# The effect of brief digital interventions on attitudes to intellectual disability: Results from a pilot study

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## Introduction

Although legislation and policy have attempted to reduce discrimination against people with intellectual disabilities, they commonly continue to experience social inequalities (Hatton et al., 2015), hostility, bullying and abuse (Fyson & Kitson, 2010; McEvoy & Keenan, 2014; Sin et al., 2009), and disability hate crimes (crimes committed *because* the person has a disability) (Mencap, 2000, 2007; Quarmby, 2008). Such experiences have been related to negative attitudes towards people with intellectual disabilities within society, which are best understood in terms of the three components of attitudes: cognitive, emotional and behavioural. Studies have shown that the public typically do not desire social interaction with people with intellectual disabilities (Gordon et al., 2004; Nagata, 2007; Westbrook et al., 1993), and are more positive about contact with people with physical and sensory disabilities (Katz et al., 2000; National Disability Authority, 2011; Staniland, 2011). Discomfort about interacting, and concern that it will be hard to communicate with someone with an intellectual disability are likely to be at least partly responsible, and not helped by generally low rates of contact between people with and without intellectual disabilities and their large-scale invisibility in public life.

While there appears to be a clear need to do more to target negative public attitudes towards people with intellectual disabilities, to date interventions to this effect are limited, mostly poorly informed by theory and rarely rigorously evaluated (Scior & Werner, 2015). Education and contact are the most widely used strategies in efforts to reduce negative attitudes among adults in other fields (Corrigan et al., 2012). Educational approaches, such as lecture programmes and educational vignettes, aim to raise awareness and challenge misconceptions and negative stereotypes by stressing the capabilities of individuals with intellectual disabilities (e.g. McCaughey & Strohmer, 2005). Although educational approaches have been shown to increase knowledge and to be partially effective in generating improvements in attitudes, when used on their own their effects appear short-lived (Corrigan et al., 2012; Scior & Werner, 2015).

To recent meta-analyses of interventions delivered to adults concluded that contact-based interventions are almost twice as effective as educational ones (Clement et al., 2013; Corrigan et al., 2012). Of note though, in most studies outcomes are measured only immediately post-intervention. When only medium to long term outcomes of such interventions are considered, and short term effects disregarded, perhaps surprisingly the superiority of direct social contact interventions is not supported (Mehta et al., 2015).

Contact interventions are broadly based on Allport's (1954) contact hypothesis, which proposed that intergroup contact reduces prejudice and hostility. A meta-analysis of 515 studies confirmed that there is a negative relationship between intergroup contact and prejudice (Pettigrew & Trapp, 2006). Direct contact has also been shown to reduce negative attitudes towards people with intellectual disabilities (Rillotta & Nettelbeck, 2007). However, direct contact between groups is not always logistically or ethically possible. While inclusive education has increased some children's contact with peers with intellectual disabilities, for those not in inclusive schools and for adults, naturally occurring direct intergroup contact with people with intellectual disabilities is often unlikely because the 'out-group' is a numerical, and mostly invisible, minority in society. In addition, it is hard to control the quality and tone of naturally occurring direct contact. As such, although direct contact can improve attitudes and should occur on a much larger scale, it is not necessarily a realistic large-scale intervention.

Imagined intergroup contact addresses these limitations of direct contact. It consists of the mental simulation of a social interaction with a member or members of an out-group (Crisp & Turner, 2009). It is based upon findings that imagining a situation evokes very similar emotional (Dadds et al., 1997) and neurological responses (Farah, 1989; Kosslyn et al., 2001) to experiencing the same situation in real life. Although a relatively new concept, a meta-analysis of over 70 studies has shown imagined intergroup contact to be effective in improving attitudes, emotions, intentions and behaviour towards the out-group (Miles & Crisp, 2014). Not

only has imagined intergroup contact proven effective in reducing stigma towards various minority groups such as children with physical disabilities, older adults, homosexuals and people with schizophrenia (Cameron et al., 2011; Turner et al., 2007; West et al., 2011), it has also been found to improve explicit and implicit attitudes (Miles & Crisp, 2014; Turner & Crisp, 2010).

A reduction in negative attitudes is most likely when the imagined contact is primed to be positive rather than neutral (Stathi & Crisp, 2008). Participants who were instructed to have positive imagined contact with an elderly or homosexual person held more positive attitudes after the task compared to participants who were instructed to imagine an outdoor scene (the control group), and those instructed to imagine meeting an elderly or homosexual person (neutral imagined contact) (Turner et al., 2007). Crisp et al. (2008) suggest that this is because without prompting a positive tone, a negative interaction could be imagined; this is supported by evidence that neutral imagined contact can result in more negative attitudes (Stephan et al., 2000). Positive imagined contact leads to positive traits being attributed to the target out-group (Stathi & Crisp, 2008). This is thought to be essential in breaking down the cognitive basis for in-group favouritism (Robbins & Krueger, 2005).

