a, 2009b). Gentile et al. (2009) recently reported on a number of studies which looked at the effects of prosocial games on helping behaviour with international evidence from longitudinal, correlational and experimental studies. They found that Singaporean middle-school children who played more prosocial games behaved more prosocially. Two longitudinal studies with Japanese children and adolescents showed that prosocial game play predicts later increases in helping behaviour. Finally, an experimental study with U.S undergraduates found that prosocial game play will lead to more helpful behaviour than violent or neutral games.

Music has also been shown to impact upon prosocial behaviour. Jacob, Guéguen, and Boulbry (2010) tested the effect of prosocial lyrics in a restaurant in the west of France and found a significant difference in tipping behaviour between diners who were exposed to prosocial music and those in the neutral condition. However, no such research has been conducted within an Irish context and so the present study aims to address this gap in our knowledge by observing the effects of prosocial music on an Irish college sample.

Theoretical perspectives: The General Aggression Model and the General Learning Model (GLM)

Before looking at the details of the present study, it is necessary to discuss the relevant theories which help explain the way in which media can affect one's behaviour. Much research on the effects of violent media is based on the General Aggression Model (GAM; Anderson & Bushman, 2002). This model describes a continuous cycle between the individual and the environment, and suggests that aggressive contents of violent media may affect a person's internal state by altering their cognition, affect or arousal (see Figure 1). These variables affect the way in which we perceive a situation which can lead to more aggressive reactions.

Figure 1. The General Aggression Model (Anderson & Bushman, 2002)



Buckley and Anderson (2006) expanded this model into the General Learning Model (GLM), which could be used to explain the way in which media and social learning scenarios affect our behaviour in a more general sense, i.e.

not just aggressive behaviours. Social learning theories (Bandura, 1969; Bandura, Ross, & Ross, 1961) were incorporated into the GLM, showing that reinforcement is not a requisite for learning (Bandura & McDonald, 1963) and that we can adopt new behaviours by modelling the behaviours of others to create social scripts. This phenomenon was famously demonstrated in the Bobo study (Bandura et al., 1961) where children acted aggressively towards a clown doll having watched adults acting in a similar fashion moments before. Individual cognitive concepts or nodes link up in the brain to form these scripts, where repetitive exposure leads to strengthened connections (Anderson, Benjamin, & Bartholow, 1998; Berkowitz, 1990). Huesmann (1986) suggested that when stimuli which were present at the formation of a script are found in subsequent situations, they can act as cues which activate the script. However, some stimuli may only partially activate a script, leading to a priming effect which can affect behaviour at a subconscious level. Bargh, Chen, and Burrows (1996), for example, have shown that solving scrambled sentence tests, which have an underlying theme of rude or polite, increases the likelihood of these behaviours occurring immediately afterwards.

Recent literature and unresolved issues

The GLM can then be applied to further our understanding of adopting prosocial behaviours. Thus far, the predictive validity of the GAM has been established, although the same cannot yet be said for the GLM (Greitemeyer, 2009b) with relation to prosocial behaviour. Only a small number of studies have looked at the effects of prosocial music (e.g., Greitemeyer, 2009a, 2009b, 2011; Jacob, Guéguen, & Boulbry, 2010) although all indicate a positive relationship between prosocial music and helping behaviour. A relationship has been observed by some researchers between music, affect and arousal; for example, Grewe, Kopiez, and Altenmuller (2009) tested the effect of seven songs on physiological arousal looking at self-reported perception of 'chills' as well as increased skin conductance response and heart rate. North, Tarrant and Hargreaves (2004) utilised this research to conduct a field study on the effects of music on mood and to then measure the impact of mood change on helping behaviour. They played either uplifting or annoying music in a gym and asked members to sign a petition for a charity or distribute leaflets for this charity on departure. They observed a ceiling effect for the low cost petition signing task but found that helping on the higher cost task increased significantly for those who heard the uplifting music.

Greitemeyer's (2009b) study aimed to test these mediators and others which are included in the GLM (i.e. access to prosocial thoughts) using samples of students from Munich (Germany) and Brighton (United Kingdom), four different measures of helping and six different prosocial songs. In the first of four studies, he found that participants who listened to four prosocial songs picked up significantly more pens, which had been 'accidentally' dropped by the researcher. The following three studies aimed to test the mediating mechanism for this behaviour, assessing the arousal, affective and cognitive routes outlined in the GLM. Greitemeyer (2009a, 2009b) also tested empathy as a potential mediator due to its contribution to prosocial behaviour observed in other research (Batson, 1994). The results from Greitemeyer's work (2009a, 2009b) suggest not only that prosocial lyrics can increase helping behaviour but that this relationship is mediated by an increase in empathy. However, only one of these songs was released within the last ten years (Love Generation by Bob Sinclair) with many of the others released in the 80's (e.g., 'We are the world' by Live-Aid and 'Feed the world' by Band-Aid) and so the extent to which we can generalize these findings to current music listeners is questionable.

