Deontological guilt and Obsessive-Compulsive disorder.

Francesco Mancini e Amelia Gangemi

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Abstract

Background and Objectives: The emotion of guilt plays a pivotal role in the genesis and maintenance of Obsessive-Compulsive Disorder (OCD). But what kind of guilt do OC patients want to prevent? Several studies suggest the existence of two different types of guilt emotions, namely deontological and altruistic guilt. This research suggests that the former, more than the latter, is involved in OCD. Studies in which people must hypothetically choose between killing one person to save a few (consequentialist choice) or take no action and allow things to take their course (omission choice), have found that the latter is consistent with the "Do not play God" moral principle whereas the former is consistent with altruistic motivations. This paper is aimed at verifying whether both OC patients, with no induction, and nonclinical participants, after the induction of deontological guilt prefer omission more often than a consequentialist option. It is hypothesized that people with OCD will be motivated to avoid feeling deontological guilt and thus will be more likely to opt for omission. Similarly, nonclinical participants who receive a deontological guilt induction will also be more likely to choose omission.

Method: In two studies participants were given seven scenarios (four moral dilemmas, three control scenarios). Twenty patients with OCD, 20 anxious controls, and 20 healthy participants took part in study 1. In study 2, we recruited 70 healthy participants who were randomly assigned to receive a deontological guilt or a control induction.

Results: Consistent with hypotheses, in Study 1 OC patients preferred omission, instead of the consequentialist option, moreso than did the clinical and nonclinical controls. In Study 2, the group receiving the deontological guilt induction preferred omission to a greater extent than did the

altruistic group.

Limitations: The present study cannot establish that the goal of preventing or neutralizing deontological guilt actually drives obsessions and compulsions.

Conclusions: These results provide further evidence that people with OCD are more sensitive to deontological guilt, compared to other people. They thus contribute to improve the moral appraisal theory of OCD.

Keywords. Obsessive-compulsive disorder,deontological guilt emotion, altruistic guilt emotion, moral trolley dilemma.

Introduction

The emotion of guilt seems to play a crucial role in the genesis and maintenance of Obsessive Compulsive Disorder (OCD). For example Shapiro & Stewart (2011) illustrate that: (1) in nonclinical samples, guilt leads to obsessive-compulsive (OC)-like symptoms, including increased threat perception (see Gangemi, Mancini & van den Hout, 2007), not-just-right-experiences (NJRE) (e.g. Mancini, Gangemi, Perdighe & Marini, 2008), over responsibility, and intrusive thoughts/ impulses (Niler & Beck, 1989); and, (2) in nonclinical neuro-imaging samples, the state of guilt is associated with brain activation in regions proximal to OCD-affected regions (Takahashi, Yahata, Koeda, et al., 2004; Shin, Doughert, Orr, et al., 2000). Moreover, it seems that a reduction of responsibility (and thus of the risk of being guilty), is associated with a reduction in checking compulsions (Lopatcka & Rachman, 1995; Shafran, 1997). Meanwhile, elevations in responsibility and fear of guilt yield a greater increase in checking behaviour across OCD subtypes than is observed in anxious and non-clinical samples (Arntz, Voncken & Goosen, 2007). Furthermore, therapeutic interventions that target inflated responsibility (Vos et al., 2011) and acceptance of guilt have been shown to significantly reduce OC symptoms across subtypes (Cosentino et al., 2012). These results suggest that not only checking symptoms, but all OC sub-type symptoms, are characterized by a high fear of guilt. Consistent with this, Reuven, Liberman and Dar (2013) found a higher Macbeth effect[1] in OC patients (Zhong & Liljenquist, 2006) than in non-clinical subjects, showing that a higher sensitivity to guilt also accounted for washing symptoms in OC patients (for the relationship between moral aspects and disgust in OCD, see also Rachman, Radomsky, Elliott & Zysk, 2012).

[1] Macbeth effect has been defined as: "a threat to one's moral purity that induces the need to cleanse oneself (Zhong & Liljenquist, 2006, p. 1451).

