

## Abstract

**Background:** It has been suggested that differences in moral judgements play a role in Obsessive Compulsive Disorder (OCD). Specifically, it has been proposed that individuals with OCD make moral judgements using more deontological rather than utilitarian principles. Visualising an image has also been linked to making deontological judgements in non-clinical populations; however, this has not yet been tested in individuals with OCD, who often experience intrusive imagery. **Method:** One hundred and forty-five participants (including 30 with OCD and 27 in a comparison group) answered questions on moral dilemmas that required them to choose between deontological and utilitarian options. The mediational role of imagery in the relationship between OCD and deontological moral judgements was tested. **Results:** A greater presence of OCD symptomatology was associated with making more deontological judgements. However, when compared by group, individuals with OCD did not make significantly more deontological judgements. Whilst imagery was found to have a relationship with moral judgements, this did not mediate the relationship between OCD and moral judgements. **Conclusions:** The results suggest an association between moral judgements and OCD, not mediated by imagery.

**Keywords:** OCD, moral judgements, deontology, utilitarianism, imagery.

## **1. Introduction**

Individuals with Obsessive-Compulsive Disorder (OCD) experience repeated intrusive thoughts around potential harm to themselves or others and feel compelled to act to prevent that harm, which is objectively unlikely to occur (ICD-10, F42). Based on research demonstrating that the occurrence of an intrusion is a normal phenomenon (Purdon & Clark, 1993; Rachman & de Silva, 1978), the Cognitive Behavioural Model of OCD states that a key factor in development and maintenance of OCD is the interpretation of the intrusion and, in particular, an interpretation around a heightened sense of responsibility of potential harm (Salkovskis 1985; 1989, Steketee, Frost & Cohen, 1998). It has been proposed that the occurrence of the intrusion raises that individual's awareness of potential harm and, as such, the individual must make a decision as to whether to act to prevent it (Wroe & Salkovskis, 2000). The model suggests that individuals with OCD interpret the occurrence of the intrusions as meaning a heightened sense of responsibility for potential harm and that they have the power to prevent it, resulting in that person feeling compelled to act to prevent harm. In contrast, an individual without OCD may also experience the intrusion, thus raising their awareness to potential harm, but make a decision not to act to prevent that harm (Wroe and Salkovskis, 2000).

A judgement of responsibility for potential harm is considered a moral judgment (Shaver, 1985 as cited in Pizarro, Ulmann & Bloom, 2003). This leads moral judgements to contribute towards decision making about action and, ultimately, the initiation of action (Bandura, 1991). As individuals with OCD interpret intrusions whilst having a heightened sense of responsibility, this may affect their interpretation

of moral dilemmas and raises the possibility that they make different judgements to individuals without the disorder.

There is a growing body of research investigating the potential role of moral judgements in people with OCD (Franklin et al. 2009; Wroe & Salkovskis, 2000; Mancini & Gangemi, 2015). Some researchers have looked at the role of responsibility in moral judgements; for example, Wroe and Salkovskis (2000) who hypothesised that a heightened sense of responsibility moderated the relationship between intrusive thoughts and moral judgements. Others have focused research on other aspects of moral judgements such as whether individuals with OCD make decisions based on the morality of the actions involved or based on the overall outcome (e.g. Franklin et al., 2009; Mancini & Gangemi, 2015), namely deontological or utilitarian judgements.

One moral dilemma, often referred to in the literature, depicts a fast moving trolley that is due to hit and kill five people. The people can be saved if another individual is pushed from a footbridge onto the trolley. This would stop the trolley from killing five people, but would kill the person pushed. When asked whether this action is morally acceptable or not, there seem to be differences in people's answers (Thomson, 1985). The dilemma people often face is in being asked to make a decision using deontological principles, favouring the rights of the individual (i.e., the individual being pushed) or utilitarian principles, favouring the 'greater good' (i.e., the five people).