Furthermore the method by which these songs were classified as prosocial may have been unreliable. Participants listened to all four songs and were then asked to rate the extent to which the song lyrics were about helping and cooperation. Considering the titles of the songs and the style of questioning, one could argue that this method is susceptible to demand characteristics as it becomes clear to the participant what the experimenter's

'desired' answer is (Ray, 2002). This raises questions as to the validity of further studies as the song ratings may not have accurately reflected the perception of the population, nor are these songs popular in current music trends.

The Present Study

The present study aimed to test the generalizability of previous findings, which suggest that prosocial music can increase helping behaviour, by using eight new prosocial and neutral songs with a sample of Irish college students.

To this end, two studies were carried out. Experiment 1 was carried out to ascertain that the prosocial songs were significantly more prosocial than the neutral songs, while attempting to minimise any subject factors which could have affected the validity of the main study. The GLM also indicates that affect, arousal or cognition may mediate the relationship between prosocial music and helping behaviour. To test this, the affect and arousal variables were measured in the first experiment to see if either variable would be altered significantly for the prosocial or neutral groups. It was hypothesised that a significant difference would not be observed between these variables for participants in the prosocial or neutral condition, as this has been the case in previous research (Greitemeyer, 2009a, 2009b). However, the second experiment tested the primary hypothesis that, exposure to prosocial music, in comparison to neutral songs, would yield higher helping scores. The implications of this hypothesis are then discussed in relation to their effect on our understanding of the GLM.

Experiment 1

The first experiment was used to determine the themes of eight well-known songs. Unlike previous research, a semantic differential was used to test the themes with an aim of minimising demand characteristics by including topics which were not of particular interest to the researcher. Four songs were identified as potentially meeting the criteria for classification as prosocial. It was hypothesised that these would score higher on 'helping' and 'cooperation' in the semantic differential than the four potential neutral songs. The researcher anticipated no significant difference between affect and arousal for these song conditions, as has been observed in previous research.

Method

Sample and participant selection. Fifty participants from University College Dublin took part in Experiment 1 (26 males and 24 females) with an age range of 19-33 (M = 21.2, SD = 2.76). All participants were approached in lectures and asked to participate in an experiment on the effects of music. Twenty-five participants were randomly assigned to each of the prosocial or neutral conditions.

Apparatus and materials. A Dell Inspiron 15R laptop equipped with iTunes and a pair of ear-phones was used. Pens were provided as paper copies of the scales were completed by participants.

The Positive Affect and Negative Affect Schedule (Watson, Clark, & Tellegen, 1988), or PANAS, was used to measure affect and consists of 20 mood states, such as 'distressed' or 'excited'. Participants were asked to rate to what extent they felt this way at that moment based on a 5-point Likert scale from 1 (not at all) to 5 (extremely). The PANAS was divided into two subscales, whereby a score was obtained for positive and negative affect. Positive affect was measured using ten of the 20 items and was found to have good internal reliability (α = 0.89). Negative affect was measured using the other ten items, which also had good internal reliability (α = 0.78).

Arousal was measured using the Positive Arousal Scale (Anderson, Deuser, & DeNeve, 1995), also known as the PAS, a 24 item scale where participants responded based on a 5-point Likert scale from 1 (not at all) to 5 (extremely) on arousal adjectives, such as 'active' or 'drowsy'. Negative items were negatively scored. The PAS also had good internal reliability (α = 0.94).

The semantic differential was designed to observe perceived themes within the music (see Appendix A). It asked participants to rate the presence of themes in the songs along a continuum, for example along the continuum between 'love' and 'hate'. Within the semantic differential, special attention was given to scores on helping ('helpful' – 'unhelpful') and cooperation ('cooperation' – 'conflict'). These items were highly correlated (r = 0.93) and thus combined to make the help score. As 'helpful' and 'cooperation' were given scores of 1 out of 5, a lower help score was used as the indicator for more prosocial songs.

Finally, a 5-point Likert scale from 1 (not at all) to 5 (extremely) was included to determine liking of songs.

Procedure. Participants began by reading an information sheet which gave details of the study. They were randomly assigned to either the prosocial condition, where they listened to 'I'll be there for you' (Crane et al., 1995), 'Count on me' (Mars, Lawrence, & Levine, 2010) 'Lean on me' (Withers, 1987), and 'Imagine' (Lennon, 1971), or the neutral condition, where they listened to 'Who are you' (Townshend, 1978), 'The lazy song' (K'Naan & Thomas, 2010) 'Gold digger' (West, Charles, & Richard, 2005), and 'Billie Jean' (Jackson, 1983). They then completed the semantic differential and answered a Likert-style question designed to measure liking of songs. Finally participants responded to the PAS and reported their positive and negative affect. Having completed the first experiment, participants were asked to sign a consent form.

