VOLUME 1

RERSEARCH COMPONENT

THE IMPACT OF CONTACT WITH PERSONS WITH A DISABILITY ON ATTITUDES TOWARDS DISABILITY AMONGST THE GENERAL POPULATION AND THOSE WITH A NEWLY ACQUIRED SPINAL CORD INJURY

BY

CHRISTINE MARY WILSON

A thesis submitted to

The University of Birmingham

for the CPD degree of

DOCTORATE IN CLINICAL PSYCHOLOGY

Department of Clinical Psychology
School of Psychology
University of Birmingham
January 2014

Abstract

Background. A review of the literature addressed intergroup contact between physically disabled and non-disabled groups using quality and data extraction frameworks to evaluate study design and contact effectiveness. Review findings showed intergroup contact of this kind led to reduced prejudice towards the disabled and may benefit those with newly acquired disabilities.

Aim. It was proposed that pre-injury contact with disabled people could influence post-injury perceptions of disability, for those with newly acquired disability.

Method. Twenty six people with a newly acquired spinal cord injury were assessed during their initial admission to a specialist centre. The effects of pre-injury contact with disabled persons were assessed, by evaluating post-injury illness perceptions. Any associations between illness perceptions and psychological wellbeing, engagement and functional achievements in rehabilitation, were also measured.

Findings. Pre-injury contact was significantly associated with post-injury perceptions of controllability of their condition but not with other illness representations. No other significant associations were found with psychological or physical rehabilitation outcomes.

Conclusions. Contact between those with new disabilities and other disabled people might help individuals adjust to their condition. More research needs to be conducted with larger samples using more relevant and better designed, measures of rehabilitation outcomes and adjustment.

Dedication

I would like to dedicate this thesis to all the staff and patients at the Midlands Centre for Spinal Injuries, in acknowledgement of everything they have taught me over the last twenty three years.

Acknowledgements

I would like to thank my research supervisor Gerry Riley for all his fair and specific feedback, his unstinting and patient support and for his gentle humour.

I also appreciate the help and support I have received from the Psychology team at the MCSI. Thanks to Mary and Steve for supporting and listening, to Sally for her wisdom and encouragement, to Natalie for her work on recruiting people to the study and to Caroline for her kind and patient help with formatting.

I would also like to thank my family for putting up with me for the last few years whilst I have been studying, especially my mum for trying not to mind when I have not had enough time for her. Finally I would like to thank my sons Daniel, James and Adam for their encouragement, willingness to listen and their technological expertise.

Contents of Volume 1

List of Tables for Volume 1

Overview

This thesis is submitted in fulfilment of the requirements for the CPD degree of Doctorate in Clinical Psychology (Clin.Psy.D.) at the University of Birmingham. The thesis consists of one volume.

Volume 1

This volume comprises three chapters. The first chapter is a literature review of intergroup contact studies involving contact between disabled and non-disabled groups. The second chapter is a quantitative study investigating the effects of pre-injury contact with disabled people on the post-injury illness perceptions of those with a newly acquired spinal cord injury. The third chapter is a public domain briefing document, providing an accessible summary of the literature review and the empirical paper.

Chapter One:

Assessing the Role of Intergroup Contact in Positively Influencing Attitudes Towards Physical Disability.

Abstract

Background. Following the publication of Allport's (1954) Contact Hypothesis, there has been a growing body of research addressing the role of intergroup contact in overcoming prejudice towards minority groups. The current review will focus on the intergroup contact research, which has taken place in the last thirty years, and explore its effectiveness in positively influencing attitudes towards the physically disabled.

Method. Four data bases were searched to identify quantitative research published between 1980 and 2013, concerning intergroup contact and the physically disabled. Included studies were evaluated using a qualitative framework to examine methodology and study design based on one proposed by Sale and Brazil (2004). A further framework was used to assess the quality of intergroup contact and its effectiveness in producing positive attitude change devised from that used by Pettigrew and Tropp (2006).

Findings. Twenty two papers were identified and 20 of these produced significant correlations between intergroup contact and positive attitude change indicating the effectiveness of intergroup contact in reducing prejudice towards the physically disabled. However, many of the studies were methodologically weak and lacked standardised and robust measures of contact and outcome. These methodological weaknesses also made it difficult to draw firm conclusions about the factors contributing to the beneficial effects of contact, and the maintenance and generalisation of any effect.

Conclusions. Although many of the studies were methodologically weak, there were sufficient numbers of better designed studies to conclude that intergroup contact, encompassing Allport's optimal conditions (Allport, 1954), led to positive attitude change. There was evidence that this change generalised to outgroup members not directly involved in the contact but less evidence that these changes were maintained over time.

There were several better designed studies, with good quality intergroup contact interventions and multifaceted outcome measures that addressed understanding the processes which took place during contact which contributed to reducing prejudice. It is suggested that a better understanding of intergroup contact benefits might help in the development of services to those with an acquired disability adjust to their new situation.

Keywords: *Intergroup contact, attitude to disability, contact hypothesis*

Introduction

In the 1950s Western governments sought to overturn prejudice towards minority groups, such as the physically disabled, in order to create desired changes in society. Individuals perceive themselves as belonging to a particular group because certain characteristics identify them as belonging to that group or ingroup, for example being female. Ingroup members view certain others as outgroup members because they do not share these characteristics, in this case, being male. Prejudice has been described as an "aversive or hostile attitude towards a person who belongs to a group simply because he belongs to that group, and is therefore presumed to have objectionable qualities ascribed to that group" (Allport, 1968, p.7). Allport (1954) put forward his Contact Hypothesis in which he proposed that prejudice could be positively influenced by contact with those from another group to whom one bore prejudice. An example of this would be intergroup contact that took place during government racial integration initiatives, like mixed race housing and schooling, in 1960s America. Allport purported that when people of differing racial origins lived alongside each other, then they were bound to meet in the course of going about their business, and eventually be in regular contact with one another. This would help them to understand and tolerate one another better, leading to friendship, integration and the breaking down of prejudice towards one another. This paper will review the research literature about the impact of intergroup contact on attitudes towards people with physical disabilities.

Allport's Contact Hypothesis. Allport highlighted four main elements, which he considered, key to contact having a beneficial effect on prejudice. Allport stated that prejudice would be reduced when members of different groups meet on an equal basis.

This could be established even if they did not have equal status outside the meeting, for example if they had equal opportunities to participate in a sports activity, (e.g. Krahe & Altwasser, 2006). Additionally, Allport thought it was important that the two groups were pursuing common goals, such as the maths task, in Johnson and Johnson's (1985) contact study. Cooperative activity was also emphasised by Allport, stressing that the activity should not be competitive but for the benefit of both groups, such as collecting wood for a camp fire. Finally the chances of reducing prejudice via intergroup contact could be assisted by institutional support, as in the case of many intergroup contact studies which have taken place in educational settings (e.g. Esposito & Peach, 1983).

Evidence supporting Allport's Contact Hypothesis. Evidence relating to Allport's contact hypothesis was reviewed by Pettigrew and Tropp's (2006) meta-analysis of 515 studies attempting to reduce prejudice through intergroup contact. Pettigrew and Tropp (2006) criticised previous work where "contact" was so poorly defined or described, that it was often not clear whether real contact between groups had actually occurred. They collected individual data, rather than data aggregated across the whole group. They looked in detail at contact and how its effects were measured and identified whether contact conditions optimised or at least approximated three of the four principles of Allport's Contact Theory. Pettigrew and Tropp looked at studies which approximated Allport's conditions (562 samples) and compared them to those which actively set out to test them (134 samples). They concluded that the more closely studies represented Allport's optimal conditions, the better the quality of the contact experience and associated positive attitudes. Pettigrew & Tropp (2006) tested all four of the conditions separately and found that all studies were institutionally sanctioned and that there was no evidence for the separate effects of the other three conditions

Next they evaluated the global effects of Allport's conditions and their results indicated that whether studies approximated Allport's conditions or directly addressed them, intergroup contact was associated with a reduction in prejudice in 94% of studies. Intergroup contact was better at reducing prejudice amongst those of differing, sexual, religious, and ethnic orientations, but less so when the differences were in age and disability, where there were also fewer studies. However Pettigrew and Tropp's (2006) meta-analysis provided evidence that intergroup contact for all kinds of groups, fostered positive attitude change, and Allport's optimal conditions produced the best results.

The role of generalisation. Intergroup contact has a very clear association with overturning prejudice, but in order for positive attitude change to influence social behaviour, the effects must spread beyond the context of the initial group contact. Only a small number of tests (152) in Pettigrew and Tropp's (2006) meta-analysis looked at whether changes in attitude resulting from contact were limited to the situation in which the contact occurred. More tests (1164) measured the generalisation from those individuals involved in the contact to the wider outgroup. Pettigrew and Tropp (2011), compared these two groups and found very significant changes in attitudes towards the wider outgroup, supporting generalisation of the effects of intergroup contact.

Generalisation may also be effected by how well the individual you were in contact with represented the wider outgroup from which they came, and how salient their group identity was during contact.

Moderators and mediators of intergroup contact. Group salience is one of a number of factors which might positively and negatively influence the impact of intergroup contact on attitude formation, as well as, generalisation of that attitude to the wider outgroup. These moderating and mediating factors play a role in maximising or minimising the potential of intergroup contact to reduce prejudice, in addition to adherence to Allport's optimal conditions and may provide some more answers as to the essential elements of intergroup contact which encourage positive attitude change.

Hewstone and Brown (1986) and Brown and Hewstone (2005) put forward the concept that enhanced salience through categorisation could lead to greater generalisation to the whole outgroup via intergroup contact. For example, Brown, Eller, Leeds, and Stace (2007) looked at friendships that developed between secondary school pupils from nearby state and public schools. They found that if a child was a good representative, or more typical, of their group positive attitude change was more likely to generalise to the whole outgroup than if the outgroup member was less representative. This finding suggests that clear group membership, or group salience, enhances generalisation of positive attitude change as the result of intergroup contact. In contrast, Brewer and Miller (1984) and Miller (2002) advocated decategorisation as the best means to maximise the benefits of intergroup contact. They stated that contact should focus on individual information, that was not related to group membership, to reduce the possibility of intergroup tensions and make the outgroup look more diversified as a whole. However if you increase individualisation, you reduce the category links to that group. In turn this reduces the potential for the generalisation of positive attitudes from the individual to the wider outgroup.

Further, the process of re-categorisation through intergroup contact has been proposed by Gaertner and Dovidio (2001). Here you replace two distinctly different group identities with a common superordinate group identity or a dual identity. Thus people can maintain their original ingroup identity together with their superordinate identity. For example Algerian and French people have their separate national identities but they share a common language in French.

The role of outgroup knowledge, anxiety reduction and empathy/ perspective taking. Pettigrew and Tropp (2008) reviewed 54 studies from their 2006 meta-analysis, and further studies (published between 2000 -2005) that directly measured the effects of three potential mediators of attitude change. They identified 11 studies that evaluated outgroup knowledge, 45 assessing anxiety reduction and nine measuring empathy and perspective taking. They found that simply gaining knowledge about the outgroup during contact had only a modest mediation effect.

High salience of outgroup membership during intergroup contact may run the risk of provoking anxiety about the contact from both group members. This could be counterproductive and cause negative emotional reactions like embarrassment and potential avoidance of intergroup contact. Paolini, Hewstone, Cairns, and Voci (2004) looked at the mediating role of anxiety reduction for more than 1000 students at Ulster University and members of the general population of Northern Ireland. Participants reported the number of their close outgroup friends at university and at home, or for the general population, in their local community (direct intergroup contact). They were also asked about their ingroup friends who had outgroup friends, (indirect intergroup contact) and their anxiety about imagining finding themselves alone among outgroup members.

Finally they were asked to rate their prejudice towards the outgroup (Catholic or Protestant) and their perceived variability of the outgroup to assess the role of categorisation salience. They found their results broadly similar for the two samples with the number of outgroup friends, direct and indirect, predicting outgroup attitudes and perceived variability of the outgroup, which was mediated by intergroup anxiety which, in turn, was negatively associated with perceived outgroup variability. Additionally Turner, Hewstone and Voci (2007) showed that self disclosure during intergroup contact predicted less anti-Asian prejudice, among white British high school students, through increased empathy towards Asians. Perspective taking may work as a mediator by reducing outgroup categorisation and increasing the overlap between one’s own ingroup identity and that of the outgroup like the model of re-categorisation described by Gaertner and Dovidio (2001) above.

The research reviewed here suggests that good quality intergroup contact, taking place over a period of time may work best to overcome prejudice. Such intergroup contact would at first address reducing anxiety about the contact, then allow individuals from each group to get to know each other better and learn about each other's perspectives before the differences in group membership were made more apparent, to encourage generalisation of effects.

Pettigrew and Tropp (2008) found that anxiety reduction, empathy and perspective taking accounted for two thirds of the contact effects but there was still a considerable portion unexplained. There were many other mediators that could have contributed which were not directly measured in the studies Pettigrew and Tropp analysed. Some of this gap in our knowledge might result from how research studies were constructed, the quality of contact and how and what measures were used to assess attitude change, and the generalisation of contact effects. Pettigrew and Tropp, (2006), pointed out that more effective studies were those with more rigorous designs, better control groups and multiple valid and reliable measures.

Summary. Intergroup contact has been found to be a useful method of breaking down stigma and discrimination and building more positive attitudes towards disadvantaged people in our society. However people with physical disabilities are still subject to negative attitudes and discrimination in our society (Livneh & Antonak, 1994; Wong, Thomas, Chan, Cardoso, Lam & Miller, 2004) and as a group, have received little attention in intergroup contact research. So it is important to consider whether intergroup contact can improve attitude and behaviour towards the physically disabled and what kinds of contact, facilitates such improvement.

Research aim. The aim of the current review is to evaluate research concerning intergroup contact that has taken place, between able bodied and physically disabled groups, over the last thirty years. The methodological quality of these studies will be evaluated by applying a framework provided by Sale and Brazil (2004). The quality and kind of contact, measures employed to evaluate intergroup contact and attitude change, will also be reviewed by applying a further framework based on the quality standards used by Pettigrew and Tropp (2006) and Pettigrew and Tropp (2008).

Method

Search strategy. 1. Searching for the literature review subject matter began with a search of the following data bases in combination, via the Athens NHS data base search tool. EMBASE, MEDLINE, PsychINFO and CINAHL data bases were searched, with the search terms, “contact hypothesis” and “attitude to disability” with limits on publication years 1980-2010.

2. Searches identified the Pettigrew and Tropp (2006) meta-analysis of inter-group contact specifying Allport’s optimal conditions of contact. Further searches were conducted using their search terms.

3.Hand searches of the references given in Pettigrew and Tropp (2011) and the Google Scholar search, led to further studies which met the criteria of Pettigrew and Tropp’s (2006) meta-analysis, which either had not been included by them, or had been published since their review article in 2006.

Inclusion Criteria. Inclusion criteria were:

1. Studies which involved intergroup contact between identified able bodied and physically disabled groups of people.
2. Studies in which intergroup contact was defined as 'face to face' interactions between members of clearly defined groups.
3. Studies which recorded contact measured by self-report, observation or assumed by intergroup contact being inevitable because of very close proximity such as being together in a small classroom for an extended period of time.
4. Studies which were of experimental or correlational design.

5. Studies which attempted to meet Allport’s optimal conditions of contact or approximated them as defined in Pettigrew & Tropp’s (2006) meta-analysis which specified at least three out of four of the optimal conditions.
6. Studies which included some measure of non-disabled participants’ attitudes or behaviour towards people with physical disabilities.

Exclusion criteria. The exclusion criteria were:

1. Unpublished doctoral dissertations.
2. Non-English language studies.
3. Studies which simulated contact.

Table 1.1

Search History Summary

Data Base	Search terms	Sources identified	Literature review studies identified	Studies found
EMBASE, MEDLINE, PsychINFO, CINAHL	Contact hypothesis and attitude to disability 1980-2010	Pettigrew & Tropp, 2006		
CSA Sociological Abstracts	Inter-group contact and Physical disability 1980-2011	Pettigrew &Tropp, 2011	Clunies-Ross & O'Meara, 1989; Esposito & Peach, 1983; Evans, 1983; Felton, 1975; Johnson & Johnson, 1985; Jones, Sowell, Jones, & Butler, 1981; Ladd, Munson, & Miller, 1984; Leyser, Cumblad, & Strickman, 1986; Maras & Brown, 1996; Rusalem, 1967; Simpson, Parrish, & Cook, 1976	11
CSA Sociological Abstracts	Inter-group contact and Physically disabled 1980-2011		Anthony, 1969; Esposito & Reed, 1986; Florian & Kehat, 1987; Leyser & Abrams, 1983	4
SOCIAL SCIENCE CSA	Intergroup contact or contact theory or prejudice and physical disability 2006-2011		Krahe & Altwasser, 2006	1
PsychINFO	Physical disorder/Prejudice 2006-2011	Pettigrew & Tropp, 2008	Leonard & Crawford, 1989; Wallymahmed, McKay-Moffat, & Cunningham, 2007	2
Google Scholar	Intergroup contact Physically disabled 2010-2013	Marom, Cohen, & Naon, 2007	Favazza & Odom, 1997; Newberry & Parish, 1987; Rimmerman, Hozmi, & Duvdevany, 2000	4

Review process. The twenty two retained studies were reviewed using two frameworks. One to assess the quality of study design and methodological rigour and one to assess the quality of contact and the effectiveness of contact in leading to positive attitude change.

Study quality framework. Studies were reviewed in terms of the internal validity and appropriateness of measures used, and whether the design, recruitment and intervention procedures were described clearly enough to be replicated. Studies were also assessed to see if they set out to investigate intergroup contact effects in an unbiased way, such as by employing randomly selecting participants and control or comparison groups in order to independently measure the effects of intergroup contact. Studies were also reviewed to see if they took into account extraneous and confounding factors by employing appropriate comparison or control groups. This framework was devised following consideration of guidelines suggested by Sale and Brazil (2004) and the one proposed by Lincoln and Guba (1986), which they cited in their paper. The components of this methodological and statistical quality framework have been listed below.

1. Participants: Studies were evaluated concerning clarity of the recruitment procedure, and whether there was random selection of participants and random allocation into groups. In each study, it was identified whether a power calculation had been conducted or there were at least 30 participants in each group in order to make calculation of effect size meaningful (Faul & Erdfelder, 1992).
2. Study design: Studies were grouped into experimental (contact manipulated by the researchers) and correlational (contact occurred outside the researchers' control), and cross-sectional and longitudinal. Studies were divided into those that included a control group without intergroup contact and those studies that did not. Studies were differentiated by whether the control group was treated the same as the intervention group apart from contact or not. Studies were assessed as to whether they controlled for extraneous and confounding variables like prior contact. Studies were assessed as to whether differences in key variables, between the control or comparison group and the contact group, were measured.

3. Contact measurement: Studies were evaluated as to whether contact was described, or if only reported, then reliable and valid measures were used. Studies were assessed to see if contact was observed, and if it was, inter-rater reliability reported. Studies were reviewed to see if there was a follow-up phase to the study, what was measured and how long after the intervention.

5. Outcome measurement: Studies were evaluated to see if outcomes were measured statistically. Studies were assessed to see if they measured generalisation of attitude change and whether follow-up studies were conducted.

Contact quality and effectiveness framework. This framework was applied to look at data relevant to the aims of the research. This data extraction framework evaluated the type, quality and quantity of contact and reviewed any moderating and mediating processes of contact that were employed and with what results. The framework assessed the effectiveness of contact in producing positive attitude change for different participant and disability groups. The data extraction framework also examined the different ways in which attitude change was assessed and the value of positive attitude change in terms of its maintenance and generalise outside the intervention context. This second quality framework drew on that adopted by Pettigrew and Tropp (2006) and Pettigrew and Tropp (2008), and its components have been listed below.

1. Contact quality and effectiveness: Studies were reviewed concerning the type, length and quality of contact and the effects on the attitude, of variation in contact. Contact effectiveness, between multifaceted and contact only interventions, was compared. Studies were reviewed to see if moderators and mediators of contact were measured and the quality of methods used.

2. Participant characteristics: Participant characteristics were evaluated to see if differences influenced contact effects. Disability group characteristics were evaluated to see if they affected attitude change.

3. Outcome measures: Studies were assessed as to whether and which self-reported attitude measures were taken and whether variability of measures affected outcomes reported. Studies were evaluated to see if affective outcomes resulted from attitude change and how they were measured. Studies were assessed to see if behavioural outcomes resulted from contact and how these changes were measured. Studies were reviewed to see if contact led to generalisation and maintenance of attitude change and how this was measured.

Findings

Methodological flaws and strengths. The quality framework was applied to examine the methodological rigour employed by the 22 studies meeting the inclusion criteria for this review. The results of this have been summarised in Tables 1.2 A and 1.2 B, Study quality framework.

Participants. Twenty one of the studies gave clear descriptions of the recruitment processes they employed, Felton (1975) being the only exception. Nine of the studies randomly selected participants and 12 studies randomly allocated participants into groups. Only one study reported a power calculation for the number of participants involved in their study (Florian & Kehat, 1987). Fourteen of the studies had sufficient numbers (over 30 in each group), to make a measure of effect size statistically meaningful.