A deontological judgement is a decision based on the morality of the action (whether or not to push the individual), where this is more important than the overall

consequences. People who make deontological decisions (i.e. not pushing the individual) judge that moral values should not be broken (Kant, 1785 as cited in Szekely & Miu, 2015), and that individual rights should be key in making decisions (Kant, 1785). In contrast, a utilitarian decision is one that benefits the greater good (Mill, 1998). Here, morality is decided by the good in an action's outcome; thus killing a person is acceptable, if multiple others are saved (Mill, 1998).

It has been proposed that individuals with OCD may have a bias towards using a particular type of reasoning process to make moral judgements. For example, Franklin, McNally and Riemann (2009) studied whether individuals with OCD tended to reason more by using deontological or utilitarian principles, when presented with moral dilemmas similar to the example above. Although not statistically significant, they found increased OCD symptomatology to be associated with deontological moral judgements. Furthermore, an increased sense of responsibility was found to be associated with deontological judgements, suggesting a potential role of responsibility in moral judgements.

Mancini (2001) (cited in Mancini & Gangemi, 2004) further suggested that compulsive behaviours are triggered by a fear of not acting in a way that is deemed to be morally correct. Mancini and Gangemi (2015) studied the moral judgements of 60 individuals (20 OCD; 20 anxious controls and 20 non-clinical), again in relation to moral dilemmas that required participants to choose from deontological or utilitarian outcomes. They found individuals with OCD to be less likely to choose to act to prevent harm to an individual, driven by deontological guilt. Thus, they do nothing because it is 'wrong to kill someone'. This suggests that OCD may be associated with deontological moral judgements; however, the mechanism by which this takes place

remains unclear.

Intrusive mental imagery is a significant factor in the presentation of OCD. In nonclinical populations, having an image in mind when making a moral judgement has been linked to people making deontological moral judgements (Amit & Greene, 2012). Thus, when considering acting to end an individual's life for the purpose of saving a group, having an image of the individual has been found to support the judgement that saving the group does not justify ending the life of the individual. Given that individuals with OCD often experience distressing images (De Silva, 1986), and at a greater frequency than in other anxiety disorders (Lipton, Brewin, Linke & Halperin, 2010) it is possible that the effect found by Amit and Greene (2012) is amplified in these populations. As Amit and Greene (2012) found individuals to imagine the potential harm caused by an action more when making deontological judgements, it is possible that imagery mediates the relationship between OCD and deontological judgements, adding an alternative pathway to that of responsibility in the triggering of compulsive behaviours and maintenance of OCD.

This study aimed to investigate the association between symptoms of OCD and deontological moral judgements and explore whether individuals with OCD make more deontological judgements than individuals without the disorder. It also aimed to explore the potential mediational role of imagery in this relationship.

### *1.1 Hypotheses*

OCD symptomatology will be associated with deontological judgements.

People with OCD will make more deontological than utilitarian judgements, in

comparison to those without OCD.

Imagery will mediate the relationship between OCD and moral judgements.

## **2. Method**

### *2.1. Participants*

Following approval from the local ethics committee, participants were recruited online via Facebook and Twitter, an undergraduate research participation scheme and OCD charities. One hundred and forty-five participants (120 females, 23 males, two chose not to disclose this information) completed the study. Participants represented 53.90% of the original sample, following sample attrition and exclusion of one participant due to having a diagnosis of psychosis. The participants' mean age was 27.86 years ( $SD=12.13$ ; range=17-70).

*2.1.1. OCD group.* Research has demonstrated that a score of 21 or higher on the Obsessive-Compulsive Inventory-Revised (OCI-R) and 16 or higher on the Yale-Brown Obsessive-Compulsive Scale-Self-Report (Y-BOCS-SR) is an indicator of the presence of OCD (Foa et al., 2002). A total of thirty participants (25 female, 4 males, one stated 'other') with these scores met criteria for the OCD group. Their mean age was 27.93 ( $S.D=11.19$ ). Their mean OCI-R score was 38.70 ( $S.D=11.95$ ) and mean Y-BOCS-SR score was 25.70 ( $S.D=6.91$ ). 83.33% of participants in this group reported having a diagnosis of OCD, 70% reported having had treatment for this. All met the inclusion criteria above for the OCD group.