Results and Discussion

Independent samples t-tests were used to verify whether the prosocial and neutral songs differed significantly for themes in the semantic differential. Perceived content of the songs was found to be significantly more prosocial (based on the combined score for helping and cooperation) for the prosocial songs (M = 12.72, SD = 2.63) than for the neutral songs (M = 25.92, SD = 3.93; $t_{(48)}$ = -13.98, $p < 0.05$). Prosocial music also scored significantly higher on trust, $t_{(48)}$ = -14.252, $p < 0.05$, dependability, $t_{(36.80)}$ = -16.16, $p < 0.05$, love, $t_{(34.24)}$ = -7.91, $p < 0.05$, and peace, $t_{(48)}$ = -4.54, $p < 0.05$. Each of these themes was positively correlated with the combined prosocial score (trust, r = 0.876, $p < 0.01$; dependability, r = 0.914, $p < 0.01$; love, r = .795, $p < 0.01$; and peace, 0.623, $p < 0.01$). As all of these themes were associated with Eagly's (2009) definition of prosocial behaviour, we could be confident in the efficacy of the song conditions. These results support the hypothesis that a significant difference would exist between the prosocial and neutral songs.

No significant difference was observed for the fantasy – reality continuum, $t_{(39.394)}$ = 0.838, $p > 0.05$, the happy – sad continuum, $t_{(48)}$ = -0.073, $p > 0.05$, nor the active – passive continuum, $t_{(48)}$ = -0.946, $p > 0.05$. This suggested that the prosocial and neutral conditions did not differ on themes which were unrelated to prosocial behaviour, which increased our confidence in the efficacy of these conditions. Similarly, liking of songs did not differ significantly when prosocial songs (M = 14.08, SD = 1.73) and neutral songs (M = 14.24, SD = 2.05), $t_{(48)}$ = -.298, $p > 0.05$, were compared using independent samples t-tests.

The arousal properties, as measured by the PAS, for the prosocial songs (M = 82.96, SD = 15.13) and neutral songs (M = 87.24, SD = 17.41) were also similar, $t_{(48)}$ = -.928, $p > 0.05$. This suggests that arousal was not affected differently by either song condition and so it was not necessary to use the PAS in the second study.

Participants from the prosocial condition (M = 31.4, SD = 6.61) and neutral condition (M = 29.88, SD = 7.97) also scored similarly for positive affect on the PANAS, $t_{(48)}$ = .734, $p > 0.05$. However, participants who were exposed to the neutral songs (M = 14.24, SD = 5.08) exhibited significantly higher levels of negative affect on the PANAS than participants in the prosocial condition (M = 11.8, SD = 2.02), $t_{(48)}$ = - 2.23, $p < 0.05$. A high negative affect score signified high levels of subjective distress (Watson et al., 1988). As a significant difference was observed for negative affect on the PANAS, this questionnaire was included in

the second study so that affect could be controlled for when looking at the link between prosocial music and helping behaviour. It should also be noted that no gender differences were observed for song themes, liking of songs, affect or arousal.

Experiment 2

Method

Sample and participant selection. For experiment two, 24 students (12 males, 12 females) from University College Dublin, Ireland, with an age range of 18-57 (M = 22.21, SD = 9.17) took part. They were randomly assigned to one of the two song conditions (prosocial or neutral). There were 12 participants in the prosocial condition and 12 in the neutral condition. All participants were tested individually.

Apparatus. A Dell Inspiron 15R laptop equipped with iTunes and a pair of ear-phones was used. Twenty pens and a container were required to carry out the helping scenario.

Materials. Affect was once again measured using the PANAS. As good internal reliability was observed for this scale in the first experiment, all 20 items were included in the positive and negative affect subscales. Positive affect was found to have good internal reliability (α = 0.881). Similarly, negative affect had good internal reliability (α = 0.724).

Procedure. Participants were welcomed by a male experimenter and learned that due to the nature of the study it was essential that they be naïve to the design but that they would be fully de-briefed afterwards and would have the opportunity to withdraw at any stage. These details were outlined in the information sheet which the participant read before continuing. The participant then chose a piece of paper from a container which indicated that they were to listen to either song-list 1 (prosocial) or song-list 2 (neutral). This information was not revealed to the experimenter, who left the room while the participant listened to all four songs in the play-list (see Appendix B for more details on instructions provided to participants).

After all four songs were played, the participant knocked on the door which indicated to the experimenter that this phase of the experiment was over. Unaware of the participant's song condition the experimenter entered the room. To measure helping behaviour, an adapted version of Twenge, Baumeister, DeWall, Ciarocco, and Bartels' (2007) method was used. The experimenter accidentally knocked over a container of 20 pens (to ascertain that all pens fell out, the bottom of the container was set up to be loose and so it fell away when the container was picked up). He then paused to see whether the participant would help pick up the scattered pens. After about 5s the experimenter began picking up pens. The number of pens picked up by the participant was recorded by the experimenter.

As the initial experiment revealed a tendency for the neutral songs to elicit a significantly higher negative affect, it was considered important to control for mood. To do this the experimenter administered the PANAS after the participants had picked up the pens. On this form participants could see an ID number which they were asked to write on the back of the piece of paper they had chosen earlier, as well as their gender (for example, participant number 14 wrote M14 or F14 on the back of the piece of paper). This was then placed in a separate envelope which the experimenter did not open until the data for all of the participants had been collected. Participants answered demographic questions and were thanked and probed for suspicion. None of the participants indicated any suspicion of a relationship between listening to the songs and the dropping of the pens. They were asked to complete a consent form at the end of the experiment.