While imagined intergroup contact (neutral and positive) reduces negative attitudes, it does not reduce it as much as direct contact does (Crisp & Turner, 2013; Paolini et al., 2004). Nonetheless, it encourages people to engage in direct contact subsequently (Husnu & Crisp, 2010). Overall it would seem that imagined contact may offer an introductory, inexpensive and practical intervention that can go a small but positive way towards improving attitudes where opportunity for direct contact is limited or impractical (Crisp & Turner, 2009). To date, the effects of imagined contact associated with intellectual disability have only been investigated in one study (Falvo et al., 2014). This study, conducted in Italy, found that imagined contact can enhance humanisation of people with intellectual disabilities, using an affect based measure

of humanity attributions by Demoulin et al. (2004). While useful initial evidence, the study leaves many questions unanswered about the effects of imagined contact on attitudes more broadly and when compared to other interventions.

*The Current Study*

The present study aimed to compare the effects of brief interventions with different education and contact components on the affective and behavioural components of attitudes, specifically emotional reactions, intergroup anxiety and social distance, in the short- and medium-term. We hypothesised that an educational film that provides information and indirect contact with people with intellectual disabilities would improve affective responses, reduce social distance and intergroup anxiety more than text based education alone. We also predicted that adding positive imagined contact to this intervention would be more effective than adding neutral imagined contact.

## Materials and Method

*Participants*

Participants who were not a UK citizen, failed to spend at least four minutes on the five minute imagined contact task, or failed to complete all measures were excluded from analysis. Follow-up data were excluded if the follow-up survey had been completed more than once by the same person, and for participants removed from the original survey for the aforementioned reasons.

The final sample of 401 UK residents (261 female, 140 male) with a mean age of 24.97 (SD=9.1; Range=18-66 years) was recruited. Of participants 61.1% reported previous contact with someone with an intellectual disability.

A power analysis performed using G*Power 3 (Faul et al., 2007), specifying alpha at 5% and desired power at 90%, indicated that in order to detect a medium effect size a sample of 270 participants would be required, and around 1650 participants to detect a small effect size.

*Procedure*

Participants were recruited through the use of social networking sites, email advertisements, and an institutional participant pool. A prize draw for retail vouchers was offered as incentive. Participants were asked permission to be contacted via email for the follow-up survey, which was sent four to six weeks after completion of the first survey. The follow-up survey had a response rate of 48.6% and re-measured the dependent variables. Ethical approval for the study was granted by the authors' institutional ethics committee.

*Materials*

The sample were allocated to six interventions in a quasi-random manner (different birth months were allocated to different interventions by the computer programme), and presented with the brief interventions as detailed in Table 1. All participants were presented with text based information about intellectual disability at the beginning of the survey (see Appendix). In addition, participants in five of the six groups then watched a brief (two minutes) film (see below) and four groups completed an imagined contact (IC) task as the final part of the intervention; see Table 1.

**-Insert Table 1 about here-**

The brief film explained what 'learning disability' (the term used most widely in the UK to denote intellectual disability) is, and that it can vary from being obvious to hidden. It showed people with intellectual disabilities talking about their own experiences of being

treated as different and abused in public. The last section of the film showed photos of people with intellectual disabilities with a voice over providing basic advice on how to communicate and interact with someone with an intellectual disability. The IC task varied in contact target (intellectual disability or control) and tone (neutral or positive IC) but in all four IC conditions was delivered analogous to studies by Turner et al. (2007) and West et al. (2011), albeit in a digital rather than face-to-face format. Accordingly, participants were given five minutes to engage in IC, and asked to note down intermittently what they were imagining. A large digital clock was placed on the screen to encourage participants to use the full five minutes.

*Measures*

Regardless of group, participants completed the following measures after the brief interventions and again at follow-up: the *General Evaluation Scale* (Wright et al., 1997) was used to measure attitudes. It consists of six semantic-differential scales (e.g. admiration – disgust, friendly – hostile), each rated using a 9-point Likert scale. Participants were asked to describe how they felt about people with intellectual disabilities in terms of these adjectives. A mean score across the six items was calculated, with higher scores indicating more positive attitudes. The internal reliability of this scale was very good ($\alpha$ =.84).

Intergroup anxiety was measured using the *Intergroup Anxiety Scale* (Stephan & Stephan, 1985). Participants were asked to rate the extent to which they would feel five emotions (e.g. awkward, relaxed) if they met someone with an intellectual disability, using a 7-point Likert scale. A mean score across the five items was calculated, with positive items reversed so that a higher score indicated increased intergroup anxiety. The internal reliability of this scale was very good ($\alpha$ =.80).