*2.1.2. Comparison group.* Previous studies have set arbitrary cut-offs to identify a group of individuals for non-OCD comparison groups (e.g., Jones &

Bhattacharya, 2014). In order to obtain a comparison group of a similar size to the OCD group a sample was selected based on the lowest 18% of scores on the OCI-R and Y-BOCS-SR. Inclusion for this group comprised of scoring lower than 13 on the OCI-R and lower than 7 on the Y-BOCS-SR. Twenty-seven participants met these criteria (21 females, 6 males). Their mean age was 30.93 ( $S.D=12.17$ ). Their mean OCI-R score was 5.78 ( $S.D=3.24$ ) and mean Y-BOCS-SR score was 1.37 ( $S.D=1.74$ ). No demographic differences were found between these groups. That is in gender, ethnicity, marital status, employment status, highest level of education and religion.

## 2.2. *Materials and Measures*

2.2.1. *Socio-demographic information.* Information was collected on gender, ethnicity, marital status, employment status, highest level of education and religion. Participants were also asked about any diagnoses of OCD and associated treatment.

2.2.2. *Verbaliser-Visualiser Questionnaire – Revised (VVQ-R).* The VVQ-R (Kirby, Moore & Schofield, 1988) is a 20-item self-report measure of verbal/visual cognitive style in everyday scenarios. It includes ten statements that relate to a verbal cognitive style and ten that relate to a visual cognitive style. Participants were asked to mark the statements as ‘true’ or ‘false’. Responses were summed within each dimension.

The VVQ-R has been shown to have good construct validity and adequate reliability ( $\alpha=.70$  and  $.59$  respectively; Kirby et al., 1988). Kirby et al., (1988) showed that scores in the visual and verbal dimensions of the VVQ-R correlate with objective measures of visual and verbal abilities and Kraemer, Rosenberg and Thompson-Schill

(2009) found cognitive style, as defined by scores on the VVQ-R, to correlate with activity in visual and verbal brain regions.

2.2.3. *Spontaneous Use of Imagery Scale (SUIS)*. The SUIS (Reisberg, Pearson & Kosslyn, 2003) is a 12-item self-report measure of an individual's spontaneous use of visual, non-emotional, imagery in everyday life. Participants were given descriptions of situations in which images are involved and are asked to indicate how much each was appropriate for them.

The author suggested the SUIS to have high internal consistency (at least .98) (Reisberg et al., 2003) and this was confirmed by McCarthy-Jones, Knowles and Rowse (2012) who reported an internal consistency of  $\alpha = .83$ . A Dutch translation of the measure has been shown to have acceptable reliability (Chronbach's alpha of .72) and convergent validity (Nelis et al., 2014).

2.2.4. *OCI-R*. The OCI-R (Foa et al., 2002) is an 18 item self-report questionnaire that assesses for symptoms of OCD. Participants were asked to rate how much particular experiences have distressed them during the past month. Total scores were calculated by adding the item scores. The OCI-R has been found to be a good measure to discriminate OCD from other anxiety disorders (Abramowitz & Deacon, 2006) and has been recommended for making diagnostic decisions (Grabill et al., 2008).

Foa et al. (2002) reported the scale to have good internal consistency. It has good construct validity (Foa et al., 2002) with total scores correlating with the Yale-Brown Obsessive-Compulsive Scale (Goodman et al., 1989;  $r = .53$ ), the Maudsley Obsessive Compulsive Inventory (Hodgson & Rachman, 1977;  $r = .85$ ) and the

National Institute of Mental Health Global Obsessive-Compulsive Scale (Insel et al., 1983;  $r = .66$ ).