The effect of prosocial music on helping behaviour was investigated. The independent variable was song condition, which was either prosocial or neutral, and the

dependent variable was helping behaviour, which was quantified by counting the number of the pens the participant picked up. It was hypothesised that participants who were randomly assigned to the prosocial condition would pick up significantly more pens than participants in the neutral condition. Participants' mood was also assessed by the PANAS. It was hypothesised that a significant relationship would remain between song type and number of pens when mood was controlled for.

Results

Affect. Descriptive statistics for the prosocial and neutral groups are displayed in Table 1 below.

Table 1: *Descriptive Statistics for Prosocial and Neutral Groups on Age and Affect*

	N	Minimum	Maximum	Mean	SD
Prosocial					
Age	12	18	57	24.667	12.630
Positive affect	12	11	41	28.500	9.932
Negative affect	12	10	18	11.833	2.6911
Neutral					
Age	12	18	25	19.750	1.815
Positive affect	12	25	40	32.500	4.622
Negative affect	12	17	40	11.833	1.899

Using an independent samples t-test, homogeneity of variance was not observed between the prosocial and neutral groups for age, so the separate variance estimate method was used. No significant age difference was observed between the prosocial and neutral conditions, $t_{(11.454)} = 1.335$, $p > 0.05$. Similarly, no significant effects for mood were observed on the positive affect subscale (prosocial: $M = 28.5$, $SD = 9.93$; neutral: $M = 32.5$, $SD = 4.622$), $t_{(15.551)} = -1.265$, $p > 0.05$, nor on the negative affect subscale (prosocial: 11.833, $SD = 2.69$; neutral: $M = 11.833$, $SD = 1.899$), $t_{(22)} = 0$, $p = 1$.

However, as the initial experiment found that neutral participants exhibited higher scores on the negative affect subscale further analyses were carried out. Participants' scores on both the PANAS from Experiments 1 and 2 were summed and an independent samples t-test was carried out. This analysis was carried out to shed further light on the different results found for the positive and negative affect subscale scores in this study as well as others (e.g., Greitemeyer, 2009a, 2009b). Looking at all 74 participants from both experiments, the prosocial group ($M = 11.8108$, $SD = 2.222$) scored significantly lower than the neutral group ($M = 13.4595$, $SD = 4.426$) on the negative affect subscale, $t_{(72)} = -2.025$, $p > 0.05$. There was no significant difference between the prosocial ($M = 30.459$, $SD = 7.823$) and neutral groups ($M = 30.730$, $SD = 7.101$), $t_{(72)} = -.156$, $p > 0.05$ for the positive affect subscale. This suggests that across all 74 participants, from both experiments, those who listened to the neutral music scored significantly higher on the negative affect subscale, indicating a lower mood. Partial correlation analyses were used to control for this when looking at the difference between music conditions and helping behaviour.

Helping behaviour. Descriptive statistics for the prosocial and neutral groups are outlined below in Table 2 in relation to the number of pens picked up by participants.

Table 2: *Descriptive Statistics for Prosocial and Neutral groups on Number of Pens Picked Up by Participants*

	N	Minimum	Maximum	Mean	SD
Prosocial					
Number of pens	12	8	19	13.5	2.697
Neutral					
Number of pens	12	1	14	8.33	4.397

Frequency statistics were then used to look at the number of pens picked up by participants. These revealed a normally distributed curve with skewness of -0.73 and kurtosis of 0.404. The mean number of pens picked up was 10.92 with a standard deviation of 4.52. As the dependent

variable was found to be normally distributed, parametric statics were utilised in the inferential analysis stage.

Independent samples t-tests were used again to look for significant differences between the prosocial and neutral groups for number of pens picked up. Using a one-tailed independent t-test to ascertain that a song condition effect existed, homogeneity of variance was observed and so df was set at 22 and α was maintained at 0.05. As expected, exposure to prosocial music promoted helping behaviour as participants in the prosocial condition picked up significantly more pens than those in the neutral condition , $t_{(22)} = 3.373$, $p < 0.05$. This confirmed the hypothesis that participants who were randomly assigned to a prosocial music condition would pick up more pens than those in a neutral music condition. Examination of the 95% confidence interval allowed further interpretation. Both the lower (1.99) and upper (8.34) values were removed from zero so we would expect similar results on repetition of this study.

Testing for gender differences, the number of pens picked up by males ($M = 9.9167$, $SD = 4.944$) and females ($M = 11.9167$, $SD = 4.01$) was similar, $t_{(22)} = -1.088$, $p > 0.05$. Further analyses were carried out to ascertain whether a significant difference existed when controlling for gender. Men in the prosocial condition picked up significantly more pens ($M = 12.6667$, $SD = 2.5033$) than their neutral counterparts ($M = 7.1667$, $SD = 5.419$), $t_{(10)} = 2.257$, $p < 0.05$. A similar result was found for females, $t_{(10)} = 2.561$, $p < 0.05$, which suggests that the priming effect of the music was equally effective for both males and females.