Table 1.2

Studies Quality Framework, Part A, papers 1-11

	Anthony (1969)	Cluines-Ross & O'Meara (1989)	Esposito & Peach (1983)	Esposito & Reed (1986)	Evans (1976)	Favazza & Odom (1997)	Felton (1975)	Florian & Kehat (1987)	Johnson& Johnson (1985)	Jones, Sowell, Jones & Butler (1981)	Krahe & Altwasser (2006)
Participants											
Recruitment clear	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
Random selection of participants	No	Yes	No	No	Yes	Yes	No	Yes	Yes	No	Yes
Random allocation to groups	No	Yes	No	No	Yes	No	No	Yes	Yes	Yes	Yes
Power calculation	No	No	No	No	No	No	No	Yes	No	No	No
At least 30 in each group	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Yes	No
Study Design											
Experimental	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes	Yes	Yes
Correlational	Yes	No	No	Yes	No	No	Yes	No	No	No	No
Cross sectional	No	No	No	Yes	No	No	No	No	No	No	No
Longitudinal	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Control group receiving no contact	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	No	Yes	Yes
Controls same as intervention group apart from contact.	Yes	Yes	Yes	No	Yes	No	No	No	No	Yes	Yes
Confounding variables like prior contact measured	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No	Yes
Differences in key variables between contact group and control measured	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
Contact Measurement											
Contact described	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
Contact observed	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes	Yes	Yes
Contact reported	Yes	No	No	Yes	No	No	Yes	No	No	No	No
Contact reliably measured	No	No	No	No	Yes	No	No	No	Yes	No	No
Outcome Measurement											
Outcomes were measured statistically	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Generalisation was measured	Yes	No	No	Yes	No	Yes	No	Yes	Yes	Yes	Yes
Follow-up measures were taken	No	Yes	No	Yes	No	Yes	No	No	No	No	Yes

Table 1.2

Studies Quality Framework, part B, papers 12-22

	Ladd, Munson & Miller (1984)	Leonard & Crawford (1989)	Leyser & Abrams (1983)	Leyser, Cumblad & Strickman (1986)	Maras & Brown (1996)	Marom Cohen & Naon (2007)	Newberry & Parish (1987)	Rimmerman Hozmi & Duvdevany (2000)	Rusalem (1967)	Simpson, Parrish & Cook (1976)	Wallymahmed, MacKay-Moffat & Cunningham (2007)
Participants											
Recruitment clear	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Random selection of participants	Yes	No	No	No	No	No	Yes	No	No	Yes	No
Random allocation to groups	Yes	Yes	No	Yes	No	No	Yes	Yes	No	Yes	No
Power calculation	No	No	No	No	No	No	No	No	No	No	No
At least 30 in each group	No	No	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
Study Design											
Experimental	No	Yes	No	Yes	No	No	No	No	Yes	Yes	No
Correlational	Yes	No	Yes	No	Yes	Yes	Yes	Yes	No	No	Yes
Cross sectional	No	No	Yes	No	No	No	No	No	No	No	Yes
Longitudinal	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
Control group receiving no contact	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	No
Controls same as intervention group apart from contact.	No	No	Yes	No	Yes	No	Yes	Yes	No	Yes	No
Confounding variables like prior contact measured	No	Yes	No	No	No	No	No	Yes	No	No	No
Differences in key variables between contact group and control measured	No	Yes	No	Yes	Yes	Yes	No	No	No	Yes	No
Contact measurement											
Contact described	Yes	Yes	No	Yes	Yes	Yes	Yes	No	Yes	Yes	No
Contact observed	Yes	Yes	No	No	Yes	Yes	Yes	No	Yes	Yes	No
Contact reported	No	No	Yes	Yes	No	No	No	Yes	No	No	Yes
Contact reliably measured	Yes	Yes	No	No	Yes	No	No	No	No	No	No
Outcome measurement											
Outcomes were measured statistically	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
Generalisation was measured	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Follow-up measures were taken	Yes	No	No	No	No	No	No	No	Yes	No	No

Design. Twelve studies were categorised as experimental, 10 as correlational. Three studies were cross-sectional and 19 longitudinal in design.

Fifteen studies provided between subject control groups, without contact and six, within subject comparisons, (Anthony, 1969; Esposito & Peach, 1983; Felton, 1975; Jones et al, 1981; Ladd, Munson & Miller, 1984; Rusalem, 1967). The remaining study (Wallymahmed, MacKay-Moffat & Cunningham, 2007), compared midwives who had contact with disabled mothers with those that did not. Although they provided statistical data on the effects of contact they did not provide numbers for those in each group. Twelve studies had contact only interventions with control groups without contact. Whereas, 10 others had a variety of other aspects in their interventions, such as education as well as contact, and a control group receiving no intervention at all (e.g. Clunies-Ross & O'Meara, 1989). Nine of the 22 studies evaluated the effects of confounding variables, such as the participants having prior contact with disabled people. Sixteen studies matched intervention contact groups to comparison or control groups for demographic factors such as age and sex. For example, Favazza and Odom (1997) matched the kindergarten children in their study for age, sex and socioeconomic status.

Measurement of contact. Four of the included studies did not give a description of the intergroup contact which took place. Fifteen studies observed contact and seven relied on reported contact. Only four studies measured contact in a quantifiable manner. Evans (1976) and Leonard and Crawford (1989) videotaped the contact and Johnson and Johnson (1985) and Ladd et al. (1984), made observations of the intergroup contact and devised their own means of measurement. Both studies reported satisfactory inter-rater reliability.

Generalisation. Generalisation of attitude change was addressed by 20 studies using self-reported attitude change measures that had satisfactory reliability, (alpha scores greater than 0.7) and could be measured statistically. These 20 studies looked at attitudes towards disabled people in general, rather than the individual disabled people that were involved in their contact interventions. Four of these self-report questionnaires were devised by the researchers (Esposito & Peach, 1983; Esposito & Reed, 1986; Favazza & Odom, 1997; Rusalem, 1967). Three studies used multiple self-report measures including indirect measures (Leonard & Crawford, 1989) and assessing contact effects on social distance between group members (Krahe & Altwasser, 2006; Wallymahmed et al., 2007). Only Johnson and Johnson (1985), Maras and Brown (1996) and Ladd et al. (1984) looked at behavioural and affective changes towards the disabled children who took part in their studies. Researchers devised their own measures for this purpose, and these outcomes were reported statistically.

Follow-up studies. Few studies investigated generalisation other than that which occurred immediately after the intervention or in contexts other than the contact situation. Only six studies had a follow-up element, varying from one month (Evans, 1976) to two years post intervention (Esposito & Reed, 1986). Four studies used self-report attitude change measures and only two studies looked at behavioural changes as a result of contact via interviews and then reports were only anecdotal (Rusalem, 1967; Ladd et al., 1984).

Contact quality and effectiveness of contact in reducing prejudice. Quality and effectiveness of intergroup contact have been reviewed using a data extraction framework for the 22 studies, a summary of which has been provided in Tables 1.3.

Effectiveness of contact in reducing prejudice. Twenty of the 22 studies reported significant correlations between attitude change and contact. Only Florian and Kehat (1987) and Leonard and Crawford (1989) had results which did not reach significance.

Contact quality. Intergroup contact time varied from a 25 minute contact interview with a woman with cerebral palsy, (Leonard & Crawford, 1989) to a 2 year period of integration between hearing and hearing impaired adolescents during classroom activities like carpentry lessons (Ladd et al., 1984). Intergroup contact activities varied widely, for instance ice skating lessons (Clunies-Ross & O'Meara, 1989) or taking part in puppet show (Simpson, Parrish & Cook, 1976). The frequency of contacts was clearly stated by some studies, such as 15, 55 minute long maths lessons (Johnson & Johnson, 1985) and average number of contacts, 16.75 (Marom, Cohen & Naon, 2007). In other studies contact was much more poorly defined as in Anthony's (1969) study which looked at intergroup contact for tutors during a nine week summer camp. Anthony (1969) to some degree, left readers to make their own interpretations of what contact involved. Overall both studies with brief and extensive contact times proved equally effective in producing positive attitude change.

Table 1.3

Intervention quality and impact

Name of Study	Type and length of contact experience	Measures used	Design of study and data collection	Type of disability	Number and type of participants	Outcome and effectiveness of contact
Anthony, 1969	9 weeks of observed contact with disabled summer campers whilst working as camp tutors.	Attitude Toward Disabled Persons (ATDP-form O) (Yuker, Block & Young, 1966). Self-report data only. Mediators not measured. Generalisation measured.	Correlational study with within subject comparisons. Measures taken at beginning and end of camp (9 weeks apart). No follow-up.	Physical disabled children and adult tutors.	16 able bodied college students who had been tutors at previous camps and 26 new able bodied camp tutors (all college students).	Experienced staff members had significantly more positive attitudes compared to new staff at the start of camp. Experienced tutors did not make significant attitude changes between start and finish of camp. New staff's attitudes became significantly more positive between the beginning and end of the camp. (effect size r = -.361 *)
Clunies-Ross & O'Meara, 1989	4 x1 hour social study sessions involving contact with disabled peers, disability simulation and a success orientated group experience (ice skating).	Measured prior contact Peer Attitudes Towards the Handicapped scale (PATHS) (Bagley & Green, 1981). Self-report data only. Mediators not measured. Generalisation measured.	Experimental study with between subject control group without contact. Measures taken one week before and after social study contact sessions and at 3month follow-up.	Learning impaired and physically disabled children.	60 4th grade pupils 30 in each of 2 schools, 15 in each group.1 school had integration between able bodied and disabled pupils and 1 school did not.	Found directional effects in both settings but these only approached significance in the integrated school. Positive attitude change was greater in the integrated school and persisted at three- month follow-up. (effect size r= -.337 *)

Name of Study	Type and length of contact experience	Measures used	Design of study and data collection	Type of disability	Number and type of participants	Outcome and effectiveness of contact
Esposito & Peach, 1983	21 one hour long sessions over 30 weeks of school year. Class room contact between non-handicapped and handicapped children integrated for activities like snack and rest time, outdoor play and group activities.	Primary Student Survey of Handicapped Peers (PSSHP) - own scale. Self-report data only. Mediators not measured. Generalisation measured.	Correlational study within subject comparisons. Measures taken 1week prior and 1week post intervention (approx 8 months apart) No follow-up	4 physically and mentally handicapped kindergarten aged children.	9 members of kinder - garten group (4 -5 years).	Classroom integration led to significant gains in positive attitude for non-handicapped peers. Significant gains in behaviour for handicapped peers. (effect size r = -.260 *)
Esposito & Reed, 1986	Follow-up of able bodied children in Esposito and Reed 1983 study (above). Looked at subsequent contact with disabled children that had occurred as part of their education since the 1983 study.	PSSHP Self-report data only. Mediators not measured. Generalisation measured.	Correlational study, between subject comparison group. Measures taken at 2 year post intervention follow-up.	Physically and mentally handicapped 7 year old school students.	9 able bodied school pupils aged 7 years from Esposito and Peach 1983 study and 83 peers as controls.	Positive attitude gains maintained but no better than where other children had attended schools that integrated pupils with physical and mental handicaps with able bodied peers though not necessarily in the same classroom. (effect size r = -.490* medium)

Name of Study	Type and length of contact experience	Measures used	Design of study and data collection	Type of disability	Number and type of participants	Outcome and Effectiveness of Contact
Evans 1976	1 hour long interview with blind woman, contact enhanced or not (permission to talk about blindness or not).	Measured prior contact-own scale. ATDP-form B Self-report data only. Mediators measured. Generalisation measured.	Experimental study, between subject design, control group without contact. Measures taken pre and 10 days post contact. No follow-up.	1 blind adult	60 university students 20 contact enhanced 20 contact not enhanced 20 without contact	Significant positive attitude gains for subjects in the enhanced experimental condition where given permission to talk about blindness, compared to those in two control conditions (not given permission to talk about blindness or contact with non-disabled person) Those in the enhanced contact condition also had the most positive prior contact with the disabled. (effect size r= -.539 *)
Favazza & Odom, 1997	15 minutes of observed structured play with disabled children immediately after story time, 3 times a week for 9 weeks.	Measured prior contact -own scale. Acceptance Scale for Kindergarteners (ASK) -own scale. Self-report data only. Mediators not measured. Generalisation measured.	Experimental study with between subject control group without contact. Measures taken pre and post 9 week intervention and at 5 month follow-up.	15 kindergarten aged children with mental or multiple handicaps.	15 high contact (intentional) 15 low contact (proximity only) 101 controls without contact Kindergarten children mean age 72 months.	Significantly improved scores for high contact group on ASK which were maintained at follow-up using ANOVA $p < .05$. Not enough information was given to calculate effect size.

Name of Study	Type and length of contact experience	Measures used	Design of study and data collection	Type of disability	Number and type of participants	Outcome and effectiveness of contact
Felton, 1975	20 hours per week of observed contact as part of first year of study to become health care workers, (content of contact unspecified).	ATDP-form O Self-reported data only. Mediators not measured. Generalisation measured.	Correlational study, within subject comparisons. Measures taken 2 months pre and 13months post contact. No follow-up.	Families with children with multiple severe disabilities.	7 adult students training to be health care workers.	Significant positive attitude change pre to post training. (effect size r = -.473 *)
Florian & Kehat, 1987	6 x 1 hour educational and simulation sessions including 1 session of observed contact with disabled people either during a visit to a Rehabilitation Centre for the physically disabled or class room visit and discussion with two obviously physically disabled people.	(Jordan & Cessna, 1969) - measure of attitude towards the physically disabled suitable for children. Scale assessed cognitive, affective and behavioural aspects of attitude. Self-reported data only. Mediators not measured. Generalisation measured.	Experimental study with two groups involving education and contact, one education and no contact and a fourth control group with no intervention. Measures taken 1week pre and 1week post intervention. No follow-up.	Physically disabled adults (unspecified)	114 10th and 11th grade adolescent students.	No significant results on behavioural indicators. Some positive changes in attitude on emotional indicators, which were not significant. (effect size r= -.079* ns.)

Name of Study	Type and length of contact experience	Measures used	Design of study and data collection	Type of disability	Number and type of participants	Outcome and effectiveness of contact
Johnson & Johnson, 1985	55 minutes observed contact during maths lessons for 15 consecutive school days. In the cooperative maths group hearing and hearing impaired worked together on task.	Multiple self-designed measures including behavioural mapping, observing interactions between group members (during maths lesson and during play time). Measured perceived attractiveness (card sort test) and affective components evaluated using structured interviews. No self-reported data. Mediators measured. Generalisation measured.	Experimental study with between subject control group without contact, working alone on maths task. Measures taken before, during and after intervention. No follow-up.	Hearing impaired.	4th grade primary school pupils (age-7yrs) 10 hearing 5 hearing impaired in each group.	In contact condition more association and liking between hearing and hearing impaired. Significant positive attitude change demonstrated by increased interaction and interpersonal attractiveness ratings as the result of contact. Success in maths task was not undermined by integrating hearing and hearing impaired students. (effect size r = -.260 *)

Name of Study	Type and length of contact experience	Measures used	Design of study and data collection	Type of disability	Number and type of participants	Outcome and effectiveness of contact
Jones, Sowell Jones & Butler, 1981	2.5 hour x 2 lessons one week apart. Multifaceted intervention, education, simulation, sign language and observed contact via a discussion with a physically disabled adult (amount of contact unspecified).	Changing Children's Attitudes Towards the Physically Handicapped (Rapier, Adelson, Carey, & Kroke, 1972). Self-reported data only. Mediators not measured. Generalisation measured.	Experimental study, within subject comparison. Half group 1 week pre-test and whole group 1 week post–test. No follow-up.	Deaf/blind physical disability, learning difficulty cerebral palsy.	74 children aged 7-9yrs mainstream education.	Significantly improved positive attitudes as result of intervention. (effect size r= -.364*)
Krahe & Altwasser, 2006	90 minute observed contact as part of an education programme. Contact involved participating in sports activities with elite disabled athletes.	Prior contact scale. Attitude Toward Physical Disability (Siefert & Bergmann, 1987). Social Desirability scale (Stober, 1999). Self-reported data only. Mediators measured. Generalisation measured.	Experimental study with between subject control group without contact Measures taken 1 month before and after intervention 3 month follow up.	Physical disability.	70 9th graders. mean age 14.8yrs secondary school students.	Education only control group showed no significant changes in attitude whereas contact led to significant positive attitude change. There were more positive initial attitudes among participants with prior personal experience of interacting with disabled persons. Positive effects on attitude were strongest immediately post intervention but persisted at follow-up. (effect size r = -.250)

Name of Study	Type and length of contact experience	Measures used	Design of study and data collection	Type of disability	Number and type of participants	Outcome and effectiveness of contact
Ladd, Munson & Miller, 1984	Observed contact as part of a 2 year programme of integration into mainstream education with hearing impaired children joining hearing children in classroom activities like carpentry lessons.	Devised own methods to evaluate changes in social behaviour. Measured in and out of school friendships via narrative observations, interviews and self -report Peer Rating Scale (PRS) (Rubenstein, Fisher & Iker, 1975). Self-reported data and behavioural and affective changes measured. Mediators measured. Generalisation measured.	Correlational study within subject comparisons. Measures taken before during and after integration, self-report and observations, looked at affective and behavioural aspects of attitude. 1year follow-up.	Hearing impaired.	48 hearing impaired adolescents and 48 of their hearing peers. 3 cohorts, 16 in each group.	Increased interaction between deaf and hearing Hearing peers started to see their hearing impaired fellow students as individuals and chose to interact with them and form friendships in school. Interviews showed evidence of generalisation of attitudes and behaviour to those outside the study group. (effect size r = -.544 *)

Name of Study	Type and length of contact experience	Measures used	Design of study and data collection	Type of disability	Number and type of participants	Outcome and effectiveness of contact
Leonard & Crawford, 1989.	25 minutes observed contact with woman with cerebral palsy with chance to ask questions.	Assessed prior contact with the disabled. ATDP and interviews, Current Disability Issues scale (CDI).- own scale. Interaction with the Disabled scale (ID) (Gething & Leonard, 1986) Social Distance scale (SD) (Bogardus, 1933). Semanic Differential scale (Gething, 1983). More than self-reported data measured. Mediators measured. Generalisation measured.	Experimental design, between subject control group without contact. Measures taken 1 month prior and immediately post intervention. Follow-up interviews with 10 subjects randomly drawn from each of the three groups, contact, video or no intervention.	Cerebral palsy.	60, 1st year university students.	Prior contact with the disabled had the most positive effect on personal attitudes towards disability. The contact situation did not have a further significant positive effect on attitude, compared to the effects of prior contact, but this may have been due to the shortness of the contact experience. (effect size r =.075. ns)

Name of Study	Type and length of contact experience	Measures used	Design of study and data collection	Type of disability	Number and type of participants	Outcome and effectiveness of contact
Leyser & Abrams, 1983.	1 year long programme of training to become teachers, 2 training groups had observed contact experience visiting educational centres for the disabled and supervised teaching with variety of disabled children, (nature and exact length of contact unspecified).	ATDP-form O Self-reported data only. Mediators not measured. Generalisation measured.	Correlational study, between subject control group without contact. Measures taken at end of training No follow up.	All sorts of children with special education needs.	36 elementary school trainee teachers (extra training in special education in main stream). 122 elementary school trainee teachers (no contact). 148 special needs trainee teachers.	More positive attitudes amongst those who reported contact with the disabled during training. However measures only taken at the end of training so could not separate out effects of contact with the disabled, prior to training. (effect size r = -.210 *)

Name of Study	Type and length of contact experience	Measures used	Design of study and data collection	Type of disability	Number and type of participants	Outcome and effectiveness of contact
Leyser, Cumblad & Strickman, 1986.	20 hour long programme called Learning about the Handicapped included, education, simulation and contact. (Type and length of contact not specified but included observed contact with disabled adults and children).	ATDP-form O Self-reported data only. Generalisation measured. Mediators not measured.	Experimental study with between subject control group without contact. Measures taken pre and post intervention at the beginning and the end of the school semester. No follow-up.	Physical limitations, visual impairment, hearing impairment, mental impairment and special medical conditions e.g. epilepsy, diabetes and asthma.	Pupils 8-9yrs 116 intervention 128 controls.	Learning about the handicapped programme and integration led to significantly more positive attitudes compared to the control group but no evidence that changes persisted or that self-reported attitude change led to behavioural change. (effect size r = -.176*)

Name of Study	Type and length of contact experience	Measures used	Design of study and data collection	Type of disability	Number and type of participants	Outcome and effectiveness of contact
Maras & Brown, 1996.	3 month period of integration. With observed contact on 1 afternoon a week between main stream and learning disabled children mixing in the mainstream classroom or staffroom and carrying out collaborative tasks.	Indirect measures of attitude change. Looked at photos of children with various disabilities and sorted them into categories. Assessed changes in liking using smiley face choices and postbox choices of playmates. Indirect measures of attitude assessing affective and behavioural changes. Mediators measured. Generalisation not measured.	Correlational study with between subject control group without contact. Measures taken before, during and at the end of the integration period enabling within subject comparisons. Programme started at the beginning of term when the children did not know each other. No follow-up.	Learning and physical disabilities.	50 10 year olds 26 intervention 24 controls	The integration achieved improvement in the attitudes of non-disabled children towards their disabled peers. Non-disabled children started to break down their categorisation of disabled children and began to see them as individuals and not defined by their disabilities. Positive changes in preferences were significant. The views of the non-disabled control group members towards the disabled peers did not change through the course of the study. (effect size r =-.329 *)