2.2.5. *Y-BOCS-SR*. The Y-BOCS-SR (Baer, 1991) is a 68 item self-report questionnaire, adapted from the clinician-administered Y-BOCS (Goodman et al., 1989). The Y-BOCS-SR consists of a 58 item symptom checklist of symptoms of OCD and measures the severity of these.

The Y-BOCS-SR has good internal consistency (Steketee, Frost & Bogart, 1996), test-retest reliability is excellent and correlations with the clinician rated version show good convergent validity (Steketee et al., 1996).

2.2.6. *Hospital Anxiety and Depression Scale (HADS)*. The HADS (Zigmond & Snaith, 1983) is a 14 item self-report questionnaire that identifies anxiety disorders and depression through the use of two subscales, both of which are internally consistent. The items of the HADS were rated on a 4-point likert scale and totals from each subscale were calculated.

There is evidence to show that the HADS is a good measure to assess for the presence and severity of anxiety disorders and depression in both clinical and non-clinical populations (Bjelland, Dahl, Haug & Neckelmann, 2002). It performs as well as other measures that assess for symptoms of depression and anxiety (Bjelland et al, 2002).

2.2.7. *Vignettes*. Three vignettes were selected from those used in Greene et al. (2001; 2004), which have been widely validated within non-clinical samples and have been shown to be related to imagery (Amit & Greene, 2012), and three were

selected from Mancini and Gangemi (2015), which have been validated with OCD samples and used to find significant differences in the moral judgements of an OCD and comparison group (Mancini & Gangemi, 2015). All vignettes depicted moral dilemmas and detailed two potential courses of action: one involved action, killing fewer people but saving the lives of more (utilitarian); the other involved no action, but this resulted in more deaths (deontological).

Participants were asked to answer whether they should act according to the proposed utilitarian action or whether the participant considered it to be appropriate for them to do so. Participants were also asked whether this would be morally acceptable (yes/no), they were asked to rate the moral acceptability of the action and how vivid any imagery created was, on a scale of one to seven. Vignettes were all written from a utilitarian perspective; therefore, vignettes answered ‘No’ and rated as being morally unacceptable indicated a deontological moral judgement.

### *2.3. Procedure*

Consenting participants completed the series of questionnaires and moral dilemmas. The instructions, questionnaires and vignettes were presented online, in the same order for each participant, using the research platform Qualtrics (Provo, 2016). Students received course credits for their participation. All other participants were given the opportunity to be entered into a prize draw.

Correlations, t-tests, chi square and mediational analyses were used for the main analyses and effect sizes reported where appropriate. All analyses were two-tailed.

### 3. Results

When looking at the whole sample, results showed a negative correlation between OCI-R scores ( $M=20.85$ ,  $S.D=14.73$ ) and the moral acceptability of the proposed action in the vignettes, which was rated on a scale of one to seven ( $M=3.39$ ,  $S.D=1.40$ ),  $r(139)=-0.19$ ,  $p=0.02$ . That is, higher OCD symptomatology was associated with more deontological responses. Due to the association between depression and deontological moral judgements (Valdesolo & DeSteno 2006) further analyses were conducted, controlling for depression, as measured by the HADS ( $M=4.69$ ,  $S.D=3.96$ ),. This did not change the overall result ( $r(138)=-0.18$ ,  $p=0.03$ ). The effect size yielded ( $r=0.18$ ) was small to moderate (Cohen, 1988).

In order to explore any potential differences in the vignette types, they were also considered separately. When looking at Mancini and Gangemi's vignettes ( $M=3.84$ ,  $S.D=1.49$ ) this result remained significant ( $r(142)=-0.22$ ,  $p<0.01$ ), even after controlling for depression ( $r(138)=-0.22$ ,  $p<0.01$ ; small to moderate effect size  $r=0.22$ ). However, when looking at Greene's vignettes ( $M=2.97$ ,  $S.D=1.59$ ), the correlation was no longer significant ( $r(140)=-0.14$ ,  $p=0.10$ ;  $r(138)=-0.11$ ,  $p=0.18$  when controlling for depression). This suggested OCD symptomatology to be associated with deontological judgements, only in certain types of scenarios.