As mentioned previously, there was no gender effect observed for affect, as males (positive affect: $M = 31.25$, $SD = 8.302$; negative affect: $M = 12.4167$, $SD = 2.6097$) scored similarly to females (positive affect: $M = 29.75$, $SD = 7.653$; negative affect: $M = 11.25$, $SD = 1.815$) on the positive affect subscale, $t_{(22)} = 0.460$, $p > 0.05$, and the negative affect subscale, $t_{(22)} = 1.271$, $p > 0.05$. Partial correlation analyses were used to measure the relationship between helping behaviour and song condition while controlling for positive and negative affect. As expected, when controlling for these variables, a significant relationship remained between song condition and helping behaviour, $F(1, 22) = -0.642$, $p < 0.05$.

Discussion

The present study provided further support to the primary hypothesis that prosocial (i.e. music which had significantly higher help scores), music increases helping behaviour relative to neutral music (i.e. music which significantly lower on help scores, and did not differ significantly on other emotional attributes). Participants in the prosocial condition picked up significantly more pens than participants in the neutral condition. These results are similar to those found in previous research by Greitemeyer (2009a, 2009b) and, as this study used different songs and samples, the generalizability of these findings is increased. The findings from this study also support the GLM as it shows that a stimulus (i.e. music) can influence our internal state and affect our behaviour. The GLM and previous research (Greitemeyer, 2009b) suggest certain mediating variables for this relationship (affect, arousal, cognition, or empathy), two of which were tested in this study, i.e. affect and arousal.

No arousal effect was observed as participants' PAS scores were similar in both the prosocial and neutral conditions, once again reflecting findings from previous research (Greitemeyer, 2009a, 2009b, 2011). However, the findings regarding affect were not as straight-forward. Greitemeyer (2009a) observed no difference between the prosocial and neutral group for positive or negative affect although in his follow-up study (2009b), he found that prosocial participants scored significantly higher on positive affect with no difference in negative affect. The results from the present research differ again as neutral participants exhibited significantly higher negative affect scores in the first experiment and again when the samples from the first and second experiments were combined.

Based on this it seems that prosocial lyrics have no specific effect on mood, rather the tempo and melody of the music affect this variable, as has been observed in a number of previous studies (e.g., Grewe et al., 2009; Rickard, 2004; Saarakillio & Erkkila, 2007; Wells & Hakanen, 1997). Creating music with identical tempo and melody using either prosocial or neutral lyrics could remove this variable in future studies; however, this would greatly diminish the ecological validity.

As mentioned previously, this study set-out to utilise novel methods and songs to minimise demand characteristics and assess the potential of current music on behaviour. The semantic differential was utilised to minimise demand characteristics in the first experiment, meaning greater confidence in the efficacy of the song conditions, which added to the validity of the study. This was an important first step as uncertainty about the songs could have led to questions about the study as a whole. The songs used in this study ranged from 1971 ('Imagine', Lennon, 1971) to 2010 ('Count on Me', Mars, Lawrence, & Levine, 2010), indicating that songs which are popular in the charts can increase helping behaviour as well as older songs and those written specifically for charity events. This is an important contribution as even more recent studies (e.g., Greitemeyer, 2011) have failed to measure the effect of current popular music. Similarly, experimenter bias was minimised by using a double-blind procedure. Although the present study has helped show that prosocial lyrics can increase helping behaviour, it should be noted that this was a relatively small sample size which cannot be generalized to the population. With only 12 participants in each condition, relative to Greitemeyer's (2009b) sample of 25 participants per condition, the power of these findings is relatively low. Similarly, the data does not indicate whether or not this effect will extend beyond the short-term. Unfortunately this is a limitation inherent in many spontaneous helping scenarios (e.g., North et al., 2004). The GLM predicts that media can influence behaviour on a short and long-term basis and this has been observed in violent video game studies as aggressive behaviour, cognition, and affect all increased longitudinally with game play as empathy and prosocial behaviour decreased (see meta-analytic review by Anderson et al., 2010).

Similarly, the effects of prosocial music have, thus far, only been tested with low-cost helping behaviours, as was the case in this study. A number of researchers have observed distinctly different behaviour depending on the cost of helping (e.g., Greitemeyer, Fischer, Kastenmüller, & Frey, 2006; Stewart-Williams, 2007). As mentioned earlier, Stewart-Williams (2007) classified helping behaviour as low, medium or high cost, however creating medium and high cost scenarios is extremely difficult and thus results in hypothetical scenarios being assessed. Using hypothetical scenarios tells us little about real-life events but it is difficult to see a way of improving this measure.

Future research should concentrate on field and longitudinal studies as the majority of research thus far has been lab-based and cross-sectional. As aforementioned, Jacob et al. (2010) tested the effect of prosocial lyrics in a restaurant setting and found a significant difference in tipping behaviour depending on music in the restaurant. This was the first study to exemplify this effect in the field and it is evident that further field studies are necessary so that such findings can be generalised to the real world. Gentile et al. (2009) also looked at longitudinal, correlational and experimental evidence on prosocial video games and helping behaviour. Similar studies on the effects of prosocial lyrics may be interesting and could provide more ecologically valid support for the GLM.