But what kinds of guilt do OC patients want to prevent? This question arises from a number of clinical observations and from different experimental data. Obsessive patients' concern over a harmful event (e.g., a gas explosion) is substantially reduced if responsibility for the event is not their own, but someone else's, regardless of the actual probability of harm (Lopatcka & Rachman, 1995). This suggests that OC patients' concern is not about the consequences of the event so much as being responsible for it. Moreover, OC patients are frequently concerned about sins of a religious or sexual nature, even though no harm is caused to anyone.

Thus it seems that a key factor in the persistence of OCD is guilt, for whom neither the worry for, nor the presence of a victim, are necessary. However, this sense of guilt does not correspond to the guilt prototype as typically defined in moral psychology: "the core relational theme for guilt is something like: someone I am concerned about has been harmed and I have responsibility for that in virtue of what I have done or failed to do" (Prinz & Nichols, 2010, p.134). According to the authors, the prototype of guilt, at least in today's Western culture, is defined by: 1) to have caused harm to others, by action or omission, and, 2) to have violated a moral norm. Indeed, most of the guilt feelings we experience in everyday life correspond to Prinz and Nichols' prototype, and usually results from a concurrent assumption of having transgressed a moral norm and not having acted altruistically, i.e. harming others.

It is worth noting that these two kinds of assumptions can, however, act independently, so that we can feel guilty without having transgressed moral norms, but by having violated empathic/altruistic principles (i.e. Altruistic guilt, (Baumeister, Stillwell & Heatherton, 1994) or having transgressed moral norms even if there is no victim (i.e. Deontological guilt).

Here is an example of altruistic guilt:

I suffered serious symptoms and was admitted to hospital. During this time I shared a room with another person and we became friends. After ten days doctor informed me that all was well and that I could go home. I was packing my bag when my friend came into the room. He was very distressed: the doctor had diagnosed him with cancer. Even today I can't stand the idea that I was able to

resume my life while his became an ordeal. I feel guilty at not having shared his fate.

Altruistic guilt arises when one appraises one's own conduct as not being altruistic, as, in the example above, not having shared a victim's destiny, or, not having been close to her/him, even if it is evident that nothing could have been different. Altruistic guilt is characterized by feelings of sorrow, even of anguish for the victim, and by an inner dialogue of the type "poor fellow, how much he suffers", "what have I done to him?", "what can I do for him?". It is more easily activated by the closeness of friendship, and implies compassion and the tendency to alleviate the suffering of the victim at the expense of one's own. In our previous example, the protagonist of the vignette could have given up enjoyment in the days after his dismissal from the hospital due to guilt about his friend's misfortune.

Here is an example of deontological guilt:

I had just graduated in medicine. One evening, when I arrived for a-night shift, I found that a patient with terminal cancer had gone into a coma. Even in the torpor of his coma the patient complained of the pain. The head physician instructed me to give him massive doses of morphine, which would have eased his pain but would have speeded up his death. I was just about to inject the morphine when I was struck by the thought "who am I to decide on this person's life or death? Who authorizes me to play God? It is not morally correct, I cannot do that". This thought stopped me from acting.

Deontological guilt arises out of the assumption of having violated one's own moral rules [2]. In the vignette, the moral rule that could be violated is "Do not play God" (Sunstein, 2005). It implies feelings of unworthiness, expectations of punishment, and an inner dialogue of the kind: "How could I have done this!" It might be alleviated through confession or apology.

In altruistic guilt, there is always a victim and the assumption of not having been altruistic, but there might not have been any violation of moral rules. In deontological guilt, on the contrary, there might be no victims at all and one could feel guilty even if acting for the good of the victim, as, for

[2] The moral rules are not restricted to moral transgressions without harm for others.

example, in the case of euthanasia, where, in order to reduce the victim's suffering, the moral norm of "Do not Play God" has to be violated (Mancini, 2008). Thus, the assumption of having violated a moral rule is necessary and sufficient to feel the emotion of deontological guilt.

There is consistent evidence that the two types of guilt are distinct. For example, deontological and altruistic guilt appear to be associated with different areas of the brain: the former includes the insulae and the anterior cingulate cortex, whereas the latter involves the medial prefrontal areas (Basile, Mancini, Macaluso, Caltagirone, Frackowiack, & Bozzali, 2011). The insulae are also notoriously involved in self-reproach and disgust, which suggests that deontological guilt involves self-reproach and self-loathing, moreso than does altruistic guilt (e.g., Rozin, Haidt, & McCauley, 2000). On the other hand, the medial prefrontal areas are activated in theory of mind tasks such as the representation of the intention of others and when experiencing empathy and compassion. This suggests that altruism requires an understanding of the victim's mind (Blair, 1995; Moll, de Oliveira-Souza, Moll, Ignàcio, Bramati, Caparelli-Dàquer, & Eslinger, 2005; Shallice, 2001).