Name of Study	Type and length of contact experience	Measures used	Design of study and data collection	Type of disability	Number and type of participants	Outcome and effectiveness of contact
Marom, Cohen & Naon, 2007.	I year long programme of weekly or bi-weekly joint activities lasting 30-90 minutes, including social games, sports music or art sessions, average number of contacts, 16.75.	Attitude Toward Children with Disabilities (ATCD) (Weisel, Kravetz, Florian, & Shurka-Zernitsky, 1988) Self-report data only. Mediators measured. Generalisation measured.	Correlational study with between subject control group without contact. Measures taken pre and post intervention. No follow-up.	36 children with disabilities, mental retardation or cerebral palsy, mean age 10.5 years.	N=93 control group, N= 77 intervention group. Mean age 10.5 years.	Positive attitudes improved pre to post intervention for the contact group. (d = .61 **)
Newberry & Parish, 1987.	6x 1 hour long weekly sessions of unstructured informal play.	Personal Attitude Inventory for Children (ATCD) (Parish & Taylor, 1978). Self-reported data only. Mediators measured. Generalisation measured.	Experimental study with between subject control group with no contact. Measures taken before and after intervention. No follow-up.	Physically disabled children.	476 boy and girl scouts. Intervention group n=114 Age range 8-11 years.	Intervention group showed positive attitude change compared to controls. (effect size r = -.722*)

Name of Study	Type and length of contact experience	Measures used	Design of study and data collection	Type of disability	Number and type of participants	Outcome and effectiveness of contact
Rimmer-man, Hozmi & Duvdevany 2000.	4 month period of tutoring disabled students, contact unspecified.	Measured prior contact. Disability Factor Scale General (DFS-G) (Siller,Ferguson Vann, & Holland, 1967) Self-reported data only. Mediators measured. Generalisation measured.	Correlational study with between subject control group without contact. Measures taken pre and post intervention. No follow-up.	Disabled people, (unspecified)	102 university students, mean age 21.6 years. Divided into groups for prior contact and current contact as well as group without contact.	Found that attitude to contact was related to time and length of contact exposure. Reported that the able bodied students needed time to overcome their feelings of rejection about contact before being able to accept the contact situation. They found the most positive attitudes among those who had both prior and current contact with the disabled. (effect size r =.-.268 *)
Rusalem, 1967.	6xI hour long sessions twice a week for 3 weeks, multifaceted education, signing and observed contact when met with deaf /blind person and communicated with them using manual signing.	Devised own attitude measure Looked at self-reported behavioural and attitude change via interviews. Self-reported data only. Mediators measured. Generalisation measured.	Experimental study, within subject comparison group. Measures taken pre and post 3 week intervention, with 1 month follow-up interviews.	Deaf/blind people.	28 High school students 14 most positive attitude 14 most negative attitude at start of training to work with the disabled.	Found significantly improved positive attitudes amongst initially the most negative before contact but no improvement in the attitudes of those most positive at the outset (no statistics reported) At follow-up interviews 12 reported continuing to work with the deaf blind in some way and continuing to use sign language. (effect size r = -.370 *)

Name of Study	Type and length of contact experience	Measures used	Design of study and data collection	Type of disability	Number and type of participants	Outcome and effectiveness of contact
Simpson, Parrish & Cook, 1976.	I hour x 1 a week for 4 weeks education about disability. Or education and 1 hour observed contact through integration with handicapped peers via shared lunch, art or music lessons in small groups or viewing puppet show put on by disabled peers.	ATDP (adapted for age group). Self-reported data only. Mediators reported but not measured. Generalisation measured.	Experimental study. Between subject control group without contact. Measures taken pre and post 4 week intervention. No follow-up.	Mild physical disability and behaviour difficulties.	Two studies 38 in first and 54 in second. Primary school children.	No significant differences for those with contact and education compared to education only intervention but both intervention groups had significantly more positive attitudes than non-intervention controls. After the experiment, those in the intervention groups appeared to show more empathy and less fear towards their peers with special needs. (effect size r = -.265 *)
Wallymahmed, McKay-Moffat & Cunningham, 2007.	Self-reported contact with disabled mothers as part of their work as midwives.	Interaction with Disabled Persons scale (IDP) (Gething, 1994). Self-reported data only. Mediators measured. Generalisation measured.	Correlational study. With between subject comparisons, single measure. No follow-up.	Not specified disabled mums.	244 midwives 1-38yrs experience.	Discomfort at interaction reduced with contact with disabled mothers. Increased knowledge and sensitivity positively correlated with contact. (effect size r = .34)

Key- * = effect size calculation from Pettigrew & Tropp (2006) ** d = Effect size small 0.2 < d < 0.5 <d 0.8 medium > 0.8 large (Cohen 1988)
r =Effect size small 0.1< r < 0.3:0.3 > r < 0.5: medium :.> 0.5 large (Rosenthal, Rosnow & Rubin 2000)

Allport's Conditions Achieved. All of the studies either directly addressed achieving Allport's optimal conditions of contact, or approximated at least 3 out of 4 of the conditions. All of the intergroup contact took place in institutionally sanctioned settings.

Several studies clearly demonstrated the cooperative pursuit of common goals, such as Favazza and Odom's (1997) unstructured cooperative play and Johnson and Johnson's (1985) maths task. Newberry and Parish's (1987) intervention included unstructured informal play and Marom et al. (2007) used equal status activities, with intergroup contact during social games, sports, music and art lessons. Effectiveness of contact did not appear to vary in relation to studies adhering more closely to Allport's conditions.

Contact only or multifaceted interventions. Ten studies evaluated intergroup contact as part of a multifaceted intervention. For example, Marom et al. (2007) assessed the separate contribution of knowledge about disabled people, as well as that of contact. Three further studies entailed disability simulation as well as education and contact. Simulation involved able bodied participants moving about the environment in wheelchairs or being blindfolded for example, to try and experience what would be like to have a disability (Clunies-Ross & O'Meara, 1989; Florian & Kehat, 1987; Jones et al.,1981). Two other studies also taught sign language, as well as education and simulation, to students whose contact was with those who had hearing and sight impairments (Rusalem, 1967; Jones, Sowell, Jones & Butler, 1981). Contact only and multifaceted interventions were equally effective in producing positive attitude change.

Measurement of moderators and mediators of contact. Evans (1975) included an anxiety reduction condition, by allowing the blind woman in his study, to disclose to participants in one group, that she was prepared to talk about her blindness. Wallymahmed et al. (2007) and Rimmerman et al. (2000) also evaluated the role of anxiety reduction by using self-report questionnaires about social distance and social discomfort when participating in intergroup contact. Newberry and Parish (1987) employed six disabled groups, with varying degrees of disability salience, and Maras and Brown (1996) assessed outgroup salience, using a photograph categorising system. Johnson and Johnson (1985) also measured interpersonal attraction for individual members of the outgroup, friendship choices and perspective taking, the latter via structured interviews. There was no clear relationship between those studies that measured mediators and the overall effectiveness of those studies' interventions in leading to positive attitude change.

Participant characteristics. Only three studies had adult participants, who were training as health care workers (Felton, 1975) trainee teachers (Leyser & Abrams, 1983) or working as midwives (Wallymahmed et al., 2007). The vast majority of studies (19) had participants who were in full time education, ages ranging from four to five years (Esposito & Peach, 1983) to mean age, 21.6 years (Rimmerman et al., 2000). In 11 of these studies the contact intervention concerned disabled peers integrating with their able bodied peers in educational settings. Seven studies involved children and young people interacting with adults with physical disabilities, and in one study, contact was between adults and a mixed group of disabled adults and children (Antony, 1969). Two further studies involved able bodied adults working with disabled youngsters (Felton, 1975; Leyser & Abrams, 1983), and only one study evaluated attitude change following contact between disabled and able bodied adults (Wallymahmed et al., 2007). Although these differences might have meant some studies failed to meet Allport's condition of equal status between the groups, these differences did not appear to have had an affect on the effectiveness of contact interventions.

Six studies found that prior contact with the disabled interfered with the effectiveness of their contact interventions, (Antony, 1969; Evans 1976; Leyser & Abrams, 1983; Krahe & Altwasser, 2006; Leonard & Crawford, 1989; Rimmerman et al., 1997). This was important, as prior contact led to participants having more positive attitudes before the contact intervention, thus contact did not lead to significant positive attitude gain for this group.

Disability group characteristics. In the reviewed studies, contact was with various disability groups, such as cerebral palsy (Leonard & Crawford, 1989) six with sight and hearing impairments (Evans, 1976; Johnson & Johnson, 1985; Leyser, Cumblad & Strickman, 1986; Jones et al., 1981, Ladd et al., 1984; Rusalem, 1967) and a number with unspecified disabilities (e.g. Anthony, 1969). There was no evidence that contact was more effective for certain kinds of disabilities, although the small number of reviewed studies makes interpretation of these factors difficult.

Outcomes. *Attitude measurement: Self-report questionnaires.* All but one of the studies directly measured attitude change, 20 via self-report questionnaires. The most popular, valid and reliable measure used was, the Attitude Toward the Disabled Person scale (ATDP) (Yuker, Block, & Young, 1966) (seven studies). Eleven others used recognised measures, such as the Peer Rating Scale (Rubenstein, Fisher & Iker, 1973) chosen by Ladd et al. (1984). Four researchers adapted scales of their own, such as Favazza and Odom’s (1997) Acceptance Scale for Kindergarteners (ASK).

Indirect attitude measurement. In addition to self-reported measures of attitude change, Rusalem, (1967), used an interview format and Maras and Brown (1996), employed an indirect method by getting participants to sort photographs of disabled children into different categories. Other studies evaluated social distance as a measure of indirect attitude change. For instance, Krahe and Altwasser (2006) used the affective and behavioural components of the Social Desirability scale (Stober, 1999) and Leonard and Crawford (1989) used the Social Distance scale (SD) (Bogardus, 1933), as well as the Interaction with the Disabled scale (ID, Gething & Leonard, 1986). This latter measure was also employed by Wallymahmed et al. (2007) (in a more updated version), to evaluate social discomfort during contact (Gething, 1994). These variations in choice of attitude measurement did not appear to influence the effectiveness of interventions.

Measuring affective and behavioural outcomes. Only two studies evaluated outcomes and did not employ standardised self-report measures used by other studies. Johnson and Johnson (1985) evaluated changes in the perceived attractiveness of disabled children, using a card sorting test. Maras and Brown (1996) devised their own way of measuring 'liking', utilising a post box and smiley face choices, to make play mate preferences.

These variations in choice in attitude measurement did not appear to have any significant affect on the effectiveness of contact interventions.

Measurement of the generalisation of attitude change. Twenty studies measured generalisation of attitude change towards those outside the contact intervention but only immediately after contact. Only Rusalem (1967) and Ladd et al.1984) looked at continued behaviour change at follow-up interviews one month and one year respectively, following intervention. Both research studies evaluated classroom integration between hearing and hearing impaired peers and reported continued friendships and use of sign language between the two groups.

Overall effectiveness of studies. In order to establish the value and the power of intergroup contact to influence positive attitude change, the 14 studies in the review which had more than 30 participants in each group, were included in an evaluation of effect size. Effect size information was either taken from Pettigrew and Tropp's (2006) meta-analysis Pearson correlation, (r), (12 studies) or taken directly from study reports. These results have been summarised in Table 1.4.

Seven studies were of experimental design and seven correlational. Experimental studies were more effective, with four of the seven studies showing the biggest effect sizes. Seven studies were multifaceted and seven contact only, both types of intervention were equally effective. Studies with larger numbers of participants did not produce more powerful results than those with fewer participants.

Table 1.4

Overall effectiveness of studies.

Study	Numbers in each group (n)	Effect size	Study type	Multifaceted or contact only
Newberry and Parish (1987)	90	r = -.722*	Experimental	Contact only
Marom, Cohen & Naon (2007)	73	d= 0.61**	Correlational	Multifaceted
Evans (1976)	60	r = -.539*	Experimental	Contact only
Esposito & Reed (1986)	92	r =.490*	Correlational	Contact only.
Clunies-Ross & O'Meara (1989)	60	r = -.377*	Experimental	Multifaceted
Jones, Sowell, Jones &Butler (1967)	74	r = -.364*	Experimental	Multifaceted
Anthony (1969)	42	r = -.361*	Correlational	Contact only
Wallymahmed, McKay-Moffat & Cunningham (2007)	244	r = .340	Correlational	Contact only
Maras & Brown (1996)	44	r = -.329*	Correlational	Contact only
Rimmerman, Hozmi & Duvdevany (2000)	102	r = -.286*	Correlational	Contact only
Simpson, Parrish &Cook (1976)	38	r =-.265*	Experimental	Multifaceted
Leyser & Abrams (1983)	289	r = -.210*	Correlational	Multifaceted
Leyser, Cumblad, & Strickman (1986)	244	r = -.176*	Experimental	Multifaceted
Florian & Kehat (1987)	88	r = -.079*	Experimental	Multifaceted

Key- * = effect size calculation from Pettigrew & Tropp (2006) **d = Effect size small 0.2 < d < 0.5 <d 0.8 medium > 0.8 large (Cohen, 1988)
r =Effect size small 0.1< r < 0.3: 0.3 > r < 0.5: medium: >0.5 large (Rosenthal, Rosnow, & Rubin, 2000).

Discussion

Summary of findings. There was evidence that intergroup contact led to positive attitude change, at least at the time of contact, in nearly all the studies (N=20). These findings support the idea that intergroup contact between the able bodied and those with physical disability, incorporating Allport's optimal conditions, leads to positive attitude change. These results are very similar to research findings for intergroup contact with other minority groups (Pettigrew & Tropp, 2006).

Twenty studies measured attitude change towards the wider outgroup, not only those individuals involved in the interventions, suggesting generalisation of attitude outside the contact setting. Only five studies directly measured maintenance of attitude change at follow-up and two reported generalisation of change to behaviour (Rusalem, 1967: Ladd et al., 1984). Thus there was only a small amount of evidence that attitude changes, achieved via intergroup contact, could be maintained over time or effect behaviour towards disabled groups in the wider community.

Some studies found that prior contact with the disabled reduced the impact of their interventions, detracting from contact effects (Rimmerman et al., 2000; Antony, 1969). This may have been because of ceiling effects, as prior contact meant that participants already had positive attitudes towards the disabled, before the intervention.

There were a number of different disability groups involved in the contact interventions and a great deal of variability in the amount and quality of intergroup contact provided. However there was no clear affect of these factors, on the effectiveness of intergroup contact.

The effects of contact on attitude were evaluated using a number of different outcome measures including direct self-report, indirect attitude measurement, (e.g. the Semantic Differential scale, Gething, 1983) and observations of children's changes in attitudes towards their disabled peers to assess the salience of group membership (e.g. Maras & Brown, 1996). None of the different choices in use of outcome measures appears to have influenced the effectiveness of contact on attitude change, although the different measures employed may have meant that studies were measuring different aspects of attitude change.

Finally some correlational studies took place over a very long period of up to two years, (e.g. Ladd et al., 1984) during which close friendships could develop, because of repeated and good quality contact. Among these were a few well designed and good quality studies (Johnson & Johnson, 1985; Ladd et al., 1984; Maras & Brown, 1996). These studies gave insight into the mechanisms by which intergroup contact contributed to positive attitude change. For instance, when participants start to see disabled children as individuals (Maras & Brown, 1996) and learn to see the situation from the disabled child's point of view (Johnson & Johnson, 1985).

However the reviewed studies provided sparse evidence of what constituted intergroup contact between the able bodied and physically disabled, which would reliably lead to improved attitudes and behaviour towards the disabled in our wider society, which could be maintained over time.

Search limitations. Search strategies used in identifying suitable studies to include in this review only identified a small number of relevant studies and few which had occurred in the last ten years. Studies included covered a period of over 30 years. Societal attitudes in the 1960s and 1970s were much less accepting of those with physical disabilities than attitudes of today. For example current government regulations require all new buildings to be accessible to the disabled whereas, forty years ago, access to public buildings for the disabled was rarely considered. Thus studies conducted a long time ago may have been addressing different aspects of attitude compared to more recently conducted studies. Additionally earlier studies in particular, did not provide the same quality of information as later studies. For example, Anthony's (1969) study lacked an adequate description of intergroup contact. Data collection and the reports of findings, in some studies, were inadequate (e.g. Rusalem, 1967). This made it difficult to get a genuine assessment of scientific rigour of early studies compared to later ones. Despite the use of the Quality Frameworks in Tables 1.2 and 1.3, it proved problematic to make valid comparisons.

Study limitations. Nineteen of the research studies reviewed had participants who were children or young adults at college and 21 interventions took place on educational settings, indicating a limited context, which might not generalise to other settings or be representative of contact effects for other kinds of participants.

Overall the methodological quality of studies was poor. Approximately half of the studies failed to randomly select and allocate participants to independently assess the value of intergroup contact on attitude change. A similar proportion did not allow for the confounding effects of variables such as prior contact with the disabled. A number of the correlational studies also have small numbers of participants (e.g. N=16, Ladd et al., 1984). Correlational studies provided much weaker evidence than experimental studies and this made it more difficult to make inferences about the causes of any attitude or behavioural change in correlational studies and thus compare their effectiveness with experimental studies.

There was also a great deal of variability in quality and quantity of contact and the measurement of outcomes which also contributed to difficulties in making comparisons about study value. Only six studies had follow-up elements which provided information about the maintenance of attitude change and generalisation of attitude improvements to behaviour outside the study context.

The vast majority of the reviewed studies showed a significant association between intergroup contact, employing Allport's optimal conditions, and attitude improvement. However, given the methodological limitations of the studies, there was little evidence of how this was achieved, how these findings could be replicated and how to enhance the effects of intergroup contact on attitudes towards the physically disabled.

Directions for future research. The opportunity for the larger scale recruitment of participants, who represent the wider population, rather than only those from education settings, could be helpful. Random recruitment of participants and the use of control groups and comparison groups to enable independent assessment of intergroup contact and to screen out the effects of extraneous variables, like prior contact, which might interfere with attitude change, would also be recommended. Experimental studies would be preferable to achieve these aims. There should be standardisation of the measurement of quality and frequency of contact and attitude change, including assessment of more than just, self-reported direct attitude change. The measurement of outcomes, like affective and behavioural change and indirect attitudes, need to be included. Studies should be structured to include the opportunity for clearer comparison between the effectiveness of, the shorter term contact in experimental studies, and the more extended contact more frequently seen in correlational studies. More longitudinal research would be desirable, including follow up elements, to evaluate causal relationships between contact and attitude and look at the maintenance and generalisation of attitude change. Studies should also address more directly, the kind, length and quality of intergroup contact, which would be most effective in achieving positive attitude change, which would impact constructively, on personal and societal behaviour towards physically disabled people. Research has also shown that some kinds of disabilities are more discriminated against than others. For example, Chan, Livneh, Pruett, Wang and XiZheng (2009) noted that those with mental health problems were subject to more prejudice in society than those with physical disabilities. This may have implications for the best way to overcome discrimination towards those from different disability groups However, the studies reviewed here represented a wide range of physical disabilities and intergroup contact was effective in achieving positive attitude change in nearly all cases.-

Clinical Implications. Intergroup contact has a significant positive effect on attitude as demonstrated in the current literature review, even when study limitations and variability of contact are taken in to account.

This evidence suggests such contact may be helpful for individuals in coming to terms with acquired disability. Negative attitudes towards those with physical disabilities are still prevalent in our society and contact with disabled people has been shown to reduce negative attitudes towards this minority group. Research literature focusing on adaptation to acquired disability has emphasised the importance of maintaining one's identity, through being able to continue with valued roles and preventing oneself being fully defined by the disability. For example, Galvin (2005) in her qualitative study, involving those with a number of different acquired disabilities, described how successful participants were in shaping their new identities. Some contributors talked about their 'cerebral independence', even though they needed everything done for them physically. Others with visible impairments described how their personal identities disappeared in the face of their disability; 'the wheelchair was all they saw, they did not see me.' Whalley-Hammell (2007), in her qualitative study of the quality of life for those following spinal cord injury, also indicated the importance of individuals redirecting their values to those that were attainable in their altered state, and integrating disability into their own lives, but not allowing their identity to be over-whelmed by it.

Pre-injury contact may help by allowing those with a newly acquired disability, to develop attitudes that view disabled people as individuals, who can and do play valued roles, and whose identity is not determined simply in terms of their disability. Something of this kind of process was indicated in Maras and Brown's (1996) study where young children who had regular contact with their disabled peers, began to categorise photographs of these disabled children by individual characteristics, rather than as all belonging to the same group, the disabled. So when an individual acquires their own disability, it may be that prior contact could help them to maintain their own identity, through seeing the potential to maintain valued roles, and enable them to avoid their identity being defined wholly in terms of their disability.

Post-injury contact could also work in a similar way and focus its attention on those who had not had pre-injury contact with the disabled, as these individuals would have the most potential to improve their attitudes. Post-injury contact could also benefit from planning to ensure that contact was most likely to lead to positive outcomes by, for example, trying to adopt Allport's optimal conditions of contact.

Research literature concerning helping those to adequately adapt to acquired disability, has emphasised looking at factors which define how people cope, rather than characteristics that lead to failure to manage psychological adaptation (Buckelew, Frank, Elliot, Chaney & Hewett, 1991). Contact with the disabled, might be one factor, which could help.