Future research should also aim to increase the generalizability of current findings by using new songs and methodologies. Greitemeyer (2009b) suggested using different methodologies for measuring accessibility to prosocial thoughts such as a thought-listing task (e.g., Chory-Assad, 2004) or a lexical decision task (e.g., Bösche, 2010), and empathy, for example, The Basic Empathy Scale (Jolliffe & Farrington, 2006) as these variables may

mediate the relationship between prosocial music and helping behaviour.

For many people, music is an important leisure activity (Rubin, West, & Mitchell, 2001) and it plays an important role in our social interactions (Rentfrow & Gosling, 2006). College students spend approximately 40 hours a week listening to music (Rubin et al., 2001) and so the idea that it will interact with our knowledge scripts outside of the laboratory is highly plausible. The present research shows that prosocial music can lead to greater helping behaviour; however, based on much previous research it is equally clear that violent music can have an antisocial effect (Anderson, Carnagey, & Eubanks, 2003; Fischer & Greitemeyer, 2006). Thus, increasing exposure to prosocial music and decreasing exposure to antisocial music may be beneficial to society as a whole and could perhaps be integrated into intervention programmes for patients with behavioural difficulties to promote more socially desirable behaviour.

References

Anderson, C. A., Benjamin, A. J., & Bartholow, B. D. (1998). Does the gun pull the trigger? Automatic priming effects of weapon pictures and weapon names. *Psychological Science, 9*, 308-314. doi:10.1111/1467-9280.00061

Anderson, C. A., & Bushman, B. J. (2002). Human aggression. *Annual Review of Psychology, 53*, 27-51. doi:10.1146/annurev.psych.53.100901.135231

Anderson, C. A., Carnagey, N. L., & Eubanks, J. (2003). Exposure to violent media: The effects of songs with violent lyrics on aggressive thoughts and feelings. *Journal of Personality and Social Psychology, 84*, 960-971. doi:10.1037/0022-3514.84.5.960

Anderson, C. A., Deuser, W. E., & DeNeve, K. (1995). Hot temperatures, hostile affect, hostile cognition and arousal: Tests of a general model of affective aggression. *Personality and Social Psychology Bulletin, 21*, 434-448. doi:10.1177/0146167295215002

Anderson, C. A., Gentile, D. A., & Buckley, K. E. (2007). *Violent Video Game Effects on Children and Adolescents: Theory, Research, and Public Policy*. Oxford: Oxford University Press.

Anderson, C. A., Shibuya, A., Ihori, N., Swing, E. L., Bushman, B. J., Sakamoto, A., … Saleem, M. (2010). Violent video game effects on aggression, empathy, and prosocial behaviour in Eastern and Western countries: A meta-analytic review. *Psychological Bulletin, 136*, 151-173. doi:10.1037/a0018251

Anderson, D. R., Huston, A. C., Schmitt, K. L., Linebarger, D. L., & Wright, J. C. (2001). Early childhood television viewing and adolescent behaviour: The recontact study. *Monographs of the Society for the Research in Child Development, 66*, vii-147. doi:10.1111/1540-5834.00120

Bandura, A. (1969). Social learning of moral judgements. *Journal of Personality and Social Psychology, 11*, 275-279. doi:10.1037/h0026998

Bandura, A., & McDonald, F. J. (1963). Influence of social reinforcement and the behaviour of models in shaping children's moral judgements. *Journal of Abnormal and Social Psychology, 67*, 274-281. doi:10.1037/h0044714

Bandura, A., Ross, D., & Ross, S. A. (1961). Transmission of aggression through imitation of aggressive models. *Journal of Abnormal & Social Psychology, 63*, 575-582. doi:10.1037/h0045925

Bargh, J. A., Chen, M., & Burrows, L. (1996). Automaticity of social behavior: Direct effects of trait construct and stereotype activation on action. *Journal of Personality and Social Psychology, 71*, 230-244. doi:10.1037/0022-3514.71.2.230

Berkowitz, L. (1990). On the formation and regulation of anger and aggression: A cognitive-neoassociationistic analysis. *American Psychologist, 45*, 494-503. doi:10.1037/0003-066X.45.4.494

Bösche, W. (2010). Violent video games prime both aggressive and positive cognitions. *Journal of Media Psychology: Theories, Methods, and Applications, 22*, 139-146. doi:10.1027/1864-1105/a000019

Buckley, K. E., & Anderson, C. A. (2006). A theoretical model of the effects and consequences of playing video games. In P. Vorderer & J. Bryant (Eds.), *Playing video games – Motives, responses, and consequences* (pp. 363-378). Mahwah, NJ: LEA.