Social Distance was measured using the *Social Distance Subscale* of the *Intellectual Disability Literacy Scale* (Scior & Furnham, 2011). It consists of five items describing social scenarios of varying intimacy; respondents rated their willingness to engage in each using a 7-point Likert. A mean score for the five reversed items was calculated; a higher score indicating more desire for social distance. The internal reliability of this scale was very good ($\alpha$ =.90).

Finally, demographic data were collected, including age, gender, ethnicity, educational attainment and whether the participant had previous contact with someone with an intellectual disability.

*Statistical Analysis*

The data were analysed using SPSS version 22. The data underwent analysis to ensure that any differences between groups were not the result of group differences. The six groups did not differ in their gender composition, $\chi^2$ (5) = 8.59, $p$ =.13, age, $F$(5, 401) = 32.14, $p$ = .86, or proportion reporting previous contact, $\chi^2$ (10) =14.38, $p$ =.16. The first survey was analysed using the Mann-Whitney U test, whilst the Wilcoxon signed-rank test was used for the follow-up data. The Bonferroni correction was applied to all post-hoc tests.

**Results**

*Differences between conditions in the short-term*

Medians and ranges for scores provided immediately after the intervention (time 1) for the six groups are presented in Table 2. A Kruskal Wallis test revealed a significant effect of the type of intervention on attitude scores, $\chi^2(3) = 15.87$, $p$ = .001. A post-hoc analysis using Mann-Whitney tests showed medium size differences between groups 1 (text only, no task) and 2 (text and film, no IC task), $U$ = 1672, $Z$ = -3.45, $p$ = .001, $r$ = .29, and between interventions

1 and 5 (text, film and positive IC), $U = 1992$, $Z = 3.17$, $p = .002$, $r = .26$. Attitude scores were generally higher, and thus more positive, for those in intervention conditions 2 and 5 when compared to individuals in intervention 1. Attitude scores showed no or only small, non-significant differences between interventions 1 and 3 (text, film and neutral IC), $U = 1718$, $Z = 1.52$, $p = .128$, $r = .13$; interventions 2 and 3, $U = 1293$, $Z = 1.79$, $p = .073$, $r = .17$; interventions 2 and 5, $U = 2199$, $Z = 0.17$, $p = .865$, $r = .01$; and interventions 3 and 5, $U = 1505$, $Z = -1.60$, $p = .112$, $r = .14$. These findings indicate that providing education and indirect contact (intervention 2), or education, indirect contact and positive IC (intervention 5) seem to have more favourable effects on attitudes in the short-term than either brief text based information alone or combined with a neutral IC task. Factoring in the duration of the interventions, combining education and indirect contact delivered via film (intervention 2) appeared most promising.

**-Insert Table 2 about here-**

The type of intervention also affected intergroup anxiety scores, $\chi^2(3) = 15.40$, $p = .002$. Post-hoc analyses using Mann-Whitney U tests revealed significant differences between interventions 1 and 2, $U = 1843$, $Z = -2.76$, $p = .006$, $r = .23$, with the former more likely to report higher levels of intergroup anxiety than those in intervention 2. Significant differences were also found for interventions 1 and 5, $U = 2098$, $Z = 2.77$, $p = .006$, $r = .23$, with individuals in intervention 1 reporting higher levels of intergroup anxiety than those in intervention 5. Intergroup anxiety scores varied significantly between interventions 2 and 3, $U = 1134$, $Z = 2.70$, $p = .007$, $r = .25$, with higher levels of intergroup anxiety reported for intervention 3. Furthermore, interventions 3 and 5 differed, $U = 1264$, $Z = -2.84$, $p = .004$, $r = .26$, with participants in intervention 3 reporting greater intergroup anxiety. Intergroup anxiety scores did not differ between interventions 1 and 3, $U = 2015$, $Z = 0.12$, $p = .906$, $r =$

.01, or interventions 2 and 5, $U = 2210$, $Z = 0.12$, $p = .908$, $r = .01$. Similar to attitude scores, interventions 2 and 5 seemed most beneficial in reducing intergroup anxiety in the short-term. Accounting for intervention duration, intervention 2 again appeared most advantageous.