If intergroup contact can result in positive attitude change towards the disabled, more attempts need to be made to try and influence behaviour at a societal level. Public attitudes towards the physically disabled remain quite negative despite the reduction in prejudice towards ethnic and racial minority groups since the 1960s ‘brotherhood dinners’ (Pettigrew, 2004). Perhaps the potential societal problems that could be caused by conflict over religious and racial differences have led to more attempts to resolve discrimination towards these minority groups rather than the physically disabled. However the potential and the principles of intergroup contact remain the same whatever the minority group involved. Intergroup contact has been shown to be more effective if the contact occurs between individuals whose group membership is apparent but not too salient until contact has been established through intrapersonal information exchange. Also such meetings need to be on equal terms, pursuing common goals cooperatively and in an institutionally sanctioned setting. Perhaps what is needed is a more concerted effort to address prejudice towards the physically disabled, much in the same way that racial and religious differences have been targeted in the past through intergroup contact. The literature reviewed here suggests meaningful ‘face to face’ contact between those with and without disabilities, can be a helpful mechanism to achieve positive attitude change and could play an important role in the effort to improve societal attitudes towards the physically disabled (Pettigrew & Tropp, 2006; Pettigrew & Tropp, 2008; Pettigrew & Tropp, 2011).

References

Allport, G. W. (1954). *The nature of prejudice*. Cambridge, M.A: Addison-Wesley.

Allport, G. W. (1968). The historical background of modern psychology. In G. Lindsey, G & F. Aronson (Eds.), *Handbook of social psychology* (vol.1 pp.1-80*)*. Reading, M.A: Addison-Wesley.

Anthony, W. A. (1969). The effects of contact on an individual's attitude toward disabled persons. *Rehabilitation Counseling Bulletin, 12,* 68-71.

Bagley, M. T., & Greene, J. F. (1981). *Peer Attitudes Toward the Handicapped scale.* Austin, TX: Pro-Ed.

Bogardus, E. S. (1933). A social distance scale. *Sociology and Social Research,* 17, 265-271.

Brewer, M. B., & Miller, N. (1984). Beyond the contact hypothesis: Theoretical perspectives on desegregation. In N. Miller & M. B. Brewer (Eds.), *Groups in contact: The psychology of desegregation* (pp. 281-302). Orlando, FL: Academic Press.

Brown, R., Eller, A., Leeds, S., & Stace, K. (2007). Intergroup contact and intergroup attitudes: A longitudinal stud*y. European Journal of Social Psychology, 37,* 692-703.

Brown, R., & Hewstone, M. (2005). An integrative theory of intergroup contact. *Advances in Experimental Social Psychology, 37, 255-343.*

Buckelew, S. R., Frank, R. G., Elliott, T. R., Chaney, J., & Hewett, J. (1991). Adjustment to spinal cord injury: Stage theory revisited. *Paraplegia, 29,* 125-130.

Chan, F., Livneh, H., Pruett, S., Wang, C. C., & XiZheng, L. (2009). Societal attitudes towards disability concepts, measurement and interventions. In F. chan, E. DaSilva, C. Cardoso & J. A. Chronister (Eds.), *Understanding psychological adjustment,* (pp.333-365). NY: Springer.

Clunies-Ross, G., & O'Meara, K. (1989). Changing the attitudes of students towards peers with disabilities. *Australian Psychologist, 23(2),* 273-284.

Cohen, J. (1988). *Statistical power and analysis for the behavioural sciences*, (2nd ed.). Hillsdale, N J: Lawrence Erlbaum Associates.

Esposito, B. G., & Peach, W. J. (1983). Changing attitudes of preschool children towards handicapped persons. *Exceptional Children, 49,* 361-363.

Esposito, B. G., & Reed, T. M. (1986). The effects of contact with handicapped persons on young children's attitudes. *Exceptional Children, 53(3),* 224-229.

Evans, J.H. (1976). Changing attitudes towards disabled persons: An experimental study. *Rehabilitation Counseling Bulletin, 19,* 572-579.

Faul, F., & Erdfelder, E. (1992). G-POWER: *A priori, post hoc and compromise power analysis for MS-DOS (computer program).* Bonn, FRG: Bonn University, Department of Psychology.

Favazza, P. C., & Odom, S. L. (1997). Promoting positive attitudes of kindergarten-age children toward people with disabilities. *Exceptional Children, 63(3),* 405-418.

Felton, G. S. (1975). Changes in attitudes towards disabled persons among allied heath paraprofessional trainees in an interdisciplinary setting. *Perceptual and Motor Skills, 40,* 118.

Florian, V., & Kehat, V. (1987). Changing high school children's attitudes towards disabled people. *Health and Social Work, 12(1),* 57-63.

Gaertner, S. L., & Dovidio, J. F. (2001). *Reducing intergroup bias: The common ingroup identity model.* Hove: Psychology Press.

Galvin, R. D. (2005). Researching the disability identity: Contextualizing the identity transformations which accompany the onset of impairment. *Sociology of Health and Illness, 27(3),* 393-413.

Gething, L. (1983). *Research of the Cumberland Disability Education Programme 1981-1983*, (unpublished paper). School of Nursing, Sydney College of Advanced Education, NSW 2016.

Gething, L. (1994). The Interaction and Disabled Persons scale. *Journal of Social Behaviour and Personality, 9,* 23-42.

Gething, l., & Leonard, R. J. (1986). *Interaction with the Disabled scale* (unpublished paper). School of Nursing, Sydney College of Advanced Education, NSW2016.

Hewstone, M., & Brown, R. (1986). *Contact and conflict in intergroup encounters.* Oxford: Blackwell.

Johnson, D. W., & Johnson, R. T. (1985). Mainstreaming hearing impaired students: The effect of effort in communicating on cooperation and interpersonal attraction. *The Journal of Psychology, 119 (1),* 31-44.

Jones, T. W., Sowell, V. M., Jones, J. K., & Butler, L. G. (1981). Changing children's perceptions of handicapped people. *Exceptional Children*, *47(5),* 367-9.

Jordan, J. E., & Cessna, W. A. (1969). A comparison of attitudes of four occupational groups towards physically disabled persons in Japan. *Journal of Social Psychology, 78,* 283.

Krahe, B., & Altwasser, C. (2006). Changing negative attitudes towards persons with physical disabilities: An experimental intervention. *Journal of Community Applied Social Psychology, 16*, 59-69.

Ladd, G., Munson, H., & Miller, J. (1984). Social integration of deaf adolescents in secondary level mainstream programs. *Exceptional Children, 50,* 420-428.

Leonard, R., & Crawford, J. (1989). Two approaches to seeing people with disabilities. *Australian Journal of Social Issues 24,* 112-125.

Leyser, Y., & Abrams, P. D. (1983). A shift to the positive: An effective programme for changing pre-school teachers' attitudes towards the disabled. *Educational Review, 35(1),* 35-43.

Leyser Y., Cumblad, C., & Strickman, D. (1986). Direct intervention to modify attitudes towards the handicapped by community volunteers: The learning about the handicapped programme. *Educational Review, 38(3),* 289-236.

Lincoln, Y.S., & Guba, E. G. (1986). But is it rigorous? Trustworthiness and authenticity in naturalistic evaluation. In D. D. Williams (Ed.), *Naturalistic evaluation. New directions for program evaluation, No 90,* (pp. 78-84). San Francisco: Jossey-Boss.

Livneh, H., & Antonak, R. F. (1994). Psychological reactions to disability: A review and critique of the literature. *Critical Reviews in Physical and Rehabilitation Medicine, 6(1),* 1-100.

Maras, P., & Brown, R. (1996). Effects of contact on children's attitudes towards disability: A longitudinal study. *Journal of Applied Social Psychology, 26(23),* 2113-2134.

Marom, M., Cohen, D., & Naon, D. (2007) Changing disability-related attitudes and self efficacy of Israeli children via a partners to inclusion programme. *International Journal of Disability, Development and Education, 54 (1),* 113-127.

Miller, N. (2002). Personalization and the promise of contact theory. *Journal of Social Issues, 58,* 387-410.

Newberry, M. K., & Parish, T. S. (1987). Enhancing of attitudes towards handicapped children through social interactions. *Journal of Social Psychology, 127,* 59-62.

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

Parish, T., & Taylor, J. (1978). The Personal Attribute Inventory for Children: A report on the validity and reliability as a self concept scale. *Educational and Psychological Measurement, 38,* 565-569.

Pettigrew, T.F. (2004). The social science of American race relations in the 20th century. In C.S. Crandall & M. Schaller (Eds.), *The social psychology of prejudice: Historical and contemporary issu*es, (pp.1-32). Seattle WA: Lewinain Press.

Pettigrew, T. F., & Tropp, L. R. (1997). Generalising intergroup contact effects on prejudice. *Personality and Social Psychology Bulletin, 23,* 173-185

Pettigrew, T. F., & Tropp, L. R. (2006). A meta-analytical test of intergroup contact theory. *Journal of Personality and Social Psychology, 90(5),* 751-783.

Pettigrew, T. F., & Tropp, L. R. (2008). How does intergroup contact reduce prejudice? Meta-analytic test of three mediators. *European Journal of Social Psychology, 38*, 972-934.

Pettigrew, T. F., & Tropp, L. R. (2011). *When groups meet: The dynamics of intergroup contact.* N Y: Psychology Press.

Rapier, J., Adelson, R., Carey, R., & Kroke, K. (1972). Changes in children's attitudes toward the physically handicapped. *Exceptional Children, 39,* 219-223.

Rimmerman, A. Hozmi, B., & Duvdevany, I. (2000). Contact and attitudes towards individuals with disabilities among students tutoring children with developmental disabilities. *Journal of Intellectual and Developmental Disability, 25,* 13-18.

Rosenthal, R., Rosnow, A., & Rubin, D. B. (2000). *Contrasts and effect sizes in behavioural research: A correlational approach*. Cambridge, U.K: Cambridge University Press.

Rubenstein, G., Fisher, L., & Iker, H. (1975). Peer observation of study behaviour in elementary school classrooms. *Developmental Psychology, 11,* 867-868.

Rusalem, H. (1967). Engineering changes in public attitudes towards a severely disabled group. *Journal of Rehabilitation, 3,* 26-27.

Sale, J. E. M., & Brazil, K. (2004). A strategy to identify critical appraisal criteria for primary mixed method studies. *Quality and Quantity, 38*, 351-365.

Siefert, K. H., & Bergmann, C. (1983). Development of a questionnaire to measure attitudes towards the physically disabled. *Heilpadagogische Forschung, 10*, 290-320.

Siller, J., Ferguson, L. T., Vann, D. H., & Holland, B. (1967). Structure of the attitudes towards the physically disabled: The disability factors scales, amputation, blindness, cosmetic conditions. *Studies in reaction to disability*: Xii, New York: New York University School of Education.

Simpson, R. L., Parrish, N. E., & Cook, J. J. (1976). Modification of attitudes of regular class children towards the handicapped for the purpose of achieving integration. *Contemporary Educational Psychology, 1,* 46-51.

Stober, J. (1999). The Social Desirability Scale-17 (SES17): Development and first reliability tests. *Diagnostica*, *45,* 173-177.

Turner, R. N., Hewstone, M., & Voci, A. (2007). Reducing explicit and implicit outgroup prejudice via direct and extended contact: The mediating role of self-disclosure and intergroup anxiety. *Journal of Personality and Social Psychology, 93,* 369-388.

Whalley-Hammell, K. (2007). Quality of life after spinal cord injury: A meta-synthesis of qualitative findings. *Spinal Cord, 45,* 124-139.

Wallymahmed, A., McKay-Moffat, S., & Cunningham, C. (2007). The Interaction with Disabled Persons scale: A validation with UK midwives. *Social Behaviour and Personality, 35(8),* 1049-1060.

Weisel, A., Kravetz, S., Florian, V., & Shurka-Zernitsky, E. (1988). The structure of Attitudes Toward Persons with Disabilities: An Israeli validation of Siller's Disability Factor Scales-General (DFS-G). *Rehabilitation Psychology, 33,* 227-238.

Wong, D. W., Chan, F., Cardoso, E., Lam, C. S., & Miller, S. (2004). Rehabilitation counseling students' attitudes towards people with disabilities in three social contexts: A conjoint analysis. *Rehabilitation Counseling Bulletin, 47,* 194-204.

Yuker, H. E., Block, J. R., &Young, J. H. (1966). *The measurement of Attitudes Toward Disabled Persons: Human Resources Study No.7*. Albertson, N.Y. Human Resources Center.

Yuker, H E., & Block, J. R. (1986). *Research with the Attitudes Toward Disabled Persons Scale ATPD 1960-1985*. Hempstead, N.Y.: Hofstra University.

Chapter Two:

Intergroup Contact and Adjusting to Acquired Disability; An Exploration of the Effects of Pre-Injury Contact with Disabled People on Post Injury Illness Perceptions, Mood and Engagement in Rehabilitation, for those with Newly Acquired Spinal Cord Injury (SCI).

Abstract

Background. Within the research literature concerning factors which influence adjustment to a wide range of acquired disabilities and chronic illness conditions, attention has been focused on illness representations about the dangers posed to the individual by that illness and how these perceptions can affect physical outcomes and psychological adjustment. For the specific acquired disability, SCI, the emphasis has been on cognitive appraisals and how these affect psychological adaptation and physical functioning. Further research looking at the effects of contact between those from different groups has shown that such contact may have a positive influence on attitudes towards those from another group, with whom they have had contact.

Aims. The aim of this study was firstly to assess whether contacts with people with disabilities, prior to acquiring a SCI, could positively influence illness perceptions made post injury. Secondly, if those with pre-injury contact had more positive illness perceptions, would they be associated with improved psychological wellbeing and greater engagement and achievements in rehabilitation post injury.

Method. Prior contact with the disabled, illness perceptions, psychological distress and engagement and functional achievements were measured for 26 people with a newly acquired SCI. Assessments of prior contact and illness perceptions were made at approximately four weeks post injury and again at the end of rehabilitation, about eight weeks later. Psychological distress and functional outcomes were evaluated at the start and completion of rehabilitation and engagement within the two weeks before the end of rehabilitation.

Findings. There was some evidence that prior contact could positively influence illness perceptions concerning the controllability aspects of their SCI. However, consequence illness perceptions and those related to emotional representations were unaffected by contact. Additionally no significant associations were found between rehabilitation outcomes and psychological distress and prior contact and illness perceptions.

Conclusions. This lack of positive association could partly explained by the choice of measures and small sample size. However given the significant association between prior contact and positive illness perceptions of controllability, it could be helpful to further evaluate the impact for those with newly acquired disabilities having contact with those who already have a physical disability. This contact could have a positive effect on illness perceptions made post injury, which in turn, could lead to more adequate adaptation to their own illness condition.

Keywords: *Spinal cord injury, cognitive appraisal, intergroup contact, illness perception*

Introduction

Unlike many acquired disability and chronic illness conditions, spinal cord injury (SCI) has an acute onset, often in traumatic circumstances, with sudden loss of control over the body, such as loss of bowel, bladder and sexual functions. The movements of all four limbs (tetraplegia) are affected when the spinal cord damage is in the neck, lower down only the lower limbs (paraplegia) are affected. Sensations throughout the body, below the level of the lesion, are also lost. Lesions can be complete, allowing for no movement or sensation below the damage to the spinal cord, or incomplete, preserving some power and feeling below the lesion level, but this may not be functional (Duff & Kennedy, 2006).

Injury is often associated with pain, which may become a chronic problem (Ravenscroft, Ahmed & Burnside, 1999; Cairns, Adkins & Scott, 1996) and occur even below the level of the lesion (Cole, 2004). The initial total physical dependency of people with a new, acute, spinal cord injury often necessitates a long unplanned stay in hospital, in a specialist spinal injuries centre, away from family and local communities. This is done to enable those with SCI to participate in multidisciplinary rehabilitation in order to manage or regain control over the multi-system failure that characterises SCI.

Psychological distress. This dramatic and extensive interruption to an individual's life can be difficult to adjust to psychologically, and some researchers regarded high levels of anxiety and depression as inevitable (Silver & Wortman, 1980; Horowitz, 1979). However, initial judgments were anecdotal and no objective measures were used (Orbaam, 1980). More recently it has been recognised that psychological distress, as measured by elevated levels of anxiety and depression, does occur at a significant level for some people who sustain a SCI.

Woolrich, Kennedy and Tasiemiski (2006) looked at anxiety and depression levels for (N=963) people with spinal cord injury (SCI), who were living in the community, (average time since injury 19.5 years). They used the Hospital Anxiety and Depression scale (HADS) (Zigmond & Snaith, 1983). They reported that clinical levels of anxiety and depression were, 31.8% and 21.8% respectively, with a tendency for depression to reduce slightly over time since injury. Compared to other groups like those with heart and kidney disease, SCI scores were higher, but lower than for breast cancer or stroke, when using the HADS. There was a distinct SCI group for whom, clinically significant levels of distress remained over time. In another longitudinal study investigating psychological distress, Kennedy and Rogers (2000), measured levels of anxiety and depression experienced by those with newly acquired SCI (N=104), at 14 points, from six weeks to two years post injury. They utilised the Beck Depression Inventory (BDI) (Beck & Steer, 1987) and Spielberger State Trait Anxiety Inventory (SAI) (Spielberger, Gorsuch, Lushene, Vagg & Jacobs, 1983). They found that there was a pattern to anxiety and depression levels. At two years post injury 16% scored above the clinical cut off for anxiety (SAI) and 28% above the cutoff point for depression (BDI). Their study also showed a subgroup of people had clinically significant levels of depression and anxiety, which they maintained over time. Some researchers have focused their attention on this subgroup and looked for explanations for their poorer psychological adjustment.

Mechanisms to explain individual differences in adjustment. Spinal cord injury and its consequent loss of control over one’s bodily functions suggests that those with higher lesions and therefore more physical disability, would have more difficulty in adjusting to their new situation, but this has not been found to be so. For example, one study looking at those with very high lesions, who were dependent on ventilators for breathing, found anxiety and depression levels were not elevated when compared to others with lower SCI, except for the initial phase at home, following discharge (Bach & Tilton, 1994, cited in North, 1999).

Some researchers have looked at intrapersonal resources, such as perceived locus of control. Krause, Stanwyck & Maides (1996) investigated factors which influenced locus of control for people (N=127) with SCI. It was proposed that those with higher internality would adjust better to their SCI because they would be more likely see their attempts to manage their injury as potentially effective. Results indicated that greater age, minority group status and less education were associated with lower internality. Buckelew, Frank, Elliott, Chaney and Hewett (1991) conducted a cross sectional evaluation of two different cohorts of people undergoing rehabilitation following SCI, in order to look for an explanation for differences in psychological adjustment. They concluded that it would be better to focus on the intrapersonal characteristics that defined those who managed best, rather than look at features in common, such as age or time since injury. Other researchers have considered factors like social support (Kennedy & Rogers, 2000) and environmental barriers and their influence on psychological adjustment (Kennedy, Sherlock, McClelland, Short, Royale & Wilson, 2010c).

However, the individual meaning of a particular injury to that person has also been a focus for an explanation of individual differences in adjustment to SCI and this will be the area of interest in this study. The role of Lazarus and Folkman's (1984) explanatory model of stress, appraisal and coping for the individual has been the subject of much of this research. This model concerns the individual assessing the potential threat posed, in this case by SCI, and then trying to regulate any threat perceived by taking action to ameliorate it and to deal with the emotional responses this creates. There are two stages to this model of appraisal (Duff & Kennedy, 2006). Firstly the primary appraisal, is the spinal injury a threat and does it represent harm to the individual and indicate loss in the future. Or can it be conceptualised as a challenge, which can be overcome and mastered. Next there is a process of secondary appraisal, in which the person judges whether they have the resources to deal with the situation and decides what they are going to do in response to the situation. If the individual judges that it is a challenge or a manageable threat, then they are more likely to be proactive and address this challenge, with approach focused strategies intent on solving the problems created by the challenge. If they judge the situation to be a threat, and feel they do not have the ability to deal with this threat, then they are more likely to direct their resources to cope with their affective responses and adopt avoidance techniques such as behavioural disengagement or emotional venting of feelings that the stressor aroused.

Kennedy with others has taken a particular interest in this area as an explanation as to how the individual experiences the potential threat posed by a SCI and how this may impact on each individual's adjustment to the situation. Kennedy, Marsh, Lowe, Grey, Short and Rogers (2000) carried out longitudinal research to establish types of coping strategies utilised by (N=87) individuals with SCI at nine points between six weeks and two years post injury. They used the SAI to measure anxiety, BDI to evaluate depression and the COPE scale (Carver, Sheier & Weintraub, 1989) to assess fifteen different coping strategies. They also evaluated functional physical achievement using the Functional Independence Measure (FIM) (Hamilton & Grainger, 1990), neurological indicators of physical disability (Frankel, Hancock & Hyslop, 1969) and the value of social support using the Social Support Questionnaire (SSQ) (Sarason, Sarason, Shearing & Pearce, 1987). The most used strategies were acceptance, positive reinterpretation, active coping, planning and social support .The least popular were behavioural disengagement, denial and ideation about alcohol and drug use. Individuals also maintained their choice of strategies over time. They found significant positive associations between depression levels and the coping strategies, mental and behavioural disengagement, denial and drug and alcohol ideation. Similar patterns were found for anxiety. Thus negative psychological outcomes were positively associated with less adaptive coping strategies. Results indicated that choice of coping strategy at six weeks post injury was predictive of psychological adjustment one year after injury.

Researchers, having found that coping strategies choices were hard to influence (e.g. Kennedy, Duff, Evans & Beedie, 2003), have turned their attention to the appraisals which informed coping mechanism decisions. Kennedy, Evans and Sandhu (2009a) looked at the value of appraisals together with coping and hope in a cross sectional study (N=54). The key finding was that threat appraisals were good indicators of higher levels of anxiety and depression. It was not possible to establish a causal relationship between appraisal and adjustment or, the effects of time since injury, due to the study design. Finally they also reported that hope was a better predictor of coping style than appraisal, which indicated that predisposing factors, which contributed to appraisal, could also be important.