Chory-Assad, R. M. (2004). Effects of television sitcom exposure on the accessibility of verbally aggressive thoughts. *Western Journal of Communication 68*, 431-453. doi:10.1080/10570310409374812

Coates, B., Pusser, H. E., & Goodman, I. (1976). The influence of "Sesame Street" and "Mister Rogers' Neighborhood" on children's prosocial behaviour in the preschool. *Child Development, 47*, 138-144. doi:10.1111/1467-8624.ep12432723

Crane, D., Kauffman, M., Skloff, M., Willis, A., Sōlem, P., & Wilde, D. (1995). I'll Be There for You [Recorded by P. Sōlem & D. Wilde]. On *L.P.* [Medium of recording: CD] Hollywood, CA: East West Records.

Darley, J. M., & Latané, B. (1968). Bystander intervention in emergencies: Diffusion of responsibility. *Journal of Personality and Social Psychology, 8,* 377-383. doi:10.1037/h0025589

Eagly, A. H. (2009). The his and hers of prosocial behavior: An examination of the social psychology of gender. *American Psychologist, 68,* 644-658. doi:10.1037/0003-066X.64.8.644

Fischer, P., & Greitemeyer, T. (2006). Music and aggression: The impact of sexual-aggressive song lyrics on aggression-related thoughts, emotions, and behavior toward the same and the opposite sex. *Personality and Social Psychology Bulletin, 32,* 1165-1176. doi:10.1177/0146167206288670

Fitzgerald, C. J., Thompson, M. C., & Whitaker, M. B. (2010). Altruism between romantic partners: Biological offspring as a genetic bridge between altruist and recipient. *Evolutionary Psychology, 8,* 462-476. Retrieved from http://www.epjournal.net/filestore/EP08462476.pdf

Gentile, D. A., Anderson, C. A., Yukawa, S., Ihori, N., Saleem, M., Ming, L. K. & Sakamoto, A. (2009). The effects of prosocial video games on prosocial behaviors: International evidence from correlational, experimental, and longitudinal studies. *Personality and Social Psychology Bulletin, 35,* 752-763. doi:10.1177/0146167209333045

Greitemeyer, T. (2009a). Effects of songs with prosocial lyrics on prosocial thoughts, affect, and behaviour. *Journal of Experimental Social Psychology, 45,* 186-190. doi:10.1016/j.jesp.2008.08.003

Greitemeyer, T. (2009b). Effects of songs with prosocial lyrics on prosocial behaviour: Further evidence and a mediating mechanism. *Personality and Social Psychology Bulletin, 35*(11), 1500-1511. doi:10.1177/0146167209341648

Greitemeyer, T. (2011). Exposure to music with prosocial lyrics reduces aggression: First evidence of the underlying mechanism. *Journal of Applied Social Psychology, 47,* 28-36. doi:10.1016/j.jesp.2010.08.005

Greitemeyer, T., Fischer, P., Kastenmüller, A., & Frey, D. (2006). Civil courage and helping behaviour: Differences and similarities. *European Psychologist, 11,* 90-98. doi:10.1027/1016-9040.11.2.90

Greitemeyer, T., & Osswald, S. (2010). Effects of prosocial video games on prosocial behavior. *Journal of Personality & Social Psychology, 98,* 211-221. doi:10.1037/a0016997

Greitemeyer, T., Osswald, S., & Brauer, M. (2010). Playing prosocial video games increases empathy and decreases schadenfreude. *Emotion, 10,* 796-802. doi:10.1037/a0020194

Grewe, O., Kopiez, R., & Altenmuller, E. (2009). The chill parameter: Goose bumps and shivers as promising measures in emotion research. *Music Perception, 27,* 61-74. doi:10.1525/mp.2009.27.1.61

Huesmann, L. R. (1986). Psychological processes promoting the relation between exposure to media violence and aggressive behavior by the viewer. *Journal of Social Issues, 42,* 125–139. doi:10.1111/j.1540-4560.1986.tb00246.x

Jacob, C., Guégen, N., & Boulbry, G. (2010). Effects of songs with prosocial lyrics on tipping behaviour in a restaurant. *International Journal of Hospitality Management, 29,* 761-763. doi:10.1016/j.ijhm.2010.02.004

Jackson, M. (1983). Billie Jean [Recorded by M. Jackson, G. Phillinganes, G. Smith, B. Wolder, D. Parks, L. Johnson, … M. Boddicker]. On *Thriller* [Medium of recording: Record] Los Angeles, CA: Epic.

Jolliffe, D., & Farrington, D. P. (2006). Development and validation of the basic empathy scale. *Journal of Adolescence, 29,* 589-611. doi:10.1016/j.adolescence.2005.08.010

K'Naan, Thomas, J. (2010). The Lazy Song [Recorded by B. Mars]. On *Doo-Wops & Hooligans* [Medium of recording: CD] Burbank, CA: Elektra Records.

Lennon, J. (1971). Imagine. On *Imagine* [Medium of recording: Record] NY: EMI.

Lesser, G. S. (1975). *Children and Television: Lessons from Sesame Street.* New York: Vintage Books.