Other evidence is found in behavioural studies which employ the *switch version* of the trolley problem. In its original form, the task requests people to imagine that "a trolley is running out of control down a track. In its path are five people who have been tied to the track. Fortunately, you can flip a switch, which will lead the trolley down a different track to safety. Unfortunately, there is one person tied to that track. Should you flip the switch?" When faced with the *switch version* of the trolley problem most participants (80-90%) prefer action to omission (that is, not intervening at all and letting nature take its course; see Greene, Cushman, Stewart, Lowenberg, Nystrom, & Cohen, 2009). This moral dilemma requires participants to choose one of two undesirable courses of action (both involving loss of life) which puts two sets of moral principles into conflict: a deontological one and an altruistic one. If one does not flip the switch, then one does not modify the «natural order» of things and respects the «Do not play God» moral rule (Sunstein, 2005). However, in such a case, five people would die. If one pulls the lever, one saves four people, reducing the number of victims, but modifying the «natural order» of things and playing God. In

fact, in our first investigation (Gangemi & Mancini, 2013) we found that individuals who chose omission tended to justify themselves by referring to the "Do not play God" rule (for example: «Who am I to decide who lives and who dies?!»), whereas those choosing action tended to justify it by referring to the altruistic consequences, i.e. minimizing other's suffering (for example: «it's better that one person dies instead of five»). However, when faced with the switch version of the trolley problem, most participants (80-90%) appear to prefer action (see Greene et al., 2009). To avoid this ceiling effect, we ran a second study in which we used a similar dilemma to the original one, but with a modified proportion of victims, i.e., five vs. three, instead of the five vs. one (see, Gangemi & Mancini 2013). We found that participants chose action and omission equally. In this study we also varied features of the protagonist. In the "authority version", a moral authority (e.g. a judge) was close to the protagonist, whereas in the "closeness/altruistic version", the protagonist was close to the five potential victims. Consistent with the hypotheses, the "authority version" led individuals to prefer the omission, presumptively in order to prevent a deontological guilt emotion, while the "closeness version" led participants to prefer the consequentialist[3] option, presumptively in order to prevent an altruistic guilt.

What happens in OC patients? Clinical observations suggest that OC patients are more sensitive to deontological guilt than other people are. For example, in a recent functional magnetic resonance imaging (fMRI) study (Basile et al., 2013) the authors investigated the brain responses of OC patients while they were processing deontological guilt (DG) and altruistic guilt (AG) stimuli. Compared to healthy controls, when processing DG stimuli OC patients showed decreased activation in the anterior cingulate cortex, the insula and the precuneus. No significant differences were observed between groups when processing AG, angry or sad stimuli. The authors suggested that this decreased activation may reflect patients' cerebral efficiency, which results from their

3 It's a choice that does not consider the intrinsic character of the behaviour but its consequences, that is, whether the behaviour is harmful or harmless for others in a specific situation.

frequent exposure to deontological guilt feelings, known as *neural efficiency hypothesis*[4] (Neubauer & Fink, 2009). In two other studies D'Olimpio and Mancini (2014a) investigated whether deontological guilt induction activated checking and washing behaviours to a greater extent than an induction of altruistic guilt. Results showed that participants in the deontological group had greater doubts and discomfort, checked more and cleaned a Plexiglass cube more times than did participants in the altruistic induction group.

Gangemi and Mancini's results (2013) suggest that the omission choice in the trolley dilemma is a means of preventing deontological guilt (see also Sunstein, 2005), and that the choice to take action is a means of avoiding pain and harm to other human beings, which in turn reflects altruistic guilt. From this premise, we were interested in further investigating whether OC patients are more motivated than clinical controls to prevent deontological guilt, than altruistic guilt. To this end, we conducted two studies using the switch version of the trolley dilemma.