This last point links to another dispositional factor, that of a Sense of Coherence, (SOC) (Antonovsky, 1993). SOC was described by Kennedy, Lude, Elfstrom and Smith (2010a), as “a belief that the world is meaningful, manageable and comprehensible” (p.612). They suggest that individuals with a strong SOC, even when faced with an unexpected event outside their control, like a SCI, will still see the situation as controllable as part of some logical ordered world. Kennedy et al. (2010a) looked at the contributions of SOC, appraisals and coping styles, to psychological adjustment. They reported that challenge appraisals were positively associated with high SOC and threat appraisals with low scores on SOC. Finally high SOC was negatively associated with psychological distress at one year follow up. These findings seem to indicate a role for a SOC in the situation of sustaining a SCI, linked to appraisal and psychological adjustment.

In another longitudinal study, Kennedy, Lude, Elfstrom & Smithson (2010b) used at a battery of tests including, Appraisal of Life Events scale (ALE) (Ferguson, Matthews & Cox, 1999) and the Spinal Cord Lesion-related Coping Strategies questionnaire, (SCL-CS) (Elfstrom, Ryden, Kreuter, Persson & Sullivan, 2002). Also they employed the Perceived Manageability Scale (PMS), which was a specially devised measure of perceived ability to deal with SCI (Kennedy, Scott-Wilson & Sandhu, 2009b), as well as the Sense of Coherence scale (SOC) (Antonovsky, 1993) and COPE, looking at coping styles such as positive reinterpretation and behavioural disengagement. Psychological adjustment was measured using the HADS and for functional achievements in rehabilitation the FIM, for (N=266) people from four European SCI centres. Questionnaires were administered as soon as possible after SCI, (at six weeks) and at 12 weeks post injury. Their regression analysis indicated that early appraisals and subsequent choice of coping strategies (at six weeks), explained a large portion of the variance found in functional and psychological outcome measures (at 12 weeks). According to the authors of this study, more attention needs to be paid to other factors that may lead to appraisal of a stressful situation, such as SOC, as these contribute to how an individual makes sense of their spinal injury.

Additionally, in a recent qualitative study, Kaiser and Kennedy (2011) put forward the idea that it was not only the appraisals that an individual makes themselves that matter, but also the appraisals of those around the person that are significant to them, such as their partners and doctors. They proposed dividing appraisals further into subcategories, for interpersonal and intrapersonal appraisals, as a more accurate guide as to how the individual arrived at their situational appraisal.

The influence of prior contact with the disabled. Research reviewed in the previous section suggests that the perceived manageability of SCI influences the appraisal process, potentially at both the primary and secondary appraisal stages. This, in turn, raises the question of why there might be individual differences in the perceived manageability of SCI. One factor that might explain these differences is contact with disability prior to their own SCI. The occurrence and nature of this contact might influence the attitudes of the person towards their disability.

There is a long history of the effects of intergroup contact on attitude formation, dating back to Allport's Contact Hypothesis. Allport (1954) proposed that contact between majority and minority groups reduces prejudice and particularly so, if the circumstances of contact optimised certain conditions. Allport proposed that the two groups should be on equal terms during contact. Their meeting should be to pursue common goals co-operatively and in an institutionally sanctioned setting. A case in point would be ‘brotherhood dinners’, which took place after the Second World War in the USA. These functions were intended to improve race relations, through contact between different racial groups, to increase understanding about the commonalities in their cultures, thus reducing prejudice against racial minorities (Pettigrew, 2004). Pettigrew and Tropp (2006) completed a meta-analysis of intergroup contact studies. They concluded that better contact, adhering to Allport’s conditions, was more effective in leading to positive attitude change. More recent research has concentrated on the quality of the contact and the processes by which contact may lead to positive attitude change (Pettigrew & Tropp, 2008; Pettigrew & Tropp, 2011). Some research has focused on the effects of clear group membership (group salience) during contact. It has been proposed that high group salience could increase the effectiveness of positive attitude, to then generalise to other members of the minority group, who have not been directly involved in meeting. However, if group membership is evident when meeting, this could lead to anxiety about contact (Voci & Hewstone, 2003). Addressing these issues, Paulino, Hewstone, Cairns and Voci (2004) investigated cross group friendships between Catholics and Protestants in Northern Ireland. They found that friendships mediated the effects of anxiety, despite clear differences in group membership, there was less prejudice amongst those who had cross group friendships. This suggests that there is still research needed to establish the most effective forms of intergroup contact. Overall, intergroup contact has been shown to increase positive attitudes towards minority groups, even when optimal conditions of contact are not achieved (Pettigrew & Tropp, 2011).

These effects of contact could equally apply to a minority group like the physically disabled, rather than race or religion. Attitudes of the general public have been shown to be quite negative towards those with physical disabilities, Chan, Livneh, Pruett, Wong & Xi-Zheng, 2009). In one study (Olver, 2001, cited in Duff & Kennedy, 2006); able-bodied people rated the quality, value and meaning of life for people with a SCI. The able bodied participants consistently gave lower ratings than those made by people with tetraplegia themselves. Those with tetraplegia, in turn, also predicted that those without spinal injuries would perceive their quality of life, as less than those who were able bodied. SCI is a rare condition (Duff & Kennedy 2006), and therefore individuals are unlikely to have experience of coming into contact with someone with that condition prior to their own injury. However, prior experience of people with physical disability in general is much more likely.

Prior experience with the disabled could influence their appraisal of their own SCI. For example, pre-injury contact with disabled people, (provided that it satisfied Allport's conditions of the required kind of contact), could enable the individual sustaining the SCI to have a greater belief in the potential of people with a disability to lead a meaningful and satisfying life, to believe that having a disability is not a complete catastrophe and that people can take control and manage their disability effectively. This, in turn, could have a positive impact on the appraisal of their SCI. For example, seeing that people with a disability can manage their disability, could feed into their perceived manageability of their own condition, highlighted by previous research as a contributor to the appraisal process.

Currently there is no evidence that prior contact can have these benefits. There is, however, some related evidence indicating that contact with other people with a SCI, after injury has occurred, can lead to more positive attitudes towards the disability. Kaiser and Kennedy (2011) noted the positive effects of the opportunity to meet with others with SCI. The ten people with newly acquired SCI in their study were interviewed individually using the Interpretative Phenomenological Analysis approach to explore their experiences of sustaining a SCI and how they were coping. Comments made by participants described how they were able to see that people with disabilities were not just victims, meeting both the newly injured and those injured for some time at the centre where they were taking part in rehabilitation, gave a sense of hope and examples of potential mastery over their injuries.

Illness representations as a framework for investigating the impact of prior contact. Illness representations could be introduced to provide a framework for understanding and assessing the impact of prior contact with disabled people on adjustment to SCI. Illness perception has its foundations in Levanthal's Common Sense Model (CSM) of illness danger (Levanthal, Mayer & Nerenz 1980). This model concerns beliefs that guide individual's health behaviour. This is an individual based, situational model, like Lazarus and Folkman's stress appraisal model and has been used to look at illness appraisal in a number of chronic illness conditions like diabetes and irritable bowel syndrome (Hagger & Orbell, 2003). However there has been very little work on illness perceptions among acute onset conditions such as SCI, although there was one recent study looking at trauma victims (Chaboyer, Lee, Wallis, Gillespie & Jones, 2010).

Moss-Morris, Weinman, Petrie, Horne, Cameron and Buick (2002) developed the revised Illness Perception Questionnaire (IPQ-R) which has been used in recent studies looking at the effects of illness representation on adaptation to illness conditions. The scale breaks illness representations into different categories. The CSM (Levanthal et al., 1980) proposed that when one is diagnosed with a particular condition, one makes individual representations of that illness and beliefs about symptoms attributed to that illness based on one's experience of the condition and prior knowledge and views one might have gained from the media or knowing others who have had that condition. One also makes representations about the expected timeline and ones' understanding of the illness, the degree to which the illness can be treated or cured and the consequences of that illness for the individual. Emotional responses to the illness run parallel to the cognitive representations and together these cognitive and emotional representations establish the potential threat. It is a feedback system, so that perceptions lead to coping responses, which in turn lead to illness outcomes, which in turn feedback into the formation of new cognitive and emotional illness representations. Illness perceptions have been linked to psychological adjustment and illness outcomes for chronic illness and acquired physical conditions. Illness perceptions of individuals at the outset of the illness have been shown to predict psychological distress, potential for engagement in treatment for the illness condition and functional physical outcomes. The illness perceptions providing the most predictive information concern the perceived time course of the illness, the severity of perceived consequences for the condition and the perceived controllability of the illness condition.

In one longitudinal study, Millar, Purushotham, McLatchie, David George and Murray (2005) looked at women (N=371) having surgery for primary breast cancer. They measured illness perceptions using the Illness Perception Questionnaire (IPQ) (Weinman, Petrie, Moss-Morris & Horne, 1996) and psychological morbidity using the General Health Questionnaire (GHQ-28) (Goldberg &Williams, 1988). Psychological distress at follow up was predicted by illness perceptions concerning a long time course for the illness, post-surgery. Millar et al. (2005) established that illness perceptions, related to the impact of symptoms and the timeline of the disease, were predictive of variations in distress levels at one year follow-up.

In another study Dempster, McCorry, Brennon, Donnelly, Murray and Johnson (2011) measured coping using COPE adapted for cancer patients and illness perceptions (IPQ-R) (Moss-Morris et al., 2002). They assessed psychological distress (HADS) at two points, twelve months apart, for (N=189) participants with esophageal cancer. They found those who perceived that neither their own actions nor their treatment could control their disease were more likely to be anxious and depressed.

In another study researchers were able to link illness representations with functional physical outcomes. Foster, Bishop, Thomas, Main, Horne, Weinman and Hay (2008) looked at those consulting their G.P. for low back pain and participants completed the IPQ-R and the Roland and Morris Disability Questionnaire (RMDQ) (Roland & Morris, (1983) Participants (N=1591) completed the measures three weeks after the consultation and six months later (N= 890). The participants, whose initial illness perceptions indicated that they expected their back pain to last for a long time, perceived they had inadequate means to control their situation and anticipated serious consequences, were likely to have poorer functional outcomes at the six month follow-up.

Lobban, Barrowclough and Jones (2005) adapted the IPQ-R for use with mental health problems, creating the Illness Perception Questionnaire for Schizophrenia (IPQS). They looked at the relationship between scores on the IPQS and the Drug Attitudes Inventory (DAI) (Hogan, Awad & Eastwood, 1983), which assessed attitudes towards anti-psychotic medication and how this was associated with compliance with medication. They found scores on the treatment control aspect of the IPQS were positively correlated with scores on the DAI, indicating that beliefs that the treatment (the anti-psychotic medication), could help control their condition. In a further study looking at mental health conditions and illness perceptions ability to predict engagement in treatment, Shah, Hull and Riley (2009) assessed illness perceptions in two secure units for those with mental health conditions, using the IPQS, self-reported engagement, using the University of Rhode Island Change Assessment (ULRICA) (DiClemente & Hughes, 1990) and staff reported engagement, Service Engagement Measure (SEM) (Hall, Meaden, Smith & Jones, 2001). They reported that illness perceptions concerning the time course of the illness and positive perceptions about the ability of the treatment to control their illness condition, were significantly positively associated with higher self-reported engagement (ULRICA), but not with staff reported engagement (SEM).

The role of illness perceptions also needs to be considered for groups where there is acute onset of the condition, like SCI, as well as chronic onset disability like osteoarthritis (Bijsterbosch, Scharloo, Vesser, Wath, Meulenbelt, Huizinga & Kloppenberg, 2009), in order to learn more about their value for these groups. Chaboyer et al. (2010) looked at the ability of individual trauma sufferers' illness representations to predict health related quality of life and physical outcomes. They administered the Chinese version of the IPQ-R (Lee, Chaboyer & Marianne, 2008) and the Medical Outcome Study (short form 36) (Ware, Kowsinki & Gandeck, 1993) to participants (N=114) immediately after the trauma, three and six months later. They found that illness perceptions measured at three months, concerning the timeline of the illness and emotional representations were predictive of the Mental Summary Scale Score aspect of the Physical Summary score, at six months post injury.

There is evidence here that illness perceptions concerning the time course of the illness, the impact of the illness on one's life and whether the illness was perceived as controllable, could all predict levels of psychological distress, willingness to engage in treatment and physical outcomes for illness conditions.

Summary. From the literature reviewed above it is apparent that there is an uninvestigated area concerning the role of prior contact with disabled people and related illness perceptions. The impact of these factors on the psychological adjustment, willingness to engage in treatment and functional outcomes for people with newly acquired disabilities could benefit from further investigation. Research in this area could contribute to the body of work that already exists related to stress appraisal and coping.

Prior contact with disabled people could result in more positive attitudes to disability already existing when someone then sustains a physical disability, like SCI. The stress appraisal and coping model and illness perceptions can provide a framework for thinking about more positive attitudes, or lack of them without prior contact, on subsequent adjustment.

Those with good quality prior contact with the disabled may make a more positive appraisal of being disabled themselves, because they can draw on their own evidence of people leading successful and meaningful lives alongside physical disability. This may also relate to the illness representations they form as they have experienced how others manage and thus view SCI as having a less devastating impact on their lives. On the basis of the literature reviewed above, less negative consequence and control beliefs may be expected to result in more positive primary and secondary appraisals.

More positive control and consequences beliefs have been directly associated with less psychological distress, greater engagement in treatment and better physical outcomes. It was the intention of the present study, to investigate these possible effects of prior contact, on people with newly acquired SCI.

Aims of study. It was proposed that positive pre-injury contact with physically disabled people would positively influence individual's illness perceptions concerning the controllability and consequences of their own spinal injury. In turn these more positive beliefs would lead to improved mood, greater engagement in rehabilitation and better functional outcomes for individuals.

Hypothesis 1: Pre-injury contact with disabled people will be associated with more positive illness perceptions, specifically with perceptions of higher personal and treatment control and with perceptions of less severe consequences and with less severe emotional representations.

Hypothesis 2**:** These positive illness perceptions will, in turn, be associated with less depression and anxiety.

Hypothesis 3: Positive illness perceptions will also be associated with greater engagement in treatment.

Hypothesis 4: Greater engagement in treatment and less depression and anxiety will be associated in turn with better functional progress.

Method

Ethical approval was gained from the UK's National Research Ethics Committee (see Appendix A (1) and A (2) for details).

Recruitment and participants. A power calculation was conducted using the G-POWER programme of Faul and Erdfelder, (1992). The main analysis focused on correlations. To ensure adequate power (0.80), to detect a large effect correlation (r=.5), with alpha set at 0.05(two tailed), the calculation indicated a sample size of at least 26 participants. This was rounded up to 30 participants to address the possibility of dropouts.

Some potential participants were excluded from the study due to age or co-morbidities. The exclusion criteria were being under 18 or having a significant brain injury, severe mental illness or learning difficulty or lack of understanding of the English language that would interfere with their participation in the study.

Participants were recruited from those newly injured, neurologically impaired patients admitted to one Specialist Spinal Injury Centre (SSIC) between April 2011 and January 2013. Each newly injured person admitted to the centre who met the qualifying criteria was approached to participate by a member of the Psychology team. If interested they were provided with an information sheet about the study (see Appendix B), and given a minimum of twenty four hours to consider joining the study before the main investigator approached them to answer any questions and to take their written consent if appropriate (see Appendix C). Twenty eight people agreed to taking part the study. Two participants were transferred out of the centre at short notice, one to another spinal centre closer to their home and one back to her home before the second set of data collection could be completed, therefore they were excluded from the study. Twenty six participants completed all aspects of the study.

Demographic information about these participants has been given in Table 2.1. Tests for differences were made between study participants and other people with newly acquired SCI admitted to the SSCI centre during the period of the study. The two groups were compared on the following demographic factors, age, sex, whether living alone or with others, level and completeness of spinal injury, using Chi Squared and T-Tests. The comparison group was composed of all those with new SCI, who completed goal planning at the SSIC between March 2011 and December 2012. Results indicated that there were no significant variations from the comparison group, based on demographic variables (age results are given in Table 2.1 and other demographic information in Table 2.2). The sample was therefore considered to be reasonably representative of the typical new SCI admissions to the SSIC during this period of time.

Table 2.1

Age Data

Age range	N	mean	Standard deviation	Range	t-test sig.diff means	df	p value
Participant	26	50.27	14.92	21-78 (57)			
Comparison group	134	53.88	18.05	16-87 (71)	-.958	158	.340

Table 2.2

Other demographic variables

	Participants n=26		Comparison n=134		Chi-squared value	df	Exact p value (two tailed)
	n	%	n	%			
Male	17	65	94	70			
Female	9	35	40	30	.233	1	.649
Living with partner	16	61.5	78	61			
Living alone	10	38.5	50	39	.033	1	1.000
Lesion level-paraplegia	12	46	72	54			
Lesion level-tetraplegia	14	54	62	46	.063	1	.801
Lesion type-complete	9	35	43	32			
Lesion type-incomplete	17	65	91	68	.065	1	.821

4. **Measures.** ***Contact with the Disabled Persons scale (CDP).*** The CDP (Yuker & Hurley, 1987) is a single scale comprising twenty items, examining the amount and type of contact the individual participant has had with physically disabled people (see Appendix D). For each item, the individual is asked to consider the statement describing each contact situation which could have happened to them, using a five point likert scale for frequency (1 = never, 5 = very often). For example, "How often have you discussed your life or problems with a physically disabled person?" The scale range is 20-100, higher scores indicating more contact and better quality of contact.

The Illness Perception Questionnaire-Revised (IPQ-R). The IPQ-R is a valid and reliable instrument, which has been used to assess representations of physical illness across a variety of patient groups (see Appendix E). Seven subscales were used in this study. Three subscales measured, Illness Coherence (five items maximum score 25), (the degree to which participants feel they can make sense of their illness), Personal Control (six items maximum score 30), (the belief in personal efficacy to control their illness or symptoms), Treatment Control (five items maximum score 25), (the effectiveness of medical treatment in curing or controlling their disease). Scores on these subscales indicated positive illness perceptions if they were high and more negative illness perceptions if they were low. The four remaining subscales were, Timeline Acute/Chronic (six items maximum score 30), (the expected duration of the illness), Timeline Cyclical (four items maximum score 20), (the variability and predictability of symptoms), Consequences (six items maximum score 30), (the negative consequences of the illness on the patient's life) and Emotional Representation (six items maximum score 30), (the negative emotions associated with the illness). Scores on these latter four subscales indicate more positive illness representations, if scores were low and more negative perceptions, if they were high. Subscale items were rated on a five point likert scale, (5= strongly agree, 1= strongly disagree, some items were reverse scored). Each item was changed to represent perceptions about SCI rather than any other illness condition, for example, "There is very little that can be done to control my spinal injury".

Hospital Anxiety and Depression Scale (HADS). The HADS is a well-known and widely used mood screening tool, designed especially for use with medical outpatients and to overcome the effects of somatic indicators of mood change (see Appendix F). It is made up of 14 items divided in two subscales, anxiety (seven items) and depression (seven items). It involves rating 14 statements on a four point likert scale (0-3), aligning the statement that best represents the individual's mood state at that time and within the last seven days. For example," I still enjoy the things I used to enjoy", rating from not at all, score =3 just as much, score =0. Each subscale should be considered separately as either a measure of current depression or anxiety. Scores over eight indicate clinical levels of mood disturbance (range 0-21), for each subscale. From the reliability point of view Cronbach's Alpha scores were, for anxiety subscale a = .85, and depression subscale, a = .79, for 963 people with SCI (Woolrich et al., 2006)

The Spinal Cord Independence Measure (SCIM). The SCIM (Catz & Itzkovich, 2007) was a specially designed measure for use in spinal cord injury rehabilitation to assess achievements in functional independence (see Appendix G). It contains a number of items divided into three subscales, assessing activities of daily living, continence and breathing and finally mobility. Scoring on subscales varies concerning how much help an individual requires with each activity. Scores range from 0-100 for the whole scale. Higher scores indicate more independence.

The Key Worker Engagement Measure (KEM). The KEM (Hall et al., 2001) was developed for use in measuring engagement in treatment with mental health services. The scale was designed to be completed by each participant's key worker within the service (see Appendix H). It comprises six different subsets looking at appointment keeping, client therapist interaction, communication and openness, client's perceived usefulness of treatment, collaboration with treatment and compliance with medication. Some subscales only have one item and none more than three items. Each item is rated on a five point scale from never = 0 to always = 5, range of possible scores for the whole scale being 11-55, higher scores indicating better levels of engagement in treatment. There was a cut off score devised by the authors discriminating good engagers, scores above 33 and poor engagers, scores below 33.

The observer rated engagement (OBS). The OBS (Kennedy, Walker & White, 1991) was employed to observe participants' engagement in rehabilitation activities in areas where rehabilitation took place (i.e. physiotherapy gym or occupational therapy department) during planned activity periods. Individuals were observed using a pen and paper method with a coding sheet, for one minute once every three minutes. Each participant was observed for a total of sixty minutes. Their level of engagement with activities, staff and other patients within each observation, was categorised using a system developed by Kennedy et al. (1991) which they used to evaluate the introduction of a goal planning system into a specialist rehabilitation service for those with SCI. Categories concerned whether those observed were engaged in individual tasks and alone, unengaged or engaged on a task and/or interacting with others, (see Appendix I for category definitions). Each observation was scored as, either, engaged with a task and/or interacting with another person, or unengaged on a task and/or interacting with another person, or unengaged and alone. A percentage score for engagement was given over the hour long observation, for each participant. Inter-rater reliability was not tested as only three observational periods were completed by anyone except the main investigator and none with two raters. In the original study (Kennedy et al., 1991), inter-rater reliability was reported at 90%.