Mares, L., & Woodard, E. (2005). Positive effects of television on children's social interactions: A meta-analysis. *Media Psychology, 7,* 301-322. doi:10.1207/S1532785XMEP0703 4

Mars, B., Lawrence, P., & Levine, A. (2010). Count on Me [Recorded by B. Mars]. On *Doo-Wops & Hooligans* [Medium of recording: CD] Burbank, CA: Elektra Records.

North, A. C., Tarrant, M., & Hargreaves, D. J. (2004). The effects of music on helping behaviour: A field study.

Environment and Behaviour, *36*, 266-275. doi:10.1177/0013916503256263

Ray, W. J. (2002). *Methods: Toward a science of behavior and experience*. (7th ed.). London: Wadsworth.

Rentfrow, P. J., & Gosling, S. D. (2006). Message in a ballad: The role of music preferences in interpersonal perception. *Psychological Science*, *17*, 236-242. doi:10.1111/j.1467-9280.2006.01691.x

Rickard, N. S. (2004). Intense emotional responses to music: A test of the physiological arousal hypothesis. *Psychology of Music*, *32*(4), 371-388. doi:10.1177/0305735604046096

Rubin, A. M., West, D. V., & Mitchell, W. S. (2001). Differences in aggression, attitudes toward women, and distrust as reflected in popular music preferences. *Media Psychology*, *3*, 25-42. doi:10.1207/S1532785XMEP0301_02

Saarakillio, S., & Erkkila, J. (2007). The role of music in adolescents' mood regulation. *Psychology of Music*, *35*(1), 88-109. doi:10.1177/0305735607068889

Stewart-Williams, S. (2007). Altruism among kin vs. nonkin: Effects of cost of help and reciprocal exchange. *Evolution and Human Behavior*, *28*, 193-198. Retrieved from http://www.sciencedirect.com/science/article/pii/S1090513807000037

Townshend, P. (1978). Who Are You? [Recorded by R. Daltrey, P. Townshend, J. Entwistle, K. Moon, R. Argent, & A. Fairweather-Low]. On *Who Are You?* [Medium of recording: Record] London, UK: Polydor.

Twenge, J. M., Baumeister, R. F., DeWall, C. N., Ciarocco, N. J., & Bartels, J. M. (2007). Social exclusion decreases prosocial behavior. *Journal of Personality and Social Psychology*, *92*, 56-66. doi:10.1037/0022-3514.92.1.56

Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology*, *54*(6), 1063-1070. doi:10.1037/0022-3514.54.6.1063

Wells, A., & Hakanen, E. A. (1997). The emotional use of popular music by adolescents. In A. Wells & E. A. Hakanen (Eds.) *Mass media & society* (pp. 217-228). Greenwich, London: APC.

West, K., Charles, R., & Richard, R. (2005). Gold Digger [Recorded by the cast of Glee]. On *Glee: The Music: Volume 2* [Medium of recording: CD] NY: Columbia Records. (2009)

Withers, B. (1987). Lean on Me [Recorded by the cast of Glee]. On *Glee: The Music, Volume 2* [Medium of recording: CD] NY: Columbia Records. (2009)

Appendix A

Semantic differential for assessing perceived song content and Likert-style question on liking of songs.

Music Themes

Gender: _____ Age: _____

Below are a series of scales which describe the content of the songs you are about to hear. Words are arranged with their opposites for each pair. Please tick (or place an 'x') the box closest to the word that best describes what you feel this song is about for each pairing. The closer you put the tick to the word, the more it describes that song. If you feel that neither adjective is relevant to the theme of that song, please mark the middle box.

Song title: Artist/Group:

	A	B	C	D	E	
Fantasy	☐	☐	☐	☐	☐	Reality
Happy	☐	☐	☐	☐	☐	Sad
Trust	☐	☐	☐	☐	☐	Distrust
Dependable	☐	☐	☐	☐	☐	Not dependable
Cooperation	☐	☐	☐	☐	☐	Conflict
Active	☐	☐	☐	☐	☐	Passive
Helpful	☐	☐	☐	☐	☐	Unhelpful
Love	☐	☐	☐	☐	☐	Hate
Peace	☐	☐	☐	☐	☐	War

Please indicate below how much you liked this song by ticking the appropriate box.

not at all	Slightly	Moderately	very much	Extremely
☐	☐	☐	☐	☐

Appendix B

The instructions for the semantic differential, liking of songs scale, PANAS and PAS can all be found in written form at the beginning of each scale.

Verbal instructions were given as follows:

- Participants were asked to read the information sheet before the experiment began.
- After this they were asked to pick a piece of paper which would indicate the playlist they were to listen to. They were told to keep this information a secret from the experimenter due to the nature of the study.
- Having chosen their playlist participants were told to sit back and relax as they normally would when listening to music. They were instructed to knock on the door of the lab to let the experimenter know that they had listened to all four songs.
- They were then instructed to write the number which appeared at the top of the PANAS sheet on the back of the playlist paper in combination with the first letter of their gender and to put this piece of paper into an envelope when complete. E.g., participant number 14 who was male would have written 'M14'.
- In the de-briefing, participants were informed of the true nature of the study and were given the opportunity to withdraw at this stage.

No other verbal instructions were given.