2. Study 1

The goal of the present study was to verify whether OC patients are more prone to prevent deontological guilt, than both healthy controls and patients with anxiety disorders via showing a preference for omission rather than action on the trolley task. Secondly, we expected that OC patients would be more prone to prevent deontological than altruistic guilt.

2.1 Method

2.1.1. Participants

Two clinical groups and one nonclinical group took part in the study. The clinical groups included a sample of 20 patients with obsessive compulsive disorder (OCD, 12 men, 8 women, mean age 32.55 years, *SD* = 8.9, range 18-47 years), and a sample of 20 patients with anxiety disorders (AD, i.e., social phobia, agoraphobia, panic attacks, general anxiety disorders; 9 men, 11 women, mean age 34.4 years, *SD* = 10.5, range 20-51 years). All patients were recruited before their start of

4 The "Neural Efficiency Hypothesis" postulates that trained individuals display a lower degree of cortical activation, than less trained people (Neubauer & Fink, 2009).

treatment at the Centre for Cognitive Psychotherapy in Rome. They were diagnosed using the Structured Clinical Interview for DSM-IV (SCID; First, Spitzer, Gibbon, & Williams, 1996). The nonclinical group consisted of 20 participants (11 men, 9 women) with a mean age of 34 years (*SD* = 10.9, range 19-53 years) screened using an abbreviated SCID interview to ascertain that they did not meet criteria for any past or present mental disorders. They were recruited from several sites (university students, working population) via advertising, as well as announcements on the public boards of Messina University. Mean age in the total sample was 33.67, SD= 10. There were no differences between the clinical and nonclinical groups in gender (χ^2 (1, 60) = 0.03, p= 0.85), age (t(58) = 0.18, p = 0.86) and educational level (clinical participants: M = 13.8 years of education, SD = 3.3; nonclinical participants: M = 14.2 years of education, SD = 3.5, t(58) =0.41, p = 0.68) distributions. All participants provided written informed consent.

2.2 Measures

Padua Inventory-Revised. The revised version of the Padua Inventory (PI-R, van Oppen, Hoekstra, & Emmelkamp, 1995) consists of 41 items rated on a 5-point scale according to the degree of disturbance caused by a thought or behavior (0 = not at all to 4 = very much). The PI-R produces a total score (from 0 to 164) indicating the presence of obsessive-compulsive features, and five sub-scale scores: impulses (e.g., "While driving I sometimes feel an impulse to drive the car into someone or something"), washing (e.g., "I feel my hands are dirty when I touch money"), checking (e.g., "I check letters carefully many times before posting them"), rumination (e.g., "I find it difficult to make decisions, even about unimportant matters"), and precision (e.g., "I feel obliged to follow a particular order in dressing, undressing, and washing myself"). The PI-R shows good internal consistency (α = 0.77–0.93 in the OC sample; van Oppen et al., 1995). The internal consistency for the scale in the current study was high as well (α = 0.87).

*Beck Depression Inventory-II***.** The Beck Depression Inventory-II (BDI-II; Beck, Steer, & Garbin, 1988) consists of 21 items used to assess the severity of depressive symptoms experienced during the 2 weeks prior to completion on a Likert-type scale (0-3). The range of scores is 0–63.

The scale is a reliable (α = 0.92) and valid measure (Beck et al., 1988). It had a high internal consistency in our sample (α = 0.89).

*Trait Anxiety Inventory***.** On the Trait Anxiety Inventory (STAI; Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983) respondents are asked to rate how often they "generally" feel in regard to 10 self-descriptive statements using a 4-point scale (1 = almost never, 4 = almost always). The internal consistency for the scale was 0.90 in the original study as well as in the present one.

2.3 Procedure

Participants were given a booklet with written instructions and seven dilemmas. The dilemmas were seven brief scenarios comprised of 6–8 sentences each. Four scenarios concerned moral dilemmas, each requiring participants to indicate, which of two options they would choose if confronted with them (Greene & Haidt, 2002; Greene, et al., 2004). The consequentialist/altruistic alternative was to act, thereby killing three human beings while saving the lives of five others. The omission/deontological alternative was to do nothing, thereby saving three people but killing five. Three control scenarios required participants to choose between action and omission, but there were no victims, harm, or violations of moral norms. These were included as filler items. The seven dilemmas were presented in randomized order. The following is an example of the two kinds of dilemmas, moral and control, presented in the study (translated from Italian):

Moral Dilemma

You are near a Ferris wheel. It does not work. Just under the wheel, there are five tourists. Suddenly, the wheel starts turning and soon a cabin will crush them to death. There is no way to warn them and they cannot escape in any way. The only way to save the five tourists is to pull a lever that can change the rotation of the wheel. Unfortunately, there are three people on the other side that would be killed. Should you pull the lever?