Finally, social distance scores were found to vary as a function of intervention condition, $\chi^2(3) = 19.34$, $p = .001$. Post-hoc analyses using Mann-Whitney U tests, revealed small to moderate differences between interventions 1 and 2, $U = 1880$, $Z = -2.61$, $p = .009$, $r = .22$, and between interventions 1 and 5, $U = 1753$, $Z = 4.07$, $p = .001$, $r = .33$. Participants in intervention 1 expressed more desire for social distance than those in interventions 2 and 5. Social distance differed a little between interventions 1 and 3, $U = 1494$, $Z = 2.58$, $p = .010$, $r = .23$; interventions 2 and 3, $U = 1584$, $Z = 0.13$, $p = .897$, $r = .01$; interventions 2 and 5, $U = 1770$, $Z = 2.10$, $p = .036$, $r = .18$; interventions 3 and 5, $U = 1564$, $Z = -1.29$, $p = .196$, $r = .12$. Intervention 2 and intervention 5 again emerged as apparently most beneficial in reducing social distance towards those with intellectual disabilities immediately post-intervention.

*Effects at Follow-up*

To investigate whether effects of the interventions observed at time 1 holds at four to six-week follow-up, we then looked at data for those participants who provided data at follow-up; see Table 3.

**-Insert Table 3 about here-**

A Wilcoxon signed-ranks test was used to assess differences between each group's scores at time 1 and follow-up, see Table 4. Little change in attitudes, intergroup anxiety and social distance from time 1 to follow-up was observed. This is promising, as it suggests that positive effects of a brief educational film and IC task do not diminish immediately. However, intergroup anxiety reduced substantially from time 1 to follow-up for interventions

5 and 6, $Z = 2.53$, $p = .01$, $r = .43$ and $Z = 2.26$, $p = .02$, $r = .44$ respectively. Thus a positive IC task not only showed more positive effects immediately after the task compared to a neutral IC task but also resulted in lowered intergroup anxiety over time.

**-Insert Table 4 about here-**

In summary, brief film-based education combined with indirect contact delivered via the internet was more effective in improving attitudes than textual education alone. The effects of the former were enhanced by a positively toned IC task, whilst a neutral IC task appeared to result in raised intergroup anxiety. At follow-up there were few differences to time 1 indicating that any positive effects of the interventions were maintained. In addition, intergroup anxiety was reduced further over time for the positive IC group, suggesting that a brief film combining education and indirect contact and followed by a positive IC task shows the most promising effects of the interventions tested here.

## Discussion

In an attempt to advance our understanding of different web-based interventions and direct future research, the present study compared six interventions consisting of different education, indirect contact and imagined contact components. Their effects on affective responses, intergroup anxiety and social distance were assessed immediately post-intervention and at four to six-week follow-up. The intervention combining film based education and indirect contact with adults with intellectual disabilities had small to medium size positive effects on affect, intergroup anxiety and social distance when compared to an educational text alone. Social distance was further reduced with the addition of a positively toned imagined contact task. Conversely, adding a neutral imagined contact task to the film based intervention resulted in increased intergroup anxiety. These effects were maintained at

follow-up with further reductions in intergroup anxiety for the intervention integrating education, indirect contact and positive imagined contact.

Before discussing the present findings in greater detail, we must stress that this study was a pilot. Due to the small group sizes and unrepresentative sample, the findings should be viewed above all as pointers for future research. The finding that the six groups tested were similar in terms of key demographics suggests differences in the outcomes are likely to have resulted from the interventions and not participant characteristics. However, this conclusion should be viewed as tentative until evidence from larger randomised controlled trials is available. Participants were typically young, highly educated and likely to have had previous contact with individuals with intellectual disabilities. These respondent characteristics have been correlated with more positive attitudes in previous studies (Page & Islam, 2015; Scior, 2011).

Based on the findings, an intervention that solely educates the public about what intellectual disability is using written material, not surprisingly, appears of little value for efforts to achieve greater social acceptance of people with intellectual disabilities when compared to other interventions. However, given widespread misunderstanding regarding what constitutes an intellectual disability (Coles & Scior, 2012; Mencap, 2008), provision of such information should be a component of any intervention designed to improve attitudes to intellectual disability.

The results suggest that there is promise in employing brief film based interventions which incorporate education, indirect contact and advice on social interactions with people with intellectual disabilities. The film presented in this study was only two minutes long, yet yielded small to medium effects. Such promising findings are in line with Walker and Scior's (2013) study, which found that a similar 10-minute film had small favourable effects on

attitudes and social distance. This supports the notion that while direct contact should be encouraged wherever possible, indirect contact can improve the public's outlook on intellectual disabilities. However, it is worth noting that Walker and Scior (2013) concluded that a film providing a first-hand account of injustices, harassment and discrimination experienced by someone with an intellectual disability provoked stronger emotional responses and better outcomes than one showing individuals with and without intellectual disabilities as equal partners. Larger trials, and well as further research designed to identify the most promising format and contents of digital interventions, certainly seem called for.