Data Collection. Data collection took place during each participant's initial admission for acute management and rehabilitation at the SSIC. Measures, IPQ-R and CDP were taken before active rehabilitation began when participants were still on bed rest and had little information about their diagnosis and likely prognosis (time one –T1) At the SSIC patients spent approximately six weeks on bed rest following their injuries before mobilising to take part in rehabilitation. Measures were taken again within two weeks of the conclusion of rehabilitation (time two-T2). The mean time between T1 and T2 administration was 56.77 days, standard deviation being 22.57 days and minimum 7 days and maximum, 118 days. The CDP and the IPR-R were administered by the main investigator where possible or by other members of the psychology team if needed. Assessment using the SCIM and HADS formed part of treatment at the SSIC and the HADS was administered by the participants' key worker in the goal planning process, prior to the first and last goal planning meeting. The SCIM was completed by the multidisciplinary team present at the participant's first and last goal planning meeting, which defined their period of rehabilitation. The KEM was completed by the participant's key worker in the goal planning system, in the fortnight before their last goal planning meeting. Observations (OBS) were made by the main investigator, after arrangement with staff and study participant, in the two week period prior to the individual's last goal planning meeting. At the SSIC, goal planning meetings commence within two weeks of patients mobilising from their beds, (approximately eight weeks after admission) and continue at two weekly intervals until rehabilitation goals have been completed, (rehabilitation maybe completed several weeks before actual discharge if there is no suitable community placement available). The schedule for the administration of measures has been set out in Table 2. 3.

Reliability analysis. The internal reliability of each measure was assessed using Cronbach's alpha. Results have been given in Table 2.

Table 2.3

Schedule for test administration

Time One (T1)	Within 2 weeks of Time Two (T2)	Time Two (T2)
CDP	OBS	CDP
IPQ-R	KEM	IPQ-R
HADS		HADS
SCIM		SCIM

Table 2.4

Reliability Analysis

Measures	TI Alpha	T2 Alpha
CDP	.941	.836
HADS (totals)	.922	.964
SCIM	.820	.832
IPQ-R		
Timeline Chronic	.933	.884
Consequences	.731	.750
Personal Control	.781	.898
Treatment Control	.582	.675
Illness Coherence	.880	.748
Timeline Cyclical	.745	.801
Emotional Representation.	.820	.832
KEMS (administered within two weeks of T2) α= .818		

Cronbach's Alpha showed satisfactory reliability for all measures (i.e. alpha at least 0.7) excepting the Treatment Control subscale of the IPQ-R (T1and T2).

Findings

Descriptive Statistics. Results for all measures were explored to see whether they departed significantly from normal distribution. This was assessed using the Komogorov-Smironov test. Results are given in Table 2.5 below. None of the results was significant, indicating the distributions did not depart significantly from normal, and the data were suitable for parametric analysis.

Mood measures. Mean scores on the Anxiety and Depression subscales of the HADS were both below the cut-off point for clinical significance (i.e. scores of 8 or above).

Measures of engagement. There were limitations to the value of both the observed levels of engagement (OBS) and the staff reported engagement (KEM) due to ceiling effects.

There were extremely high levels of engagement observed (OBS) (mean engagement 96.81%). Similarly staff reported very high levels of participant engagement in rehabilitation (mean 50.80), where the potential minimum was 11 and maximum score was 55. No positive association was found between the two measures of engagement, r (26) =-.151 p = .461.

Hypothesis 1. *Pre-injury contact with the disabled will be associated with more positive illness perceptions, specifically with perceptions of higher personal and treatment control and with perceptions of less severe consequences and with less severe emotional representations.* Correlations between scores on the CDP (T1) and each of the IPQ-R subscales (T1 +T2) are given in Table 2.6.

Table 2.5

Normal Distribution-All Measures

	Mean		Standard Deviation		Range of obtained Scores		Kolmogorov Smirnov Score		p value	
	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
CDP	43.88	60.04	16.12	10.95	20-73 (range 20-100)	40-83	.78	.64	.52	.76
IPQ-R Timeline Chronic	21.77	24.12	6.40	5. 46	12-30 (range 6-30)	7-30	.80	.74	.49	.59
IPQ-R Consequences	23.54	23.92	4.13	4.10	15-28 (range 6-30)	16-30	.90	.58	.35	.85
IPQ-R Personal Control	21.31	21.85	4.61	5.57	11-30 (range 6-30)	6-30	.65	1.06	.75	.18
IPQ-R Treatment Control	16.81	16.00	3.20	3.63	12-22 (range 5-25)	8-22	.76	.53	.56	.92
IPQ-R Illness Coherence	19.92	21.19	3.43	2.31	10-25 (range 5-25)	17-25	1.03	.81	.21	.49
IPQ-R Timeline Cyclical	8.92	9.23	3.05	3.51	4-14 (range 4-20)	4-15	.80	.83	.49	.44
IPQ-R Emot/Rep	17.23	16.04	5.16	4.80	8-26 (range 6-30)	6-24	.98	.56	.96	.86
HADS Anxiety	6.04	6.57	5.21	6.17	0-17 (range 0-21)	0-17	.73	.99	.61	.24
HADS Depression	6.12	6.36	4.72	6.09	0-16 (range 0-21)	0-19	.86	1.02	.41	.22
SCIM totals	34.23	63.23	18.26	22.73	14-77 (range 0-100)	15-92	.99	.76	.25	.55
Measures taken within 2 weeks of T2										
OBS Engaged	96.81% mean score		6.841		70-100		N/A		N/A	
Unengaged	3.19 % mean score		6.841		(range 0-100)					
KEM Totals	50.80 mean score		3.63		42-55 (range 11-55)		.928		.316	

Table 2.6

Tests of Association IPQ-R (T1+T2) and CDP (T1)

Tests of association Pearson Product moment		CDP (T1) Pearson correlation score	CDP (T1) p Value
IPQ-R Timeline chronic	(T1)	-.075	.716
	(T2)	-.233	.273
IPQ-R Consequences	(T1)	-.013	.948
	(T2)	-.123	.548
IPQ-R Personal Control	(T1)	.400*	.043
	(T2)	.539**	.005
IPQ-R Treatment Control	(T1)	.180	.378
	(T2)	.500**	.009
IPQ-R Illness Coherence	(T1)	.010	.963
	(T2)	.047	.821
IPQ-R Illness Cyclical	(T1)	.106	.605
	(T2)	.201	.325
IPQ-R Emotional Rep.	(T1)	.184	.368
	(T2)	.215	.292

*p =.05 ** p =.01

Results indicated higher scores on CDP (1), (showing higher levels and better quality of contact with disabled people prior to sustaining their own injuries) were significantly positively associated with higher scores on the control aspects of the IPQ-R, (T1+T2), concerning beliefs that both treatment (Treatment Control T2) and personal actions (Personal Control T1+T2) could positively affect the course of their illness. This finding was partially supportive of the first part of the hypothesis; that positive prior contact with disabled people would lead to positive illness perceptions about the controllability of their illness condition (SCI), but not the consequences aspect of illness perceptions.

Contrary to the hypothesis pre-injury contact was associated with more negative emotional representations, though this association was not significant.

Hypothesis 2: *These positive perceptions, (more control, less serious consequences and less severe emotional representations), will, in turn, be associated with less depression and anxiety.*

Hypothesis 3: *And with higher levels of engagement*. To test these hypotheses, illness perceptions were correlated with HADS scores at both T1 and T2 and with the KEM scores. No significant associations were found between illness perceptions at T1 and T2 and HADS at T1 and T2 (except for Emotional Representations T2 and HADS T1). No Significant associations were found between IPQ-R at T1 and T2 and KEM either. Thus neither hypotheses 2 or 3 were supported. See Tables 2.7 for a summary of results.

Table 2.7

Tests of Association, IPQ-R, HADS and KEM

Tests of association Pearson Product moment		HADS (T1) correlation	HADS (T1) p value	HADS (T2) correlation	HADS (T2) p value	KEM Correlation p value	
IPQ-R Timeline chronic	(T1)	-.157	.444	-.118	.574	.246	.225
	(T2)	-.277	.171	-.311	.131	.120	.559
IPQ-R Consequences	(T1)	.055	.788	-.055	.794	.109	.597
	(T2)	.061	.768	.066	.975	.314	.118
IPQ-R Personal Control	(T1)	.145	.479	.061	.733	-.102	.621
	(T2)	.177	.388	-.136	.517	-.273	.273
IPQ-R Treatment Control	(T1)	.133	.518	-.066	979	-.017	.936
	(T2)	.026	.898	.052	.806	-.102	.621
IPQ-R Illness Coherence	(T1)	-.324	.107	-.239	.244	.010	.963
	(T2)	-.290	.515	-.173	.409	-.047	.820
IPQ-R Timeline Cyclical	(T1)	.017	.933	.178	.396	-.279	.168
	(T2)	.159	.437	.126	.549	-.172	.400
IPQ-R Emotional Rep.	(T1)	.361	.070	.301	.144	.180	.378
	(T2)	.510**	.008	.329	.108	-.212	.299

*p =.05 ** p =.01

Hypothesis 4: *Greater engagement in treatment and less depression and anxiety will, in turn, be associated with better functional outcomes.* Better functional progress was measured by the differences between SCIM scores at T1 and T2 -so the higher the difference in scores, the more functional progress made. There were no significant correlations between the SCIM difference score and the (KEM) engagement score (r =.128; p.532), the OBS score (r =.319; p.112), the HADS T1, (r = -.047; p.820), the

HADS T2, (r = -.057; p.787). As there were no significant associations, hypothesis 4 was not supported.

Further analysis. One possible explanation for the lack of association between the SCIM difference score and the KEM and the OBS was the ceiling effects on these two engagement measures. Therefore it was decided to analyse the correlation between the SCIM difference score and both the IPQ-R (T1 and T2) scores and the CDP (T1). There were no significant correlations found. See Table 2.8.

Table 2.8

Correlations: IPQ, CDP and SCIM differences

		SCIM Differences Correlations	SCIM Differences p value
IPQ-R Timeline Chronic	T1	-.348	.081
	T2	-.350	.079
IPQ-R Consequences	T1	-.151	.462
	T2	-.178	.385
IPQ-R Personal control	T1	-.091	.659
	T2	-.048	.815
IPQ-R Treatment control	T1	.022	.914
	T2	.278	.169
IPQ-R Illness coherence	T1	-.103	.615
	T2	-.039	.815
IPQ-R Timeline cyclical	T1	.248	.222
	T2	.028	.891
IPQ-R Emotional Representation	T1	-.301	.135
	T2	-.098	.634
CDP	T1	-.034	.871

Supplementary analysis. ***Demographic differences***. Participant scores on all measures were compared for demographic variables using the Mann Whitney U Test as some of the scales had failed to show normal distribution.

There were significant differences in illness perceptions for those who had complete compared to incomplete lesions and lower and higher lesions (paraplegia and tetraplegia respectively), at both T1 and T2. Those with complete and higher lesions, perceived they had less personal and treatment control, perceived more serious consequences and saw their condition as longer lasting than those with incomplete and lower lesions. It may have been that level and completeness of lesion had a separate influence on illness perception for these different demographic groups. However, due to the small numbers in each group, it was not possible to analyse them satisfactorily. Significantly different results have been given in Table 2.9.

Table 2.9

Demographic Variables, significant differences

All Measures		Mean Scores	Mann-Whitney U Score	p value
CDP (T1)	Male	36.76		
	Female	57.33	U = 21.50	p.002**
IPQ-R (T1) Timeline Chronic				
	Paraplegia	24.25		
	Tetraplegia	19.64	U= 44.5	p.041*
	Complete	27.44		
	Incomplete	18.76	U= 12.50	p<.001**
IPQ-R (T1) Personal Control				
	Complete	19.11		
	Incomplete	22.59	U =39.50	p.045*
IPQ-R (T1) Treatment Control				
	Complete	14.22		
	Incomplete	18.18	U =20.00	p.001**
IPQ-R (T1) Illness Coherence				
	Complete	22.22		
	Incomplete	18.71	U= 25.00	p.003**
IPQ-R (T2) Timeline Chronic				
	Paraplegia	26.50		
	Tetraplegia	22.07	U=45.50	p.045*
	Complete	27.11		
	Incomplete	22.53	U= 34.00	p.020*
IPQ-R (T2) Treatment Control				
	Male	14.94		
	Female	18.00	U =38.50	p.039*
IPQ-R (T2) Consequences				
	Paraplegia	25.67		
	Tetraplegia	22.43	U=45.00	p.044*
	With partner	17.56		
	Single	13.60	U = 41.50	p.042*
IPQ-R (T2) Emotional representation				
	With partner	17.56		
	Single	13.60	U= .41.50	p.042*
HADS (T1) Depression				
	Paraplegia	3.83		
	Tetraplegia	8.07	U=41.00	p.025*

Key * p= .05 ** p= .01

Discussion

Hypothesis 1: *Pre-injury contact with disabled people will be associated with more positive illness perceptions of higher personal and treatment control and perceptions of less severe consequences and with less severe emotional representations.* The results of the study partially supported this hypothesis. Prior contact was significantly correlated with personal control perceptions at T1 and with both personal and treatment control at T2. However, consequences illness perceptions and emotional illness representations were not significantly associated with prior contact.

This finding gives some support to the hypothesis that, through good quality prior contact with others with physical disabilities, the participants in this study may have been more aware, from their own experience, that disability can be managed. This could have led to them seeing their injury as one that was potentially controllable.

As this study may be one of the first to look at the influence of prior contact with the physically disabled, on illness perceptions for those with a newly acquired SCI, it seems important to establish how these findings fit into the substantial related work already available on appraisal and coping. Folkman (1984) discusses how control beliefs may affect both primary and secondary appraisal. She makes the distinction between generic control beliefs, which might affect primary appraisal, and specific control beliefs that would influence secondary appraisal. Prior contact with disabled people could possibly influence both primary and secondary appraisal. Generic beliefs about controllability leading to primary appraisal (i.e. the assessment of whether a situation constitutes a threat or a challenge, and the extent of any threat or challenge) could be positively influenced by prior knowledge and experience, through contact with the disabled. Prior contact could also influence secondary appraisal (i.e. the evaluation of whether and how the individual can address any threat), as it could contribute to the individual being able to weigh up their potential to cope with the specific situation of their SCI. The contact could possibly provide some examples of ways to cope and problem solve in the life changing circumstances of sustaining a SCI. For example, beliefs about control are reinforced by experience, and if the situation has been appraised as controllable, it would be more likely to be seen as a challenge rather than a threat. Challenge appraisals do not tend to generate such negative emotions enabling the individual to concentrate more on problem solving and deal more successfully with the stressful situation. Even in the largely uncontrollable situation of sustaining a SCI, generic and situational perceptions of controllability, based on prior experience of those with disabilities, may help individuals to see something positive even in a negative situation, creating a new means of control. For example, Folkman (1984) described how an individual who suffers a SCI may decide to abandon walking as a controllable outcome and concentrate on moving about effectively in a wheelchair.

Prior contact is likely to inform the appraisal made right at the beginning of the acquired disability. Appraisals made then have been shown to be predictive of psychological adjustment later on. Kennedy et al. (2010b) were able to demonstrate that appraisals made at six weeks post injury were predictive of psychological outcomes at twelve weeks post injury. It is important to assess factors that potentially positively influence appraisal, such as prior contact, which could help the individual to perceive their SCI as a challenge rather than a threat, as this may lead to the choice of more functional and adaptive coping. Kennedy et al. (2009a) supported this view, as they found that threat appraisals were associated with higher levels of anxiety and depression and the adaptive coping strategy they termed, fighting spirit, was positively correlated with challenge appraisals.

If control beliefs affected secondary appraisal then they should have an impact on how a person copes with their situation. Chase, Comille and English (2000) provided an example of this in their study investigating life satisfaction among people with SCI. They conclude that perceived control was very important; for example, being able to direct one's own care, even when one was unable to complete it without help. Perceiving effective controls in your situation could be an important contributor to adequate adjustment. It is possible that prior contact with the disabled experienced by the participants in this study, contributed to appraisal of their situation in such a way, as to aid adjustment, as described in the literature reviewed here concerning appraisal and psychological outcomes.

Prior contact however, did not show any impact on perceived consequences or emotional representations associated with their SCI. This is unexpected in the light of earlier findings indicating that perceived severity of consequences and emotional impact on emotional representations at the outset of the illness condition, were predictive of later psychological wellbeing. For example Millar et al. (2005) found perceiving more severe consequences soon after surgical treatment for breast cancer was predictive of more psychological distress at one year follow-up. Failure to support this part of the hypothesis may possibly be explained by the times of test administration at T1. The IPQ-R was first administered when participants were on 'bed rest', before they mobilised or started rehabilitation. They also had limited information about their diagnosis or prognosis at this stage. Thus, as North described, they may have had little opportunity to come to an understanding of their situation, its implications, and the impact on their emotional wellbeing. North pointed out that in these early stages after injury one might be affected by, "…medication, sensory deprivation and pain. The presence of these aspects of SCI, may delay full realisation of the significance of the injury on the individual and their life" (North, 1999, p.671). This does not explain, however, why these aspects of the IPQ-R were not associated with prior contact at T2 either.

Hypothesis 2: *These positive illness perceptions (higher personal and treatment control and perceptions of less severe consequences and with less severe emotional representations) will be associated with less anxiety and depression*. Positive illness perceptions were not associated with less psychological distress. This finding was contrary to other research literature such as that by Moss-Morris, Petrie and Weinman (1996). They evaluated illness perceptions for those with chronic fatigue syndrome and reported that participants, who thought that their illness was out of their control and caused by stress and had very severe consequences, were also those who were the most psychologically impaired. In a more recent study Fischer, Wiesenhaan, Does-den Heijer, Kleijn, Nortier and Kaptein (2013) assessed the effectiveness of a psychological care intervention helping women after primary breast cancer surgery. They found perceived severity of consequences and the length of the perceived time course of the illness at its outset were significantly related to psychological wellbeing at follow-up.

The lack of association in the present study may be partly explained by the low mean scores on the anxiety and depression scales for participants. These were below the cutoff level for clinical significance and showed the generally low level of psychological disturbance among participants. Other studies have also found low levels of anxiety and depression amongst the majority of those sustaining a SCI (Kennedy & Rogers, 2000). Finally the short-term nature of the study may have had an impact. Others have found little change in psychological wellbeing in measures taken at six and 12 weeks post injury (Kennedy et al., 2010b). This suggests that future long-term follow-up may be necessary to see the value of early illness perceptions on the psychological welfare of those with SCI.

Hypothesis 3: *Positive illness perceptions (of higher personal and treatment control and perceptions of less severe consequences and with less severe emotional representations) will be associated with greater engagement in rehabilitation***.** Positive illness perceptions of controllability and consequences were not associated with greater engagement with rehabilitation. This finding was not representative of earlier research in this area, which had found positive associations. For example, Stafford, Jackson and Berk (2008) found that IPQ-R scores concerning consequences of not changing one's behaviour after a heart attack, predicted willingness to engage in treatment. Lobban et al. (2005) also reported, with participants in a mental health setting, that beliefs that treatment could control one's condition led to better self-reported compliance.

The measures of engagement employed in this study may have contributed to the lack of significant findings. Further, due to ethical constraints, observations (OBS) were not permitted in any potentially private areas of the SSIC and were taken in situations in which participants were very unlikely not to be engaged in rehabilitation (e.g. taking part in timetabled gym sessions). Participants had to be informed when and where observations were taking place. This procedure may have led to the extremely high levels of engagement recorded (mean engagement 96.81%). Similarly, staff reported very high levels of participant engagement in rehabilitation, (KEM, mean score 50.80, range 11-55). Thus any sensitivity to potential differences was lost because of ceiling effects. Additionally the KEM may not have been sensitive enough to the aspects of engagement that were of interest to this study. The KEM was originally designed to measure engagement in mental health settings (Hall et al., 2001) and looked at key worker assessment of patient engagement, in part, in terms of attending appointments and medication compliance, for example. These aspects were not particularly relevant in the context of SCI, where patients refusing their medication or failing to attend timetabled rehabilitation activities was less likely. Therefore the KEM may have been insensitive to identifying features in participant behaviour that would indicate good or poor engagement. There was a lack of association between the two measures of engagement. This may have been due to the ceiling effects on both measures, or it may have been the case that they were not measuring similar things and that one or both measures lacked validity. Shah et al. (2009) also failed to find positive associations between illness perceptions of controllability and staff ratings of engagement using the KEM, but found significant correlation between these perceptions and a self-reported measure related to engagement.

Hypothesis 4: *Greater engagement in treatment and less depression and anxiety, will, in turn, be associated with better functional progress***.** Functional progress was assessed by measuring the differences between SCIM scores for participants, at T1 and T2. No significant associations were found between greater engagement lower mood scores and functional outcomes. As discussed earlier, the limitations of the measures of engagement may have rendered them insensitive to factors of participant engagement that would have been relevant to mood levels and functional achievements in rehabilitation. Likewise the relatively low overall scores on the HADS may have also reduced the likelihood of finding significant associations with functional outcomes.