Control dilemma

You have just sent an e-mail order for three books that you need for your studies (they are by your favorite writer), when a colleague suggests you to buy the same books, and two

more (five books in total), with a special discount. The order cancellation procedure requires a lot of time. Should you proceed with the cancellation procedure?

Participants were asked to respond to each dilemma by marking "yes" (action) or "no" (omission). The total number of omission choices made by each participant was the dependent variable.

2.4 Results

Means and standard deviations of the questionnaires in the OCD group, AD group and nonclinical group are shown in Table 1.

Please insert Table 1 about here

As expected, the percentage of scenarios for which participants chose the omission alternative was significantly higher for OC participants (78%), than for both patients with AD (42%, $F(1,40)= 9.8$, $p< .005$) and healthy controls (31%, $F(1, 40)= 11.87$, $p< .001$). The difference between the OCD group and the other two groups remained significant when controlling for BDI scores (AD group, $F(1, 40)= 6.77$, $p< .02$; healthy group, $F(1, 40)= 5.98$, $p< .02$). As shown by the percentages, OC participants preferred the omission options more than the action options ($t(19)= 9.13$, $p<.0001$). No differences were found between the three groups of participants in the proportion of non-moral scenarios for which participants chose omissions (ts < .98).

Correlational analyses (Pearson, Bonferroni correction) between the PI-R total score and the tendency to choose the omission solution, in the moral dilemmas were conducted across groups. Positive associations were found for all groups, ranging from .25 to .40, indicating that higher scores in OC behaviors and thoughts corresponded to more omission choices in the moral dilemmas. Due to the relatively small sample size (n=20 for each group), none were statistically significant. Our findings are in line with those of D'Olimpio & Mancini (2014) in which the authors found that people high in OCD symptoms more frequently chose omission in the trolley dilemma than did participants low in OCD symptoms.

3. Study 2

If, indeed, deontological guilt leads to a preference for omission over action then we would expect that a deontological guilt induction would result in more frequent choices of omission than action in moral dilemmas whereas the opposite would be true following an induction of altruistic guilt. To test this hypothesis, the participants of our second study were assigned to one of two guilt emotion induction conditions, namely deontological or altruistic guilt. Guilt emotions were induced separately by using *ad hoc* vignettes which were established as evoking either altruistic or deontological guilt, but not both (see the Preliminary Study). Participants were then asked to write about a deontological guilt-related or an altruistic guilt related life event. They were then administered the same 7 scenarios used in Study 1. The induced guilt emotional states were, thus, neither generated by, nor related to, these dilemmas.

3.1 Method

3.1.1 Participants

Seventy undergraduate and postgraduate students (58 females and 12 males) were recruited from the University of Messina (Italy). Participants' age ranged from 18 to 24 years-old, with a mean age of 21.2 years. All of the participants voluntarily participated in the study, and were provided with informed consent. Subjects were randomly assigned to one of two groups, depending on the kind of guilt induction (deontological guilt n=40 vs. altruistic guilt n=30).

3.1.2 Materials

3.1.2.1 Scenarios for altruistic/deontological guilt induction

In order to induce deontological and altruistic guilt participants were given a set of 6 scenarios, half depicting a situation involving altruistic guilt situations, and, the other half depicting a situation involving deontological guilt. Scenarios were selected from a pool of other vignettes whose development is detailed in D'Olimpio and Mancini (2014). The three deontological guilt scenarios featured an explicit violation of a moral rule which resulted in guilt (e.g. transgression of a moral taboo, religious sins), but with no harm or pain to anyone. By contrast, the three altruistic guilt scenarios featured actions or omissions with harmful consequences to other people which resulted