Whilst the addition of a positive imagined contact task reduced social distance when compared to the film based intervention, it was not superior in its effect on attitudes or intergroup anxiety in the short-term. There are a number of potential explanations for these results. It is possible that the film created a ceiling effect for attitudes and intergroup anxiety which could not be further improved by the addition of an imagined contact task. Certainly it is conceivable that by providing information stressing the range of presentations subsumed under the term 'intellectual disability', providing indirect contact with diverse individuals with intellectual disabilities and offering straightforward guidance on how to interact and communicate with someone with intellectual disability, the film tackled feelings of uncertainty about interactions with individuals with intellectual disabilities reported by the general public (McCaughey & Strohmer, 2005).

Alternatively, it is possible that the benefits of imagined contact in reducing negative attitudes to intellectual disability are minimal when it is delivered via the internet. To date, the effectiveness of imagined contact delivered via the internet, rather than as the usual group based face-to-face intervention, has not been explored. Thus, a much less controlled digital procedure containing extraneous variables may not be optimal for imagined contact to work effectively. The imagined contact tasks were carefully designed to ensure that participants co-

operated with instructions, including use of a large five-minute countdown timer displayed in the middle of the screen, participants being reminded to use the entire five minutes, and asked to write down intermittently in an open text box what they were imagining; these measures by no means guarantee active engagement with the task, although similar reservations could be raised about *in vivo* delivered imagined contact. Finally, the fact that over 60 per cent of participants reported prior contact with someone with an intellectual disability is also likely to have limited the benefits of the interventions, given the established link between contact and attitudes (Blundell et al., 2015; Morin et al., 2013; Page & Islam, 2015).

Nevertheless, it is worth noting that the addition of a positive imagined contact task showed benefits for intergroup anxiety at follow-up suggesting that some positive effects may take time to develop. As such, previous research that has usually only measured the impact of imagined contact immediately post-delivery (e.g. Crisp & Turner, 2009; West et al., 2011) may have under-estimated its effects. Nevertheless, it must be stressed that owing to the small sample size, great caution should be exercised when considering the follow-up findings. In any case, the results suggest that a neutral imagined contact task can be harmful to efforts to reduce intellectual disability stigma and as such should be avoided. This conclusion supports West et al.,'s (2011) argument that mental imagery can have undesirable effects as negative simulations can increase negative affect towards out-groups.

In addition to the limitations noted above, some other issues arising from the use of convenience sampling merit consideration. Participants were self-selected, raising the risk of sampling bias – in fact the high proportion reporting prior contact suggests that those who chose to participate in the study may have had a prior higher degree of awareness or interest in intellectual disabilities and more positive attitudes. Efforts should therefore be made to conduct similar research with representative samples, and by focusing on populations known to hold less positive attitudes.

## Conclusions

Even though educational approaches do not appear to hold the most promise in improving lay attitudes towards people with intellectual disabilities, in view of the many misconceptions associated with intellectual disability they must play a part. In the present study education and indirect contact appeared to supplement one another, engendering a brief yet relatively rich approach to reducing intergroup bias. The addition of a positive imagined contact to these components may enhance positive effects, especially in reducing social distance in the short-term and intergroup anxiety further in the longer term. Neutral imagined contact appears counter-indicated.

In the context of limited resources, clarifying which combinations of web-based interventions are best, ascertaining the optimal content and format of delivery of these, examining how respondent characteristics influence their effectiveness and determining whether desired effects are sustained, warrant further consideration with larger representative samples. The development of effective interventions, which reduce intergroup bias towards those with intellectual disabilities, is imperative as these promote the social inclusion of individuals with intellectual disabilities into mainstream society.

**References**

Allport, G. (1954). *The nature of prejudice*. Reading, MA: Addison-Wesley.

Blundell, R., Potts, H.W., Das, R., & Scior, K. (2016). The Association between Contact and Intellectual Disability Literacy, Causal Attributions and Stigma. *Journal of Intellectual Disability Research, 60(3),* 218-227.

Cameron, L., Rutland, A., Turner, R., Holman-Nicolas, R., & Powell, C. (2011), Changing attitudes with a little imagination: Imagined contact effects on young children's intergroup bias. *Anale de Psychologia,* 27, 708-717.

Clement, S., Lassman, F., Barley, E., Evans-Lacko, S., Williams, P., Yamaguchi, S., ... Thornicroft, G. (2013). Mass media interventions for reducing mental health-related stigma. *Cochrane Database of Systematic Reviews*, *2013*(7), [CD009453].

Coles, S. & Scior, K. (2012). Public attitudes towards people with intellectual disabilities: a qualitative comparison of white British & South Asian people. *Journal of Applied Research in Intellectual Disabilities,* 25, 177-188.