In considering whether participants who met criteria for the OCD group made more deontological moral judgements than those in the comparison group, data was analysed using chi-square and  $t$ -tests. Results showed participants who met criteria for the OCD group not to make significantly more deontological responses than the comparison group (59.22% and 53.70% deontological responses respectively;

$\chi^2(1)=1.05, p=0.18$ ); however, when participants were asked whether the utilitarian option was morally acceptable 61.02% of responses in the OCD group were ‘no’ compared to 41.98% in the comparison group. This difference was significant ( $\chi^2(1)=12.29, p<0.001$ ) and equated to a small to medium effect size ( $\phi=0.19$ ).

Whilst the OCD group had a lower mean moral acceptability score than the comparison group ( $M=3.43, S.D=1.37$  and  $M=3.83, S.D=1.36$  respectively), this difference was not significant ( $t(53)=1.10, p=0.28$ ;  $F(1,52) = 0.12, p=0.73$  when controlling for depression). Again, the vignette types were considered separately and results did not change (Greene’s vignettes:  $t(54)=0.50, p=0.62$ ;  $F(1,53)=0.16, p=0.69$  after controlling for depression, Mancini and Gangemi’s vignettes: ( $t(54)=1.58, p=0.12$ ;  $F(1,53)=1.21, p=0.28$  after controlling for depression). This suggested that people with OCD did not make more deontological than utilitarian judgements, when compared to the comparison group, however they did feel the utilitarian option to be less morally acceptable.

To evaluate the potential mediational role of imagery in the relationship between OCD symptomatology and moral judgements, the PROCESS macro for SPSS (Hayes, 2012) was utilised. Imagery was measured using the VVQ Visual scale (a measure of visual/verbal cognitive style);  $M=12.83, S.D=1.93$ ), SUIS (a measure of visual imagery;  $M=37.96, S.D=9.63$ ) and vividness ( $M=4.56, S.D=1.61$ ), in separate analyses. Moral judgement was measured using mean moral acceptability scores, both for the vignettes together as well as Greene’s and Mancini and Gangemi’s vignettes separately. As in previous analyses, depression was controlled for.

As Figure 1 illustrates, the relationship between OCD symptomatology and mean moral acceptability was not significantly mediated by imagery, as measured by the VVQ Visual scale. The significance of the indirect effect (standardised indirect effect = -0.02) was tested using bootstrapping procedures. The bootstrapped unstandardised indirect effect was -0.02 and the 95% confidence interval ranged from -.08 to .003.