in guilt. The six scenarios were previously pilot tested on a group of 60 volunteers, recruited at the University of Messina (30 females and 30 males, with a mean age of 28, ranging from 22-46). Participants were asked to empathize as much as possible with the protagonists of all scenarios, and to indicate how much they felt of: disgust, deontological guilt, anger, shame, sadness, fear, pity, altruistic guilt, or no emotion, using a VAS rating. Each emotion was identified through its name and a brief description, including feelings, a typical verbal expression, and an action disposition. For example, the VAS description for deontological guilt was: "feelings of guilt related to lack of respect (*how could I be so bold?*, *how could I have done this*?) and need to confess or apologize"; whereas the VAS description for altruistic guilt was: "feelings of guilt and sorrow towards the other person ("*how much is s/he suffering because of me?",* "*What have I done to him?*" or "*Why I am safe while he is suffering*!?"), desire to sacrifice oneself to help or, to alleviate suffering of the victim, even at the expense of one's own" (see, Basile & Mancini, 2011).

Individuals rated their feelings on the Visual Analogue Scales (VAS) within a range from 0 to 100, with anchors at 0 (not at all) and 100 (totally). All other scales besides deontological and altruistic guilt emotions were included as filler items. We then selected the six scenarios that differed reliably in their altruistic/deontological guilt ratings: three scenarios that elicited higher deontological, (M 59.23, *SD* = 24.8) than altruistic guilt ratings (M= 18.7, *SD* = 18.1, (*t* (59) = 11.02, p<.001) and three scenarios that elicited higher altruistic than deontological guilt ratings (M= 61.6, *SD* = 25.12) (M=17.7, *SD* = 17.9, (*t* (59) = 11.2, p<.001). No differences were found between the two types of scenarios in the level of the filler emotions included in the questionnaire (*t*s < .98).

3.1.3 Procedure

The experiment was administered in group format. Each group was given the specific emotion induction (altruistic vs. deontological guilt) using a series of slides.

At the beginning of the experimental session, subjects were given a booklet with written instructions and with the Manipulation Check Questionnaire (Part 1 and Part 2), containing nine 100mm VAS, and seven dilemmas. Baseline differences in deontological and altruistic guilt were

assessed through the Manipulation Check Questionnaire, Part 1, in which participants were asked to rate disgust, deontological guilt, anger, shame, sadness, fear, pity, altruistic guilt, or no emotion. As in the preliminary study, each emotion was identified by its name, feeling and/or verbal expression, and action disposition (see above). As done previously, ratings ranged from 0 to 100, with anchors at 0 (not at all) and 100 (totally).

Afterwards, deontological and altruistic guilt emotions were manipulated by showing three different scenarios, representing either altruistic or deontological guilt, but not both emotions together. As in the pilot study, participants were asked to identify themselves as much as possible with the protagonists of each scenario. Next, they were asked to describe a personal life event in which they had felt in the same way, involving a deontological guilt-related (deontological guilt induction group), or an altruistic guilt-related personal event (altruistic guilt induction group). Participants were instructed to spend 15 minutes describing the event in writing as vividly as possible, including as much details as possible and specifying their feelings and thoughts. All participants were promised that no one was going to read their text and that they did not have to return their sheets back to the experimenter.

The second part of the Manipulation Check Questionnaire was administered in order to check for the efficacy of the emotional induction.

Finally, participants were given the same seven dilemmas used in Study 1, in a randomized order, and were asked to answer to each dilemma indicating whether they would act ("action"), or not ("omission"). The total number of omission choices made by each participant was used as dependent variable.

3.2. Results

Manipulation Check Questionnaires. Table 2 shows the mean affect ratings on VAS scales of Deontological Guilt and Altruistic Guilt for participants in the two affect induction conditions both before and after the affect induction procedure. Each measure was subjected to a 2 X 2 ANOVA

comparing Time (before vs. after) as a within group factor and Affect Induction group (Deontological Guilt, Altruistic Guilt) as between group factor.