Corrigan, P. W., Morris, S. B., Michaels, P. J., Rafacz, J. D., & Rüsch, N. (2012). Challenging the public stigma of mental illness: A meta-analysis of outcome studies. *Psychiatric Services,* 63, 963-973.

Crisp, R. J., Stathi, S., Turner, R. N., & Husnu, S. (2008). Imagined intergroup contact: Theory, paradigm and practice. *Social and Personality Psychology Compass,* 3, 1-18.

Crisp, R. J., & Turner, R. N. (2009). Can imagined interactions produce positive perceptions? Reducing prejudice through simulated social contact. *American Psychologist,* 64, 231-240.

Crisp, R. J., & Turner, R. N. (2013). Imagined intergroup contact: Refinements, debates, and clarifications. In: *Advances in Intergroup Contact* (Eds G. Hodson & M. Hewstone), pp. 135-151. London: Psychology Press.

Dadds, M. R., Bovbjerg, D. H., Redd, W. H., & Cutmore, T. R. (1997). Imagery in human classical conditioning. *Psychological Bulletin,* 122, 89–103.

Demoulin, S., Leyens, J., Paladino, M.P., Rodriguez, R.T., Rogriguez, A., & Dovidio, J.F. (2004). Dimensions of 'uniquely' and 'non-uniquely' human emotions. *Cognition and Emotion,* 18, 71-96.

Falvo, R., Capozza, D., Hichy, Z., & Di Sipio, A. (2014). Imagined contact favors humanization of individuals with intellectual disabilities: A two-wave study. *Life Span and Disability*, 17, 39-57.

Farah, M. (1989). The neural basis of mental imagery. *Trends in Neuroscience,* 12, 395–399.

Faul, F., Erdfelder, E., Lang, A. G., & Buchner, A. (2007). G*Power 3: A flexible statistical power analysis for the social, behavioral, and biomedical sciences. *Behavior Research Methods*, 39, 175-191.

Fyson, R. & Kitson, D. (2010). Human rights and social wrong doings: Issues in safeguarding adults with learning disabilities. *Practice: Social Work in Action,* 22, 309–320.

Gordon, P. A., Feldman, D., Tantillo, J. C., & Perrone, K. (2004). Attitudes regarding interpersonal relationships with persons with mental illness and mental retardation. *Journal of Rehabilitation,* 70, 50–56.

Hatton, C., Glover, G., Emerson, E., & Brown, I. (2015). *People with learning disabilities in England 2015*. Durham: Improving Health & Lives Learning Disabilities Observatory.

Husnu, S., & Crisp, R. J. (2010). Elaboration enhances the imagined contact effect. *Journal of Experimental Social Psychology,* 46, 943-950.

Katz, S., Shemesh, T., & Bizman, A. (2000). Attitudes of university students towards the sexuality of persons with mental retardation and persons with paraplegia. *British Journal of Developmental Disabilities,* 46, 109–117.

Kosslyn, S. M., Ganis, G., & Thompson, W. L. (2001). Neural foundations of imagery. *Nature Reviews: Neuroscience,* 2, 635–642.

McCaughey, T. J., & Strohmer, D. C. (2005). Prototypes as an indirect measure of attitudes toward disability groups. *Rehabilitation Counselling Bulletin,* 48, 89–99.

McEvoy, S. C., & Keenan, E. (2014). Attitudes towards people with disabilities – what do people with intellectual disabilities have to say? *British Journal of Learning Disabilities,* 42, 221-227.

Mehta, N., Clement, S., Marcus, A.-C., Bezborodovs, S., Evans-Lacko, S., Palacios, M., . . . , Thornicroft, G. (2015). Evidence for effective interventions to reduce mental health-related stigma and discrimination in the medium and long term: Systematic review. *British Journal of Psychiatry,* 207, 377-384.

Mencap (2000). *Living in Fear*. London: Mencap.

Mencap (2007). *Bullying wrecks lives: The experiences of children and young people with a learning disability*. London: Mencap.

Mencap (2008). *Lack of knowledge of learning disability revealed.* Retrieved from https://www.mencap.org.uk/node/6998.

Miles, E., & Crisp, R. J. (2014). A meta-analytic test of the imagined contact hypothesis. *Group Processes and Intergroup Relations,* 17, 3-26.

Morin, D., Rivard, M., Crocker, A. G., Boursier, C. P., & Caron, J. (2013). Public attitudes towards intellectual disability: A multidimensional perspective. *Journal of Intellectual Disability Research,* 57, 279-292.

Nagata, K. K. (2007). The measurement of the Hong Kong-based ‘baseline survey of students’ attitudes toward people with a disability’: Cross-cultural validation in Lebanon. *International Journal of Rehabilitation Research,* 30, 239–241.