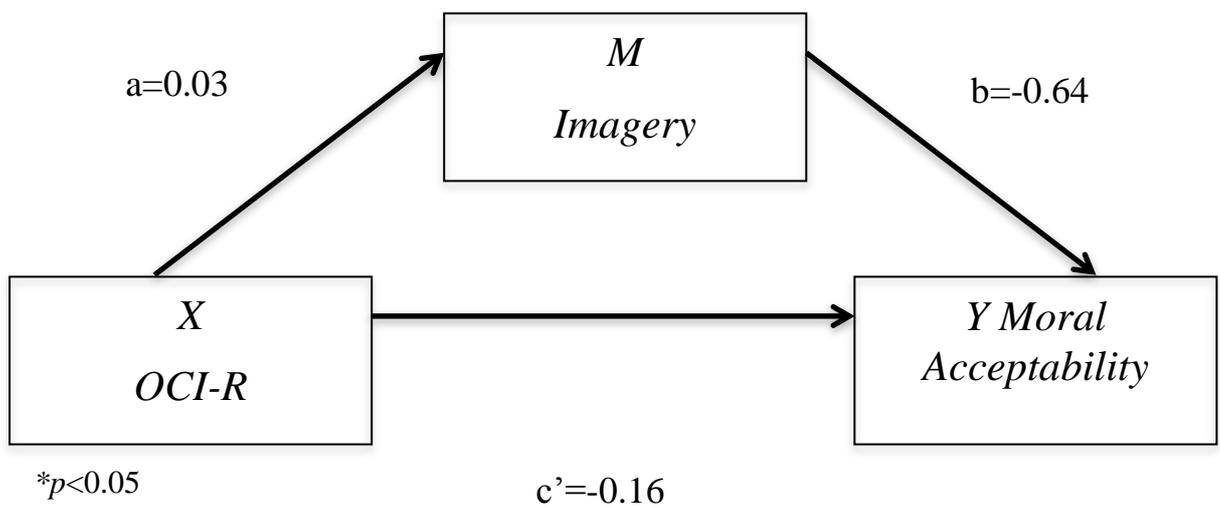
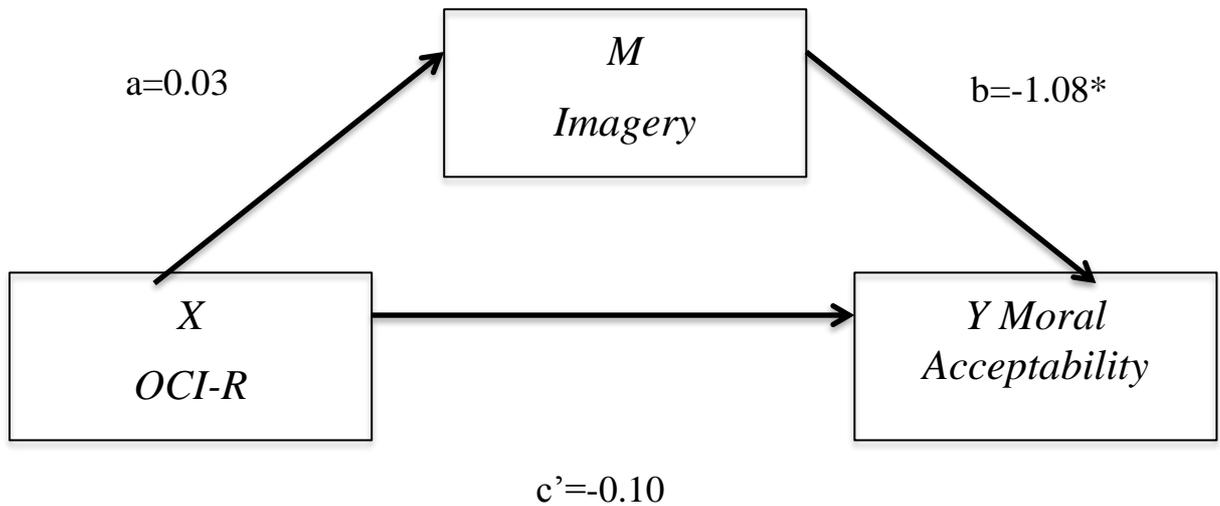


Figure 1. Mediation model for OCD symptomatology on moral acceptability via imagery.