Please, insert Table 2 about here

Results revealed that the induction was effective. Before the induction, no differences were found between the two groups in the guilt emotions felt: for deontological guilt, $F(1,68) = 1.13$, *ns*; for altruistic guilt: $F(1,68) = .94$, *ns*. After reading the scenarios and writing about the past event involving deontological guilt, individuals perceived more deontological guilt than did those in the altruistic guilt condition ($F(1,68) = 11.1$, $p<0.001$). By contrast, after reading the scenarios and writing about their past event involving altruistic guilt, individuals perceived higher altruistic guilt than did individuals in the deontological guilt condition ($F(1,68) = 15.9$, $p<0.001$). Moreover, no differences were found between the two groups in the level of the filler emotions included in the questionnaire ($Fs < 0.92$). Therefore, it is unlikely that differences in participants' preferences in dilemmas were due to the influence of emotions different from the two guilt emotions.

Moral dilemmas. As expected, the percentage of scenarios for which participants chose omission was significantly greater for the deontological guilt group (67%) than for the altruistic guilt one (24%, $t(68)= 5.33$, $p< .0001$). As shown by the percentages, the deontological group more often preferred the omission option to the action one ($t(29)= 10.64$, $p<.0001$).

However, no differences were found between the two groups of participants in the proportion of non-moral scenarios, for which participants chose omissions ($t(68)$: 0.43, $p = .67$).

4.0 General Discussion

Some observations and data from behavioral and neuroimaging studies suggest: a) the existence of two types of guilt, namely altruistic and deontological guilt (Mancini, 2008; Gangemi & Mancini, 2013; D'Olimpio & Mancini, 2014b; Basile et al., 2011); b) in the trolley dilemma the choice to not take action depends on the desire not to transgress the moral norm of "Do not Play God" (Sunstein, 2005) and is thus motivated to prevent deontological guilt (see Gangemi & Mancini, 2013); and, c) deontological guilt may play a role in the genesis and maintenance of OCD (Basile et al. 2013;

D'Olimpio & Mancini, 2014a).

Thus, if OC patients are specifically sensitive to deontological guilt than they should show a preference for inaction over action in the trolley dilemma moreso than anxious and nonanxious controls. Consistent with this, Study 1 found that OC patients preferred inaction to action more often than in the anxious and nonanxious control groups. Study 2 confirmed that the induction of deontological guilt in nonclinical individuals was indeed associated with greater preference for inaction to action.

These results are in line with previous research. Some fMRI studies (e.g., Rauch et al., 1998; Mataix-Cols et al., 2005) have shown that OC patients undergoing a symptom provocation task have activation in similar areas of the brain (e.g., the anterior cingulate cortex and the insulae) as those activated in healthy individuals experiencing deontological guilt (Basile et al., 2011). This overlap suggests that during symptom provocation patients may be experiencing deontological guilt. These data are also consistent with Basile et al.'s fMRI study (2013), which found a difference in brain activation between OC patients and nonclinical controls when processing deontological guilt, but not altruistic guilt, anger or sadness stimuli. Our results also partially overlap with those of Franklin, McNally and Riemann (2009). These authors investigated moral choices in OC patients using the trolley dilemma, demonstrating that patients' preference for the action choice was inversely related to symptoms severity. Moreover, the stronger patients endorsed responsibility attitudes, the less likely they were to choose to kill one person to save the lives of others.

It could be argued deontological guilt and shame overlap, and that our findings may reflect shame rather than guilt. However, we found that deontological guilt induction did not modify the level of any of the other filler emotions, which suggests that this emotion was *di per se* specific. Furthermore, a recent study, demonstrated that shame induction in nonclinical individuals did not lead to omission choices in the trolley dilemma (D'Olimpio & Mancini, 2014b). Our findings are, however, inconsistent with Wroe and Salkovskis (2000). In their study authors found that, in

contrast to nonclinical individuals, in OC patients omissions were viewed as being as morally serious as actions. However, Wroe & Salkovskis did not use actual dilemmas requiring a choice of action or inaction but rather had participants to judge the moral severity of action and omission. Second, in their experiment, actions and omissions led to the same outcome whereas in our study participants had to choose between two undesirable courses of action which led to quite different outcomes. It is possible that the omission bias we observed was an artefact of the deontological guilt scenarios which could be viewed as more complex, ambiguous and cognitively demanding than altruistic guilt scenarios. However, there is no evidence that our deontological questions are actually more cognitively demanding than the altruistic ones. Indeed, Greene et al. (2001) demonstrated that reaction times for action and omission preferences are quite similar.