National Disability Authority (2011). *A national survey of public attitudes to disability in Ireland 2011*. Dublin: National Disability Authority.

Page, S.L., & Islam, M.R. (2015). The role of personality variables in predicting attitudes toward people with intellectual disability: An Australian perspective. *Journal of Intellectual Disability Research,* 59, 741-745.

Paolini, S., Hewstone, M., Cairns, E. & Voci, A. (2004). Effects of direct and indirect cross-group friendships on judgments of Catholics and Protestants in Northern Ireland: The mediating role of anxiety-reduction mechanism. *Personality and Social Psychology Bulletin* 30, 770–786.

Pettigrew, T. F., & Tropp, L. R. (2006). A meta-analytic test of intergroup contact theory. *Journal of Personality and Social Psychology,* 90, 751-783.

Quarmby, K. (2008). *Getting away with murder: Disabled people's experiences of hate crime in the UK*. London: Scope.

Rillotta, F., & Nettelbeck, T. (2007). Effects of an awareness program on attitudes of students without an intellectual disability towards persons with an intellectual disability. *Journal of Intellectual and Developmental Disability*, 32, 19–27.

Robbins, J. M., & Krueger, J. I. (2005). Social projection to ingroups and to outgroups: A review and meta-analysis. *Personality and Social Psychology Review,* 9, 32–47.

Scior, K. (2011). Public awareness, attitudes and beliefs regarding intellectual disability: A systematic review. *Research in Developmental Disabilities,* 32, 2164–2182.

Scior, K., & Furnham, A. (2011). Development and validation of the Intellectual Disability Literacy Scale for assessment of knowledge, beliefs and attitudes to intellectual disability. *Research in Developmental Disabilities,* 32, 1530-1541.

Scior, K., & Werner, S. (2015). *Changing attitudes to learning disability: A review of the evidence.* London, Mencap, University College London & the Hebrew University of Jerusalem.

Sin, C. H., Hedges, A., Cook, C., Mguni, N., & Comber, N. (2009). *Disabled people's experiences of targeted violence and hostility, Research report 2*. Manchester: Equality and Human Rights Commission.

Staniland, L. (2011). *Public perceptions of disabled people: Evidence from the British Social Attitudes Survey 2009*. London: Office for Disability Issues.

Stathi,S., & Crisp, R. J. (2008). Imagining intergroup contact promotes projection to outgroups. *Journal of Experimental Social Psychology,* 44, 943–957.

Stephan, W. G., Diaz-Loving, R., & Duran, A. (2000). Integrated threat theory and intercultural attitudes: Mexico and the United States. *Journal of Cross-Cultural Psychology,* 31, 240–249.

Stephan, W. G., & Stephan, C. W. (1985). Intergroup anxiety. *Journal of Social Issues*, 41, 157-175.

Turner, R. N., & Crisp, R. J. (2010). Imagining intergroup contact reduces implicit prejudice. *British Journal of Social Psychology,* 49, 129-142.

Turner, R. N., Crisp, R. J., & Lambert, E. (2007). Imagining intergroup contact can improve intergroup attitudes. *Group Processes & Intergroup Relations*, *10*, 427-441.

Walker, J., & Scior, K. (2013). Tackling stigma associated with intellectual disability among the general public: A study of two indirect contact interventions. *Research in Developmental Disabilities,* 34, 2200-2210.

West, K., Holmes, E., & Hewstone, M. (2011). Enhancing imagined contact to reduce prejudice against people with schizophrenia. *Group Processes & Intergroup,* 14, 407-428.

Westbrook, M. T., Legge. V., & Pennay, M. (1993). Attitudes towards disabilities in a multicultural society. *Social Science & Medicine,* 36, 615–623.

Wright, S. C., Aron, A., McLaughlin-Volpe, T., & Ropp, S. A. (1997). The extended contact effect: Knowledge of cross-group friendships and prejudice. *Journal of Personality & Social Psychology*, 73, 73-90.

Table 1. *Brief Intervention/s delivered*

| Group | Text | Educational film | Neutral IC task | Neutral Control task | Positive IC task | Positive Control task |
|---|---|---|---|---|---|---|
| 1 | √ | _ | _ | _ | _ | _ |
| 2 | √ | √ | _ | _ | _ | _ |
| 3 | √ | √ | √ | _ | _ | _ |
| 4 | √ | √ | _ | √ | _ | _ |
| 5 | √ | √ | _ | _ | √ | _ |
| 6 | √ | √ | _ | _ | _ | √ |