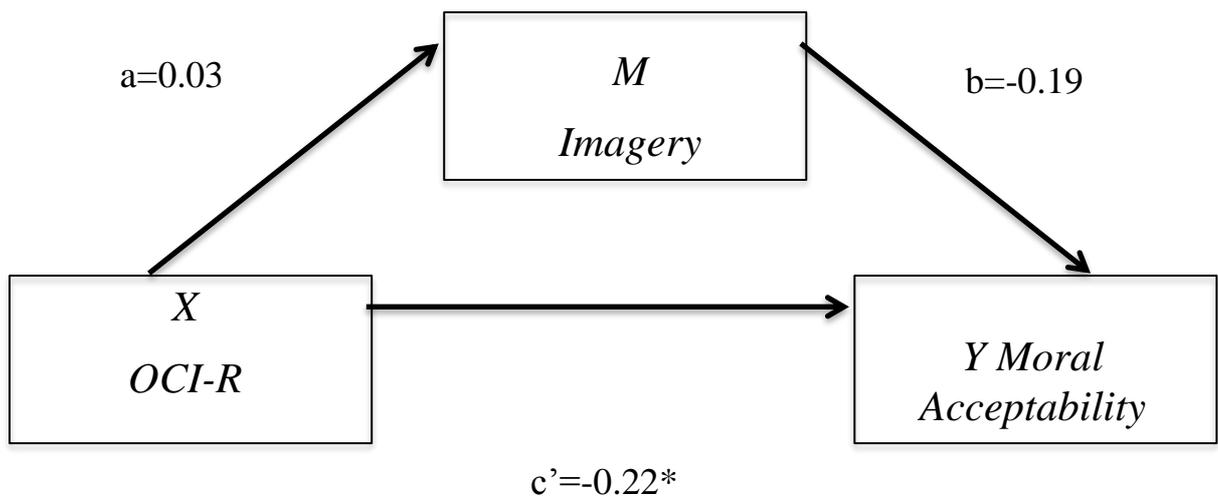
Whilst there was a significant relationship between imagery and Greene’s mean moral acceptability, the relationship between OCD symptomatology and Greene’s moral acceptability was not significant and it was therefore not mediated by imagery (see Figure 2). The bootstrapped unstandardised indirect effect was -0.03 and the 95% confidence interval ranged from -.10 to .000.



\* $p < 0.05$

*Figure Two. Mediation model for OCD symptomatology on Greene's moral acceptability via imagery*

Neither was the relationship between OCD symptomatology and Mancini and Gangemi's moral acceptability significantly mediated by imagery (see Figure 3). The bootstrapped unstandardised indirect effect was -0.006 and the 95% confidence interval ranged from -.06 to .02.



\* $p < 0.05$

*Figure Three. Mediation model for OCD symptomatology on Mancini and Gangemi's moral acceptability via imagery*

The hypothesis was also tested using the SUIS and vividness of imagery associated with the vignettes. In all of these cases, results of the mediation analyses were not significant ( $p > 0.05$  in all cases as all confidence intervals crossed 0). Neither trait nor state imagery mediated the relationship between OCD symptomatology and moral judgements.

#### **4. Discussion**

The findings of the study are consistent with the hypothesis that there are differences in the moral judgements made by individuals with and without OCD. Although no differences were found between groups in regard to the number of deontological moral judgements made, OCD symptomatology was significantly associated with more deontological moral judgements, particularly in certain situations. Further

implicating the role of deontological principles in OCD, significantly more individuals with OCD felt that the utilitarian option was not morally acceptable.

It is interesting to note that the groups did not differ on their judgements as to whether they felt they should choose to act according to the proposed utilitarian action, but did differ as to whether they thought the proposed action was morally acceptable. This highlights a potential difference between how people think they should behave and what is morally appropriate. Indeed, Wroe and Salkovskis (2000) asked about how likely individuals would be to act ('commission') or not act ('omission'), whereas other research (eg. Amit & Greene, 2012) has asked about the moral acceptability of actions. It was assumed, in line with the theories of reasoned action (Ajzen & Fishbein, 1980) and planned behaviour (Ajzen, 1985), that people would act in a way that they intend and deem to be morally acceptable (Kant, 1959). However, there is evidence to suggest that this may not be the case and what individuals feel is more morally acceptable is not always aligned with the way in which they feel they should, and do act (Mitchell & Owens, 2004). In the current study, the analysis on the numbers of deontological/utilitarian decisions made was based on the question 'should you/is it appropriate for you to [utilitarian action]' in a moral dilemma. The analysis on the moral acceptability of this action was based on the question 'would this be morally acceptable'. Future research is needed in order to explore this potential difference further as it is possible that differences in questioning could account for the conflicting results.