This lack of relatedness departed from findings reported in earlier research. For example, Kennedy et al. (2000) found that functional independence varied in relation to anxiety and depression levels. These discrepancies between expected and obtained findings may, in part, be explained by the measure chosen to determine functional progress. The SCIM difference scores may not have been the best way of measuring responsiveness to rehabilitation. Participants with differing levels of physical ability at T1 did not necessarily have an equal chance of improving by a given amount at T2. It was likely that those with more severe disabilities had less chance to show improvement in functional independence, than those with less physical limitations. This factor may also have had a confounding effect on the mood variable, as indicated by demographic data comparisons. For example, variables such as lesion level significantly affected depression scores at T1. Paraplegics (mean score 3.38) had significantly lower scores than tetraplegics (mean score 8.07). However due to the small number of study participants, further analysis of these differences was not possible.

Additional findings. It was found that the CDP scale did not correlate with the mood or engagement measures or with functional improvement. Illness perceptions (IPQ-R) also failed to show significant correlations with functional outcomes. Although this relationship was not directly addressed in the study aims, this finding ran contrary to the findings of earlier studies. Foster et al., (2008) found that among those consulting their

GP for low back pain, illness perceptions concerning their pain being uncontrollable, lasting for a long time and having very serious consequences, predicted functional outcomes at six months. The small number of participants in this study may also have been a contributing factor to the lack of associations found.

Limitations of studies. Overall, the limitations of the study fall into two categories, the lack of sensitivity and validity of the measures used and the small number of study participants. The lack of significant findings in the study may possibly be explained by these limitations.

Questions about the sensitivity of the HADS and the engagement measures were discussed earlier, as were the validity issues concerning the keyworker engagement measure and the SCIM difference score. The validity of the CPD scale itself might be in question and could have contributed to this lack of association with other measures. The CDP measures contact with disabled people; it is a unidimensional measure, with quality and frequency items, which are not divided into separate subscales, items contribute equally to a total maximum score of 100. Thus although the CDP measures quality and quantity of contact with disabled people, these factors are not differentiated within the scoring. Due to this structure, good quality contact may not be distinguishable from poorer but more frequent contact (Pruett, Lee, Chan, Wong, & Lane, 2008). Further it is not an attitude measure. One more frequently used attitude measure is the Attitude Toward Disabled People scale (ATDP), developed by the same researchers (Yuker & Block, 1986). However this measure also has the same unidimensional structure, with the same implications. Chan et al. (2009) have argued that this measure too, assesses different aspects of attitude, although it is still widely employed in its current form. In hindsight it may have been more useful to employ both measures in conjunction with one another. Another problem with the CDP was that it was measured retrospectively. This made it uncertain whether differences in illness perceptions may have influenced retrospective recall about their prior contact, when completing the CDP. There is a need for a more adequate, theoretically based, measure of contact, which establishes its relationship to attitude.

The small sample size also meant that the power of the statistical tests were relatively low. This could have meant that genuine effects may not have been detected by the statistical analyses. Some of the correlations obtained could have turned out to be significant if there had been a larger sample of participants. For example, there was one significant association between emotional representations on the IPQ-R at T2 and the HADS at T1, but the association between emotion representations at T1 and HADS at T1, also approached significance.

The small sample size also limited the possible statistical analyses that could be conducted. For instance it was not possible to look at how demographic and injury related factors might have influenced the results.

Study participants were self-selecting and this may have caused bias in some way. Those who were more anxious and depressed may have been reluctant to participate in the study especially as it involved discussion of their SCI at an early stage. This might explain the relatively low mood scores on the HADS. Voluntary participation may also have mean that the sample may not have been representative. However no differences were found between the sample participants and the comparison group of others admitted over the same time period to the SSIC. The lack of differences may have been due to the small size of the sample group. Therefore caution should be shown in generalising these results to others with SCI or other physical illness conditions.

Directions for future research. Much work has been done on the role of appraisal and other pre-dispositional factors, in adapting to an acquired disability such as SCI., (e.g. Kennedy et al., 2000; Kennedy et al., 2009a; Kennedy et al 2010a; Kennedy et al., 2010b). Using the illness perception framework offers a rare opportunity to enrich research in this area by linking it to the wider body of appraisal-related research on a range of other medical conditions. Future research could involve the measurement of appraisal, pre-dispositional factors like perceived manageability and a SOC, as well as assessing illness perceptions using the IPQ-R, to look at the overlap in appraisals of controllability of the illness condition. One area that might be of particular interest in SCI could be the use of illness perceptions to further investigate differences in participants' illness perceptions found in this study, based on completeness and level of lesion, (which indicated the severity of the physical disability). Researchers in this area have indicated that level of injury was not an important factor in how individuals adapted to their SCI (North, 1999; Duff & Kennedy, 2006). However illness perceptions have not been employed so far to look at this issue for those with SCI. Severity of disability has been shown to be related to illness perceptions concerning the controllability, consequences and timeline of the acquired disability for those with other illness conditions (Foster et al., 2008; Fischer et al., 2013).

It would also be helpful to be able to investigate the value of contact with other disabled persons *following injury.* There is evidence that this contact is valued. Kaiser and Kennedy (2011) commented that it was important for participants in their study to have contact with others “in the same boat” as well as those with more experience of SCI. Sherman, DeVinney and Sperling (2004) evaluated the support offered by live-in partners (LIP) compared to peer mentor experience (PME) (N= 62), at a SSIC, in the first year following SCI. Mean time since injury for participants was 11.7 years. They found that peer support could complement social support offered by a LIP. Study participants considered PME helpful to their adjustment even though more than ten years had passed since that contact took place. Dickson, Ward, O’Brien, Allan and O’Carroll (2011), using a qualitative approach, interviewed 17 people with SCI about their experiences of being discharged back into the community. They reported that participants missed the ‘camaraderie’ of the spinal centre and felt isolated in their communities, even though they were with friends and family. Participants felt that able bodied others did not understand their condition and were discouraged from making social contacts outside their homes. Research is needed to increase understanding of why peer contact is important to people with a SCI. On the basis of the current research, one possibility that merits further investigation is that contact could help individuals to perceive their situation as more manageable and controllable, rather than threatening. Research could also address whether Allport’s optimal conditions of contact are also important determinants of this post injury contact.

Clinical implications. When looking at the role of individual perceptions about experiencing an acute onset disability like SCI, more attention needs to be paid to prior contact with disabled people. The knowledge gained from such contacts could shape individuals’ beliefs about the manageability and controllability of their own condition, which in turn could have positive benefits for their physical and psychological wellbeing.

It might be useful for therapists working with people with SCI to ask them about their prior contact with the disabled, as part of a more general assessment of their attitudes towards disability and of the impact of those attitudes on their emotional and practical response to their injury. These attitudes could then be targeted as part of a more general therapeutic attempt to enhance coping responses of the person to their SCI.

The potential benefits of post injury contact with others with a similar disability also needs to be considered by service providers Many interventions offered by professionals to help support those with newly acquired chronic health conditions, mainly shortly after diagnosis, are often conducted in group settings (e.g. Millar et al., 2005; Fischer et al., 2013; Kennedy et al, 2003). This group contact maybe of significant therapeutic value and it could be useful for services to attempt to maximize this potential benefit. Informal peer contact opportunities are available in many rehabilitation environments, (Kaiser & Kennedy, 2011) and could also be beneficial to those who have returned to their own homes. For example, Dickson et al. (2011) recommended the provision of outreach by peers with SCI, into local communities, to have contact with those post discharge. Peer contact research could also act as a guide as to the best way to provide such peer mentoring to support those with newly diagnosed conditions. Sherman et al. (2004) pointed out that those in receipt of peer mentoring opportunities in their study, received on average 20 peer contacts in the first year following injury, which were informal in nature and on a one to one basis.

References

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

Antonovsky, A. (1993). The structure and properties of the Sense of Coherence scale. *Social Science and Medicine, 36*, 725-733.

Bach, J. R., & Tilton, M. C. (1994). Life satisfaction and well-being measures in ventilator assisted individuals with traumatic paraplegia. *Archives of Physical Medicine and Rehabilitation, 75,* 626-632.

Beck, A. T., & Steer, A. R. A. (1987). *Beck Depression Inventory Manual:* San Antonio, TX: Psychological Corp.

Bijsterbosch, T., Scharloo, M., Vesser, A. W., Wath, I., Meulenbelt, I., Huizinga, T. W. J., & Kloppenberg, M. (2009). Illness perceptions in patients with osteoarthritis: Change over time and association with disability. *Arthritis and Rheumatism, 61,* 1054-1061. doi.10.1002/ort.24674.

Buckelew, S. R., Frank, R. G., Elliott, T. R., Chaney, J., & Hewett, J. (1991). Adjustment to spinal cord injury: Stage theory revisited*. Paraplegia, 29,* 125-130.

Cairns, D. M., Adkins, R. H., & Scott, M. D. (1996). Pain and depression in acute spinal cord injury: Origins of chronic problematic pain? *Archives of Physical Rehabilitation, 77*, 329-335.

Carver, C. S., Scheier, M. F. & Weintraub, J.K. (1989). Assessing coping strategies: A theoretically-based approach. *Journal of Personality and Social Psychology, 56,* 267-283.

Catz, A., & Itzkovich, M. (2007). Spinal Cord Independence Measure: A comprehensive ability rating scale for the spinal cord lesion patient. *Journal of Rehabilitation Research and Development, 44(1),* 65-68.

Chan, F., Livneh, H., Pruett, S., Wang, C. C., & Xi Zheng, L. (2009). Societal attitudes towards disability concepts, measurement and interventions. In F. Chan, E. DaSilva, C. Cardoso & J.A. Chronister (Eds.), *Understanding psychological adjustment*, (pp.333-365). NY: Springer.

Chaboyer, W., Lee, Bih-O., Wallis, M., Gillespie, B., & Jones, C. (2010). Illness representations predict health related quality of life six months after hospital discharge in individuals with injury: A predictive survey. *Journal of Advanced Nursing, 27,* 43-50.

Chase, B. W., Comille, T. A., & English, R. W. (2000). Life satisfaction among persons with spinal cord injuries. *Journal of Rehabilitation, 66,* 14-20.

Cole, J. (2004). *Still lives: Narratives of spinal cord injury*. Cambridge: Massachusetts Institute of Technology.

Craig, A. R., Hancock, K. M., & Dickson, H. G. (1994). A longitudinal investigation into anxiety and depression in the first two years following a spinal cord injury. *Paraplegia, 32,* 675-679.

Dempster, M. McCorry, N. K., Brennon, E., Donnelly, M., Murray, L. J., & Johnston, B. T. (2011). Do changes in illness perception predict changes in psychological distress among oesophageal cancer survivors? *Journal of Health Psychology, 16,* 500-509.

Dickson, A., Ward, R., O'Brien, G., Allan, D., & O'Carroll, R. (2011). Difficulties adjusting to post-discharge life following a spinal cord injury: An interpretative phenomenological analysis. *Health, Psychology and Medicine, 16(4),* 463-474.

DiClemente, C. C., & Hughes, S. O. (1990). Stages of change profiles in outpatient alcoholism treatment. *Journal of Substance Abuse, 2,* 217-235.

Duff, J., & Kennedy, P. (2006). Spinal cord injury. In S. Llewelyn, & P. Kennedy (Eds.), *Handbook of Clinical Health Psychology* (2nd ed.), (pp. 251-275). Chichester: John Wiley

Elfstrom, M. C., Kreuter, M., Ryden, A., Persson, L-O., & Sullivan, M. (2002). Effects of coping on psychological outcome when controlling for background variables: A study of traumatically spinal cord lesioned persons. *Spinal Cord, 40,* 408-415.

Elfstrom, M. L., Ryden, A., Kreuter, M., Persson, L-O., & Sullivan, M. (2002). Linkages between coping and psychological outcome in the spinal cord lesioned: Development of SCL-related measures. *Spinal Cord, 40*, 23-29.

Faul, F., & Erdfelder, E. (1992). *G-POWER: A priori, post hoc and compromise power analysis for MS-DOS (computer program)*. Bonn, FRG: Bonn University, Department of Psychology.

Ferguson, E., Matthews, G., & Cox, T. (1999). The appraisal of life events (ALE) scale: Reliability and validity. *British Journal of Health Psychology, 4,* 97-116.

Fischer, M. J., Wiesenhaan, M. E., Does-den Heijer, A., Kleijn, Nortier, J. W. C., & Kaptein, A. A. (2013). From despair to hope: A longitudinal study of illness perceptions and coping in a psycho-educational group intervention for women with breast cancer. *British Journal of Health Psychology, 18*, 526-545.

Folkman, S. (1984). Personal control and stress and coping processes: A theoretical analysis. *Journal of Personality and Social Psychology, 46(4),* 839-852.

Foster, N. E., Bishop, A., Thomas, E., Main, C., Horne, R., Weinman, J., & Hay, E. (2008). Illness perceptions of low back pain patients in primary care: What are they, do they change and are they associated with outcome? *Pain 136,* 177-187. 10.1016 /j.pain 2007.12.007.

Frank, R. G., & Elliott, T. R. (1987). Life stress and psychological outcome following spinal cord injury. *Archives of Physical Medicine and Rehabilitation, 68,* 344-347.

Frankel, H., Hancock, D., & Hyslop, G. (1969). The value of postural reduction in the initial management of closed injuries of the spine with tetraplegia. *Paraplegia, 7,* 179-192

Goldberg, D. P., & Williams, P. (1988). *A user guide to the GHQ General Health Questionnaire.* Berkshire: NFER Nelson.

Haggar, M. S., & Orbell, S. (2003). A meta-analysis review of the common sense model of illness representations. *Psychology and Health, 18,* 141-184. doi:10.1080/088704403100081321.

Hall, M., Meaden, A., Smith, J., & Jones, C. (2001). Brief report: The development and psychometric properties of an observer-rated measure of engagement with mental health services. *Journal of Mental Health, 10(4),* 457-465.

Hancock, K. M., Craig, A. R., Dickson, H. G., Chang, E., & Martin, J. (1993). Anxiety and depression over the first year of spinal cord injury: A longitudinal study. *Paraplegia, 31,* 349-357.

Hamilton, B., & Grainger, C. (1990). *Guide for the use the uniform data set for medical rehabilitation.* Buffalo: NY: Research Foundation of State University of New York.

Hogan, T. P., Awad, A. G., & Eastwood, R. (1983). A self-report scale predictive of drug compliance in schizophrenics: Reliability and discriminative validity. *Psychological Medicine, 13*, 177-183.

Horowitz, M.J. (1979). Psychological response to serious life events. In V. Hamilton & D.M. Warburton (Eds.), *Human stress and cognition: An information processing approach,* (pp.234-263). Chichester: John Wiley and Sons.

Kaiser, S., & Kennedy, P. (2011). An exploration of cognitive appraisal following spinal cord injury. *Psychology, Health and Medicine, 16(6),* 708-718.

Kennedy, P., Walker L., & White, D. (1991). Ecological evaluation of goal planning and advocacy in a rehabilitation environment for spinal cord injured people. *Paraplegia, 29*, 197-202.

Kennedy, P., Marsh, N., Lowe, R., Grey, N., Short. E., & Rogers, B. (2000). A longitudinal analysis of psychological impact and coping strategies following spinal cord injury. *British Journal of Health Psychology, 5*, 157-172.

Kennedy, P., & Rogers, B. (2000). Anxiety and depression after spinal cord injury: A longitudinal analysis. *Archives of Physical Medicine, 81*, 932-937.

Kennedy, P., Duff, J., Evans, N., & Beedie, A. (2003). Coping effectiveness training reduces depression and anxiety following traumatic spinal cord injury. *British Journal of Clinical Psychology, 42*, 41-52.

Kennedy, P., Lude, P., & Taylor, N. (2006). Quality of life, social participation, appraisals and coping post spinal cord injury: A review of four community samples. *Spinal Cord, 44*, 95-105.

Kennedy, P., Evans, M., & Sandhu, N. (2009a). Psychological adjustment to spinal cord injury: The contribution of coping, hope and appraisals. *Psychology, Health and Medicine*, *14(10),* 17-23.

Kennedy, P., Scott-Wilson, U., & Sandhu, N. (2009b). The psychometric investigation of a brief and sensitive measure of perceived manageability. *Rehabilitation Psychology, 14,* 454-465.

Kennedy, P., Lude, P., Elfstrom, M. L., & Smithson, E. (2010a). Sense of coherence and psychological outcomes in people with spinal cord injury: Appraisals and behavioural responses. *British Journal of Health Psychology, 15*, 611-621.

Kennedy, P., Lude, P. Elfstrom, M. L., & Smithson, E. (2010b). Cognitive appraisals, coping and quality of life outcomes: A multicentre study of spinal cord injury rehabilitation, *Spinal Cord, 64(8),* 762-769.

Kennedy, P., Sherlock, O., McClelland, M., Short, D., Royale, J., & Wilson, C. (2010c). A multicentre study of the community needs of people with spinal cord injuries: The first eighteen months. *Spinal Cord, 48,* 15-20.

Krause, J. S., Stanwyck, C. A., & Maides, J. (1996). Locus of control and life adjustment: Relationships among people with spinal cord injury. *Rehabilitation Counseling Bulletin, 41(30),* 162-172.

Lazarus, R. S. (2001). Relational meaning and discrete emotions. In K. R. Scherer, A. Schorr & T. Johnstone (Eds.), *Appraisal processes in emotion: Theory, methods and research*. (pp. 37-67). New York: Oxford University Press.

Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal and coping*. New York: Springer.

Lee, B. O., Chaboyer, W., & Marianne, W. (2008). Quality of life three months after traumatic injury. *Journal of Nursing Scholarship, 40(1),* 83-90.

Levanthal, H., Meyer, D., & Nerenz, D. (1980). The common sense representations of illness danger. In S. Rachman (Ed.), *Contributions to medical psychology,* (vol. 12 pp.7-30). New York: Pergamon.

Lobban, F. Barrowclough, S., & Jones, S. (2005). Assessing cognitive representations of mental health problems: The Illness Perception Questionnaire for Schizophrenia. *British Journal of Clinical Psychology, 44,* 147-162.

Millar, K., Purushotham, A. D., McLatchie, E., David George, W., & Murray, G. D. (2005). A one year prospective study of individual variation in distress and illness perceptions, after treatment for breast cancer. *Journal of Psychometric Research, 58,* 335-342.

Moss-Morris, R., Petrie, K. J., & Weinman, J. (1996). Functioning in chronic fatigue syndrome: Do illness perceptions play a regulatory role? *British Journal of Clinical Psychology, 1(1),* 3-14.

Moss-Morris, R., Weinman, J., Petrie, K. J, Horne, R., Cameron, l. D., & Buick, D. (2002). The Revised Illness Perception Questionnaire (IPQ-R). *Psychology and Health, 17*, 1-16. doi: 10. 1080/ 08870440290001494.

North, N. (1999). The psychological effects of spinal cord injury: A review. *Spinal Cord, 37,* 671-679.

Olver, L.R. (2001). *Predicting the quality, value and meaning of life with tetraplegia following traumatic spinal cord injury* (Unpublished doctoral thesis). University of Plymouth, England.

Orbaan, I. J. C. (1986). Psychological adjustment problems in people with traumatic spinal cord lesions. *Acta Neurochirurgica, 79,* 58-61.

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 the anxiety-reduction mechanism. *Personality and Social Psychology Bulletin, 30*, 770-786.

Pettigrew, T.F. (2004). The social science of American race relations in the 20th century. In C.S. Crandall & M. Schaller (Eds.), *The social psychology of prejudice: Historical and contemporary issues,* (pp.1-32). Seattle WA: Lewinain Press.

Pettigrew, T. F., & Tropp, L. R. (2006). A meta-analytical test of intergroup contact theory. *Journal of Personality and Social Psychology, 90(5),* 751-758.

Pettigrew, T. F., & Tropp, L. R. (2008). How does intergroup contact reduce prejudice? Meta-analytic test of three mediators. *European Journal of Social Psychology, 38,* 972-934.

Pettigrew, T.F., & Tropp, L.R., (2011). *When groups meet: The dynamics of intergroup contact.* NY: Psychology Press.

Pruett, S. R., Lee, E. J., Chan., Wang, M. H., & Lane, F. T. (2008). Dimensionality of the Contact with the Disabled Person scale: Results from exploratory and confirmatory factor analysis. *Rehabilitation Counselling Bulletin, 51(4),* 213-214.

Ravenscroft, A., Ahmed, Y.S., & Burnside, I.G. (1999). Chronic pain after spinal cord injury: A survey of practice in U.K. spinal injury units. *Spinal Cord, 37*, 25-28.

Roland, M., & Morris, R. (1983). A study of the natural history of back pain. Part 1: Development of a reliable and sensitive measure of disability in low back pain. *Spine, 8,* 141-144.

Sarason, I., Sarason, B., Shearing, E., & Pearce, G. (1987). A brief measure of social support: Practical implications. *Journal of Social and Personal Relationships, 4,* 497-510.

Schroder, C., Johnston, M., Morrison, V., Teunisssen, L., & Notermans, N. (2007). Health conditions, impairment, activity limitations: Relationship with emotional and control cognitions in people with a disability condition. *Rehabilitation Psychology, 52(3)*, 280-289.

Shah, C., Hull, T., & Riley, G.A. (2009). Associations between the Illness Perception Questionnaire for Schizophrenia and engagement in treatment in a secure setting. *Clinical Psychologist, 13(2),* 69-74.

Silver, R. L., & Wortman, C. B. (1980). Coping with undesirable life events. In J. Garber & M. E. P. Seligman, (Eds.), *Human helplessness: Theory and applications*, (pp.279-340). New York: Academic Press.