Table 2. *Medians (ranges) for all dependent variables by group*

| Group | Condition | *N* | Median (Range) | | |
|---|---|---|---|---|---|
| | | | Attitudes | Intergroup Anxiety | Social Distance |
| 1 | Neutral, IC | 51 | 6.83 (4.67-9.00) | 4.00 (1.80-5.80) | 2.20 (1.00-5.20) |
| 2 | Neutral, Control | 78 | 6.83 (4.17-9.00) | 3.70 (1.20-6.20) | 2.40 (1.00-5.00) |
| 3 | Positive, IC | 71 | 7.33 (4.00-9.00) | 3.00 (1.00-5.80) | 1.80 (1.00-4.60) |
| 4 | Positive, Control | 58 | 6.67 (3.50-8.83) | 3.70 (1.80-5.60) | 2.40 (1.00-4.70) |
| 5 | Text only, no task | 80 | 6.58 (3.80-9.00) | 4.00 (1.00-5.80) | 2.80 (1.00-6.00) |
| 6 | Text and Film, no task | 63 | 7.67 (4.60-9.00) | 3.40 (1.00-5.20) | 2.00 (1.00-4.60) |

Table 3. *Medians and Ranges for participants who completed the follow-up survey*

| | | Original Survey | | | Follow-up survey | | |
|---|---|---|---|---|---|---|---|
| | | Median (Range) | | | Median (Range) | | |
| Group | N | Attitudes | Intergroup Anxiety | Social Distance | Attitudes | Intergroup Anxiety | Social Distance |
| 1 | 26 | 6.92 (4.67-9.00) | 4.00 (1.80-5.80) | 2.20 (1.00-5.20) | 6.83 (3.67-9.00) | 3.70 (1.50-5.40) | 2.40 (1.00-5.60) |
| 2 | 41 | 6.83 (4.22-9.00) | 3.60 (1.20-6.20) | 2.20 (1.00-5.00) | 7.00 (4.50-9.00) | 3.40 (1.00-5.80) | 2.20 (1.00-5.20) |
| 3 | 35 | 7.17 (4.00-9.00) | 3.20 (4.00-9.00) | 1.80 (1.00-4.40) | 7.00 (3.80-9.00) | 3.00 (1.00-5.60) | 2.00 (1.00-5.80) |
| 4 | 26 | 6.42 (5.00-8.83) | 3.90 (2.20-5.60) | 2.60 (1.00-4.70) | 7.00 (4.33-8.33) | 3.60 (1.80-6.00) | 2.50 (1.00-4.40) |
| 5 | 26 | 6.67 (5.00-9.00) | 4.00 (1.00-5.20) | 3.00 (1.00-5.40) | 6.50 (4.83-9.00) | 3.80 (1.00-5.00) | 3.00 (1.00-5.40) |
| 6 | 41 | 7.92 (4.83-9.00) | 2.90 (1.20-5.20) | 2.00 (1.00-4.60) | 7.83 (5.72-9.00) | 2.60 (1.00-5.40) | 2.00 (1.00-4.00) |

Table 4. *Results of Wilcoxon signed-ranks test*

| | Attitudes | | | Intergroup Anxiety | | | Social Distance | | |
|---|---|---|---|---|---|---|---|---|---|
| Group | *Z* | *P* | *R* | *Z* | *P* | *R* | *Z* | *P* | *R* |
| 1 | 0.79 | 0.429 | 0.15 | 1.88 | 0.060 | 0.37 | 0.67 | 0.506 | 0.13 |
| 2 | 1.21 | 0.227 | 0.19 | 0.51 | 0.609 | 0.08 | 1.11 | 0.268 | 0.17 |
| 3 | 0.47 | 0.636 | 0.08 | 2.53 | 0.012 | 0.43 | 1.16 | 0.245 | 0.20 |
| 4 | 0.58 | 0.563 | 0.11 | 2.26 | 0.024 | 0.44 | 1.36 | 0.172 | 0.27 |
| 5 | 0.35 | 0.726 | 0.06 | 1.32 | 0.187 | 0.21 | 0.63 | 0.53 | 0.10 |
| 6 | 0.74 | 0.457 | 0.15 | 0.21 | 0.831 | 0.04 | 0.36 | 0.716 | 0.07 |

## Appendix

Textual information provided to all participants:

This questionnaire asks you about how you feel towards people with learning disabilities. For the purposes of the questionnaire, the term 'learning disabilities' refers to people who have difficulties with thinking (intellectual function) and coping on their own on a day-to-day basis (social functioning). These difficulties would have started before adulthood (18 years old).

In some countries, a learning disability is referred to as an intellectual disability. In the past the terms ‘mental handicap’ and ‘mental retardation’ have also been used. Some specific syndromes and conditions like Down’s syndrome, Fragile X and Autism may in some cases be associated with having a learning disability.

Learning disabilities are different from specific learning difficulties such as Dyslexia, which are NOT the focus of this study.