The possibility of imagery mediating the relationship between OCD and deontological moral judgements was not supported by the current study, suggesting the consideration of alternative explanations such as a heightened sense of personal

responsibility for one's own actions (Franklin et al, 2009) and/or the unwanted deontological guilt of transgressing a moral norm (Mancini, 2008 cited in Gangemi & Mancini, 2011) in explaining the relationship between these areas. Nevertheless, the study did suggest imagery to have a role in deontological moral judgements made in certain situations, independently of OCD.

The results showed symptoms of OCD to be associated with deontological moral judgements made by individuals, particularly in Mancini and Gangemi's moral dilemmas. It is possible that the mechanisms around moral judgements in dilemmas depicting lower levels of agency and vividness and activating lower levels of emotion/empathy are somewhat different to those in moral dilemmas involving more agency and vividness and that the strength of this mechanism is affected by differences across vignettes. In addition, individuals with/without OCD may have differing sensitivities to the vividness of vignettes. This, as well as variation in the imagery's vividness between vignettes, would need to be tested and validated as such in future studies.

A number of limitations of the current study could also be usefully addressed in future research. In regard to the vignettes, and in light of Wroe and Salkovskis' (2000) work which showed decision-making in OCD to be different to that of non-clinical individuals only in situations that activated their idiosyncratic OCD concerns, the area could benefit from the development and validation of moral dilemmas that are specifically relevant to OCD. As Franklin et al. (2009) suggested the possibility of all individuals making the same judgements in life threatening dilemmas future studies could also employ the use of low-risk scenarios and real life

dilemmas in order to monitor any differences in the moral judgements of individuals with OCD in relation to these.

As noted by Kahane and Shackel (2010), in both the current and previous studies, vignettes were written from a utilitarian perspective. In other words, the utilitarian judgements are those in which the person does not act, whereas the deontological judgements are those in which the person acts. This does not allow for control of omission bias which may influence decisions involving choice between action and inaction and perceived responsibility for potential harm (Wroe and Salkovskis, 2000). Omission bias is the judgement that action that results in harm (commission) is less acceptable than failing to act (omission) which results in the same harm. It may be that omission bias is playing a role in participants' judgments of moral acceptability. In the development of this research, it seemed prudent to focus on just one potential process involved in moral judgements (that is, deontological vs. utilitarian judgements) and to use previously developed stimuli to add to the base of knowledge. However, as noted above, this may have created unavoidable confounds. In order to understand potential processes further, future research is necessary to assess decision making and moral judgements where options include deontological inactions and utilitarian actions.

In further regard to the vignettes, the content of the images visualised by individuals (e.g. if the focus of an image was an individual being sacrificed to save a number of others or many being saved as a result of an individual being sacrificed) was not identified. It is possible that this content is related to their decision and would warrant further investigation in future research to improve the understanding of the processes underlying any effect. This would further determine whether the content of mental

imagery mediates a deontological/utilitarian response.

It would also be of great interest to look further at the qualitative differences between Mancini and Gangemi's and Greene's vignettes, and their respective wordings, in order to establish any differences between them. Personal agency was not measured in the current study but may be a relevant factor in the moral judgements of individuals with OCD. A control group of individuals with anxiety disorders could also usefully be incorporated in future in order to determine any confounding effects of anxiety.

This study nevertheless has implications for clinical work in the area, particularly for cognitive work. Tailored interventions, aimed at increasing psychological flexibility, could support individuals with OCD to have a greater understanding of the types of moral judgements they make and support their ability to consider both the overall picture as well as the factors closest to them. Interventions could also consider a focus on decision making in moral dilemmas, to elicit beliefs about responsibility and/or morality and incorporate work on the costs and benefits of transgressing morals. Aiming to support individuals to act, or not act, in ways that fit with their intentions could reduce psychological distress. Indeed, a greater understanding of the underlying fears of individuals of OCD has been shown to lead to improved outcomes (Huppert & Zlotnik, 2012) and this will also have important implications for service-wide outcomes.

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