Speilberger, C., Gorsuch, R., Lushene, R., Vagg, P., & Jacobs, G. (1983). *Manual of the State Trait Anxiety Inventory (Form Y).* Paolo Alto CA: Consulting Psychologist Press.

Sherman, J. E., DeVinney, D.J., & Sperling, K.B. (2004). Social support and adjustment after spinal cord injury: The influence of past peer mentoring experiences and current live-in partner. *Rehabilitation Psychology, 49(2)* 140-149.

Stafford, l., Jackson, H. J., & Berk, M. (2008). Illness beliefs about heart disease and adherence to secondary prevention regimes. *Psychosomatic Medicine, 70*, 942-948.

Voci, A., & Hewstone, M. (2003). Intergroup contact and prejudice towards immigrants in Italy: The mediational role of anxiety and the moderational role of group salience. *Group Processes and Intergroup Relations, 6,* 37-54.

Ware, J. E., Snow, K. K., Konsinski, M., & Gandeck, B. (1993). *S F-36 Health survey, manual and interpretation guide*. The Health Institute, New England Medical Center, Boston.

Weinman J., Petrie, K., Moss-Morris, R., & Horne, R. (1996). The Illness Perception Questionnaire: A new method for assessing the cognitive representations of illness. *Psychological Health, 11,* 431-445.

Woolrich, R. A., Kennedy, P., & Tasiemski, T. (2006). A preliminary psychometric evaluation of the Hospital Anxiety and Depression Scale (HADS) in 963 people living with a spinal cord injury. *Psychology, Health and Medicine, 11(1),* 80-90.

Yuker, H. E., & Block, J. R. (1986). *Research with the Attitudes Toward Disabled Persons scale, ATDP 1960-1985.* Hampstead, NY: Hofstra University.

Yuker, H. E., & Hurley, M. K. (1987). Contact with Persons with Disabilities: The measurement of intergroup contact. *Rehabilitation Psychology, 32(3),* 145-154.

Zigmond, A. S., & Snaith, R. P. (1983). The Hospital Anxiety and Depression Scale. *Acta Psychiatra Scandinavia, 67,* 361-370.

Chapter Three:

Public Domain Briefing Document

This document provides an overview of the thesis submitted in fulfilment of the requirement for the degree of Doctorate in Clinical Psychology (Clin.Psy.D.) at the University of Birmingham. This document summarises a literature review and an empirical paper.

Literature Review: Assessing the role of intergroup contact in positively influencing attitudes towards physical disability.

Background. In order to improve race relations following the Second World War, during which people of different racial backgrounds worked together, governments sponsored racial integration projects. These created settings where those from different groups could meet (Pettigrew, 2004) and ranged from the "brotherhood dinners" to mixed race housing and schooling initiatives. At about this time Allport (1954) put forward his Contact Hypothesis, setting out the optimal conditions for intergroup contact to reduce prejudice. Allport suggested that group members should be of equal status during contact and pursue common goals cooperatively, in an institutionally sanctioned setting. Allport intended his Contact Hypothesis to improve race relations, but his proposals for good quality intergroup contact held true for any meetings between different groups.

In 2006 Pettigrew and Tropp undertook a meta-analysis of 515 intergroup contact studies and found that intergroup contact, especially that adhering to Allport's optimal conditions, overwhelmingly led to positive attitude change amongst majority group members towards minority group members. Recent attention has been turned towards identifying the elements of contact that produce the best results in terms of improving attitudes and generalising the more positive attitude to benefit wider society's treatment of minority groups (Voci & Hewstone, 2003; Pettigrew & Tropp, 2008).

Aim. There has been considerable prejudice towards the physically disabled in our society (Chan, Livneh, Pruett, Wang & Xi-Zheng, 2009). Not much attention has been focused on the effectiveness of intergroup contact between the able bodied and physically disabled groups (Pettigrew & Tropp, 2006). This review will evaluate the intergroup contact research, which has taken place between these two groups in the last 30 years.

Method. A systematic search of the literature identified quantitative intergroup contact research between able bodied and physically disabled groups, which adopted or approximated Allport's optimal conditions of contact. The 22 studies isolated via this process were evaluated using a quality framework put forward by Sale and Brazil (2004) to examine methodological rigour. A further data extraction framework, adapted from Pettigrew and Tropp (2006), was adopted to measure the quality of contact and outcome measures employed and the effect of these factors, on contact effectiveness in producing positive attitude change.

Findings. Twenty studies demonstrated that intergroup contact was significantly associated with positive attitude change at the time of intervention. The majority of studies had methodological limitations. Only six studies measured generalisation of contact effects outside the immediate context of their interventions or evaluated maintainance of attitude change. Older studies were also hard to compare with more recent ones as they lacked the scientific rigour in terms of describing procedures and reporting results, expected of contemporary studies.

A lot of variability was noted in the amount and quality of contact and in the ways that outcomes were measured. Although contact mainly took place in educational settings and participants were in the majority children and college students, those involved in contact had a variety of disability conditions. This variability made it difficult to compare the value of different studies. Few studies measured how intergroup contact worked to promote or diminish its effects on attitude. So there was little evidence about how to maximise the benefits of intergroup contact in reducing prejudice. There were some good quality interventions, which gave some insight into how contact might reduce prejudice (Johnson & Johnson, 1985; Ladd, Munson & Miller, 1984; Maras & Brown, 1996). Overall, despite these criticisms about methodological limitations and study variability, it was concluded that intergroup contact between the able bodied and the physically disabled, can have a positive effect on attitudes towards the disabled.

Conclusions. To better understand how intergroup contact works, more research needs to take place employing improved methodology, standardisation of contact and measurement of attitude change. Several good quality studies included in the review indicated how intergroup contact could lead to the breaking down of barriers and allow for the formation of shared membership whilst keeping hold of original group identities (Johnson & Johnson, 1985; Ladd et al., 1984; Maras & Brown, 1996). This finding could possibly contribute to an understanding of how individuals can adequately adapt to an acquired disability through contact with others with disabilities. This area could benefit from further investigation.

Empirical Paper: Intergroup contact and adjusting to acquired disability: An exploration of the effects of pre-injury contact with disabled people on post-injury illness perceptions, mood and engagement in rehabilitation, for those with a newly acquired spinal cord injury (SCI).

Background. SCI is a relatively rare but potentially seriously disabling condition, usually with a sudden onset (North, 1999; Duff & Kennedy, 2006). It involves loss of power and sensation of your body below the level of the injury. Although the loss of control may not be complete, for those that are affected, the injury causes changes which impact on every aspect of one's life from mobility and continence to employment and personal relationships. Research in this area has concentrated on how one copes with such a situation and what contributes to adequate adaptation. Adaptation has been measured in relation to early appraisal, i.e. soon after injury, using the stress appraisal coping model (Lazarus & Folkman, 1984) as a predictor of psychological distress and functional outcomes in the longer term (Kennedy, Lude & Taylor, 2006; Kennedy, Evans & Sandhu, 2009; Kennedy, Lude, Elfstrom & Smithson, 2010).

Adaptation to other acquired disabilities and chronic illness conditions has been evaluated using the illness representations made when acquiring disability or illness, based on the common sense model of illness (Levanthal, Meyer & Nerenz, 1980). The role of early illness perceptions has been investigated in terms of their ability to predict psychological and functional outcomes over time (Moss-Morris, Weinman, Petrie, Horne, Cameron & Buick, 2002; Hagger & Orbell, 2003; Dempster, McCorry, Brennon, Donnelly, Murray & Johnson, 2011).

One factor that might influence both appraisals and illness perceptions is prior contact with the disabled. Intergroup contact research has already established the beneficial effects of contact in reducing negative attitudes towards minority groups (Pettigrew & Tropp, 2006).

People with physical disabilities and those with SCI in particular, are viewed quite negatively by the general population (Olver, 2001). Those with acquired disabilities may well have negative attitudes about disability at the time of their own injury. Prior contact with those with disabilities might help those acquiring a new disability, to have a more positive perception of their own situation, perhaps leading to more adequate adaptation to their own injury.

Aims. The current study set out to test if prior contact with disabled people would lead to more positive illness perceptions about acquiring their own disability (SCI). Further if they did have more positive perceptions about their SCI, would this lead to less psychological distress and greater engagement and achievements in rehabilitation for the newly injured?

Method. Prior contact and its effects on illness perceptions, psychological distress, participation in rehabilitation and functional outcomes were assessed for 26 individuals admitted to a specialist spinal injury after having sustained a SCI. The impact of prior contact was evaluated using questionnaires and observations administered approximately four weeks after injury and before participants had started rehabilitation and again at the end of their rehabilitation, about eight weeks later.

Findings. Prior contact had a significant positive effect on illness perceptions concerning controllability of the illness from a personal and treatment point of view, both before the start and at the end of rehabilitation. Contact did not influence illness perceptions about the consequences and emotional impact of their acquired disability, either soon after injury or at the end of rehabilitation. There were no effects of positive illness perceptions on psychological distress, engagement or functional achievements in rehabilitation. This lack of association between prior contact, positive illness perceptions and psychological and physical outcomes, might have been influenced by the choice of measures, which may have lacked validity and not measured relevant aspects of engagement and outcomes in rehabilitation. The small number of participants may also have contributed to the lack of more positive findings. Given these limitations there was evidence of significant effects of prior contact with the disabled on perceived controllability of the illness condition.

Conclusions. More research should be conducted to evaluate the effects of prior contact on illness perceptions for those with acquired disabilities. Future studies should employ more reliable measures of the effects, bigger samples and adopt more longitudinal designs to look at the causal relationships and effects over a longer time scale. There is an opportunity to explore the potentially positive effects of contact with disabled people on illness representations made close to the onset of disability. These more positive perceptions might, in turn, have a beneficial impact on physical and psychological outcomes following acquired disability.

References

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

Chan, F., Livneh, H., Pruett, S., Wang, C. C., & Xi Zheng, L. (2009). Societal attitudes towards disability concepts, measurement and interventions. In F. Chan, E. DaSilva, C. Cardoso & J.A. Chronister (Eds.), *Understanding psychological adjustment*, (pp.333-365). NY: Springer.

Duff, J., & Kennedy, P. (2006). Spinal cord injury. In S. Llewelyn, & P. Kennedy (Eds.), *Handbook of Clinical Health Psychology* (2nd ed.) (pp. 251-275). Chichester: John Wiley.

Dempster, M. McCorry, N. K., Brennon, E., Donnelly, M., Murray, L. J., & Johnston, B. T. (2011). Do changes in illness perception predict changes in psychological distress among oesophageal cancer survivors? *Journal of Health Psychology, 16,* 500-509.

Haggar, M. S., & Orbell, S. (2003). A meta-analysis review of the Common Sense Model of Illness Representations. *Psychology and Health, 18,* 141-184. doi:10.1080/088704403100081321

Johnson, D. W., & Johnson, R. T. (1985). Mainstreaming hearing impaired students: The effect of effort in communicating on cooperation and interpersonal attraction. *The Journal of Psychology,* 119 (1), 31-44.

Kennedy, P., Lude, P., & Taylor, N. (2006). Quality of life, social participation, appraisals and coping post spinal cord injury: A review of four community samples. *Spinal Cord, 44*, 95-105.

Kennedy, P., Evans, M., & Sandhu, N. (2009). Psychological adjustment to spinal cord injury: The contribution of coping, hope and appraisals. *Psychology, Health and Medicine*, *14(10),* 17-23.

Kennedy, P., Lude, P., Elfstrom, M. L., & Smithson, E. (2010). Sense of coherence and psychological outcomes in people with spinal cord injury: Appraisals and behavioural responses. *British Journal of Health Psychology, 15*, 611-621.

Ladd, G., Munson, H., & Miller, J. (1984). Social integration of deaf adolescents in secondary level mainstream programs. *Exceptional Children, 50,* 420-428.

Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal and coping*. New York: Springer.

Levanthal, H., Meyer, D., & Nerenz, D. (1980). The common sense representations of illness danger. In S. Rachman (Ed.), *Contributions to medical psychology* (vol.12 pp.7-30). New York: Pergamon.

Maras, P., & Brown, R. (1996). Effects of contact on children’s attitudes towards disability: A longitudinal study. *Journal of Applied Social Psychology, 26(23),* 2113-2134.

Moss-Morris, R., Weinman, J., Petrie, K. J, Horne, R., Cameron, l. D., & Buick, D. (2002). The Revised Illness Perception Questionnaire (IPQ-R). *Psychology and Health, 17*, 1-16. doi: 10. 1080/ 08870440290001494

North, N. (1999). The psychological effects of spinal cord injury: A review. *Spinal Cord, 37,* 671-679.

Olver, L.R. (2001). *Predicting the quality, value and meaning of life with tetraplegia following traumatic spinal cord injury* (Unpublished doctoral thesis). University of Plymouth, England.

Pettigrew, T. F., & Tropp, L. R. (2006). A meta-analytical test of intergroup contact theory. *Journal of Personality and Social Psychology, 90(5),* 751-783.

Pettigrew, T. F., & Tropp, L. R. (2008). How does intergroup contact reduce prejudice? Meta-analytic test of three mediators. *European Journal of Social Psychology, 38*, 972-934.

Sale, J. E. M., & Brazil, K. (2004). A strategy to identify critical appraisal criteria for primary mixed method studies. *Quality and Quantity, 38*, 351-365.

Voci, A., & Hewstone, M. (2003). Intergroup contact and prejudice towards immigrants in Italy: The mediational role of anxiety and the moderational role of group salience. *Group Processes and Intergroup Relations, 6,* 37-54.

Appendices

Appendix A (1): Ethical approval letter

Page 2

Appendix A (2): Trust approval letter

Page 2

[redacted]

Appendix B: Study information sheet

Page 1

Page 2

Page 3

Page 4

Page 5

Appendix C: Participant consent form

Page 1

Page 2

Appendix D: Contact with Disabled Persons Scale

Page 1

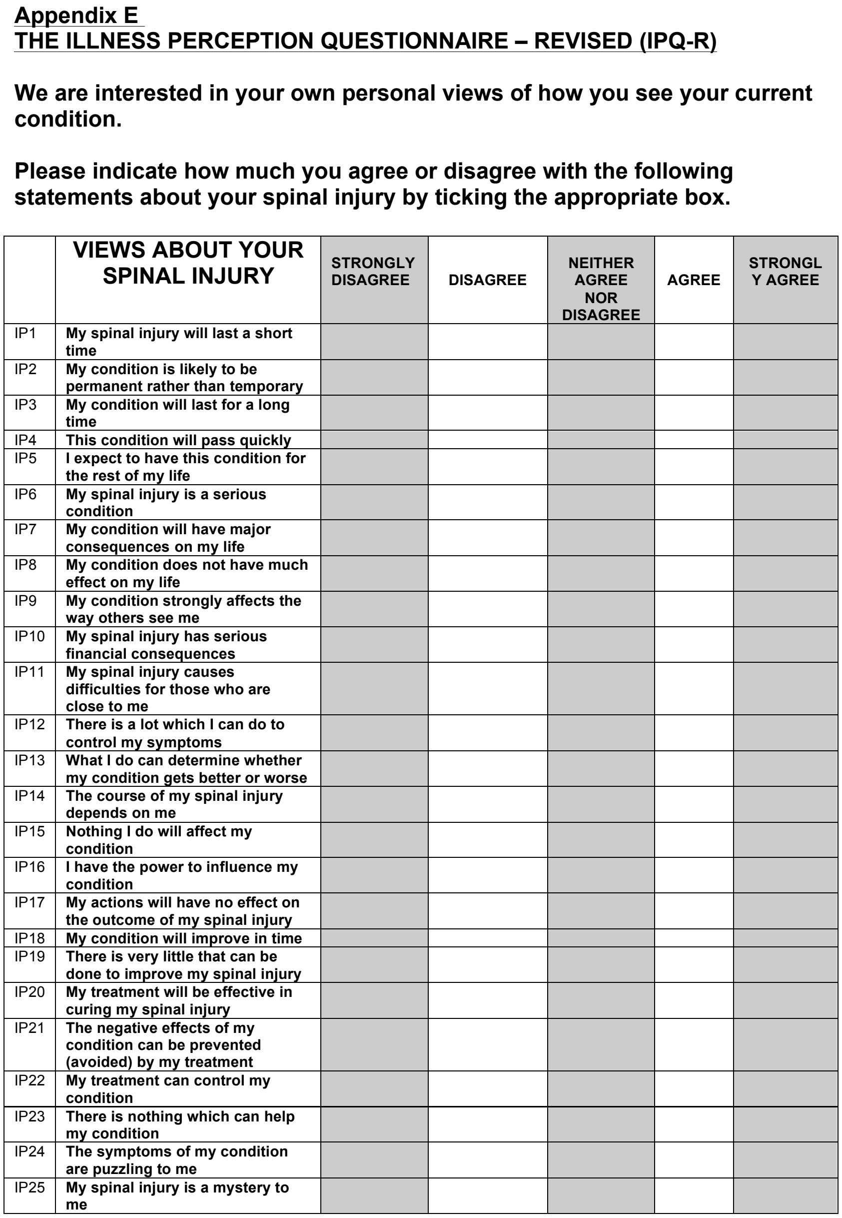
Appendix D Contact with Disabled Person (CDP) Scale

Please place a number to the left of each statement indicating your answer to each question. Use a number from 1 to 5 to indicate the following: 1 = never; 2 = once or twice; 3 = a few times 4 = often; 5 = very often

1. How often have you had a long talk with a person who is physically disabled?
2. How often have you had brief conversations with persons who are physically disabled?
3. How often have you eaten a meal with a person who has a physical disability?
4. How often have you contributed money to organizations that help disabled persons?
5. How often have physically disabled persons discussed their lives or problems with you?
6. How often have you discussed your life or problems with a physically disabled person?
7. How often have you tried to help physically disabled persons with their problems?
8. How often have physically disabled persons tried to help you with your problems?
9. How often have you worked with a physically disabled client, student, or patient on the job?
10. How often have you worked with a physically disabled co-worker?
11. How often has a disabled friend visited you in your home?
12. How often have you visited disabled friends in their homes?
13. How often have you met a physically disabled person that you like?
14. How often have you met a physically disabled person that you dislike?
15. How often have you met a disabled person that you admire?
16. How often have you met a disabled person for whom you feel sorry?
17. How often have you been annoyed or disturbed by the behavior of a person with a disability?
18. How often have you been pleased by the behavior of a physically disabled person?
19. How often have you had pleasant experiences interacting with physically disabled persons?
20. How often have you had unpleasant experiences interacting with physically disabled persons?

Appendix E: Illness Perception Questionnaire- Revised (SCI version)

Page 1



Appendix E
THE ILLNESS PERCEPTION QUESTIONNAIRE – REVISED (IPQ-R)

We are interested in your own personal views of how you see your current condition.

Please indicate how much you agree or disagree with the following statements about your spinal injury by ticking the appropriate box.

	VIEWS ABOUT YOUR SPINAL INJURY	STRONGLY DISAGREE	DISAGREE	NEITHER AGREE NOR DISAGREE	AGREE	STRONGLY AGREE
IP1	My spinal injury will last a short time					
IP2	My condition is likely to be permanent rather than temporary					
IP3	My condition will last for a long time					
IP4	This condition will pass quickly					
IP5	I expect to have this condition for the rest of my life					
IP6	My spinal injury is a serious condition					
IP7	My condition will have major consequences on my life					
IP8	My condition does not have much effect on my life					
IP9	My condition strongly affects the way others see me					
IP10	My spinal injury has serious financial consequences					
IP11	My spinal injury causes difficulties for those who are close to me					
IP12	There is a lot which I can do to control my symptoms					
IP13	What I do can determine whether my condition gets better or worse					
IP14	The course of my spinal injury depends on me					
IP15	Nothing I do will affect my condition					
IP16	I have the power to influence my condition					
IP17	My actions will have no effect on the outcome of my spinal injury					
IP18	My condition will improve in time					
IP19	There is very little that can be done to improve my spinal injury					
IP20	My treatment will be effective in curing my spinal injury					
IP21	The negative effects of my condition can be prevented (avoided) by my treatment					
IP22	My treatment can control my condition					
IP23	There is nothing which can help my condition					
IP24	The symptoms of my condition are puzzling to me					
IP25	My spinal injury is a mystery to me					

	VIEWS ABOUT YOUR SPINAL INJURY	STRONGLY DISAGREE	DISAGREE	NEITHER AGREE NOR DISAGREE	AGREE	STRONGLY AGREE
IP26	**I don't understand my spinal injury**					
IP27	**My spinal injury doesn't make any sense to me**					
IP28	**I have a clear picture or understanding of my condition**					
IP29	**My symptoms of my spinal injury change a great deal from day to day**					
IP30	**My symptoms come and go in cycles**					
IP31	**My condition is very unpredictable**					
IP32	**I go through cycles in which my condition gets better and worse**					
IP33	**I get depressed when I think about my spinal injury**					
IP34	**When I think about my spinal injury I get upset**					
IP35	**My spinal injury makes me feel angry**					
IP36	**My spinal injury does not worry me**					
IP37	**Having this spinal injury makes me feel anxious**					
IP38	**My spinal injury makes me feel afraid**					

Version One
11.11.10

Appendix F: Hospital Anxiety and Depression Scale

Page 1

Appendix G: The Spinal Cord Independence Measure

Page 1

Page 2

Appendix H: Keyworker Engagement Scale

Page 1

Page 2

[redacted]

Page 3

[redacted]

[redacted]

Page 4

Appendix I: Observer rating Scale (category definitions)

Page 1