Further studies should verify the hypothesis that the goal of preventing or neutralizing deontological guilt leads to obsessions and compulsions. As well, two other lines of research should be pursued. A first, analogous to Lopatka & Rachman (1995) and Shafran's experiments (1997), should check whether the selective reduction of deontological guilt in OC patients would be associated with a concomitant in obsessive symptoms. The second line of research, analogous to Arntz et al.'s (2007) experiment, should verify whether the selective induction of the deontological guilt in OC patients would activate OC behaviors more than in other clinical and nonclinical groups.

Since the induction of guilt in nonclinical subjects leads to a higher NJRE (Mancini et al., 2008), it would also be interesting to verify: 1) whether deontological guilt induction would lead to a higher NJRE compared to altruistic guilt induction, in nonclinical individuals, and 2) whether this effect would be greater in OC patients, than in other patients or in nonclinical controls.

Overall, our data, together with those of other studies, suggest that OC patients are especially concerned about the possibility of transgressing a moral norm, and not respecting the will of moral authority.

These data suggest that deontological guilt may be an important target in treatment of OCD. First, a clear understanding of patients' core values (in our case the value of respecting deontological

principles) may allow therapist to articulate them more clearly (Huppert & Zlotnik, 2011). The OCD symptoms may be understood as a consequence of the overvalued goal to prevent deontological guilt; that is, to not violate the moral norms. The disturbance is not due to patients' madness or badness. This can furthermore normalize patients' fears and calm (Huppert & Zlotnik, 2011). At the same time, access to the core fears can directly affect the effectiveness of treatment, both in cognitive interventions and in exposure work (Huppert and Zlotnik, 2011).

Second, increasing acceptance of guilt, even in non-symptomatic domains (i.e., guilt feelings that are not at all related to the obsessive symptoms, such as guilt towards others due to a lack of respect, or for having offended someone, or in case of religious sins, for having, say, transgressed the obligation to attend Mass on Sunday). Feelings of guilt tend to be regarded by OC patients as not only something to be feared and avoided but also as being unacceptable and a signal that one is undeserving of forgiveness. Cosentino and colleagues (Cosentino et al., 2012) demonstrated that increasing patients' acceptance of the possibility of feeling guilty, in non symptomatic domains (see above), leads to a reduction of OC symptoms and also facilitates patients' capacity to forgive themselves. It is worth noting that, in all these patients, traditional interventions-like ERP had failed. In line with this is the Compassion focused therapy (e.g., Gilbert, 2009). Its key concerns is to help patients to be less critique with themselves, via compassion and self-compassion.

In sum, our study further demonstrate that OC patients are more motivated to prevent the deontological rather than the altruistic guilt. Future studies are needed to verify the hypothesis that obsessive behaviours are actually aimed to prevent or neutralize deontological guilt. If this hypothesis is further confirmed it would support the moral appraisal theory of OCD (cf. Salkovskis, 1985; Rachman, 1993; 2002; Radomsky, Shafran, Coughtrey & Rachman, 2010).

References

Arntz, A., Voncken, M.,& Goosen, A.C.A. (2007). Responsibility and obsessive-compulsive disorder: An experimental test. *Behaviour Research and Therapy, 45,* 425-435.

Basile, B, & Mancini, F. (2011). Eliciting guilty feelings: a preliminary study differentiating deontological and altruistic guilt. *Psychology, 2* , 98-102.

Basile, B., Mancini, F., Macaluso, E., Caltagirone, C., Frackoviack, R., Bozzali, M. (2011). Deontological and altruistic guilt: evidence for neurobiological different substrates**.** *Human Brain Mapping, 32*, 229-239.

Basile, B., Mancini, F., Macaluso, E., Caltagirone, C., Bozzali, M. (2013). Abnormal processing of deontological guilt in obsessive-compulsive disorder. *Brain Structure and Function*, *4,* 1-11.

Baumeister, R.F., Stillwell, A.M., & Heatherton, T.F. (1994). Guilt: An interpersonal approach. *Psychological Bulletin, 115*, 243–267.

Blair, R.J. (1995). A cognitive developmental approach to morality: Investigating the psychopath. *Cognition, 57,* 1–29.

Cosentino, T., D'Olimpio, F., Perdighe, C., Romano, G., Saliani, A.M., & Mancini, F. **(**2012**).** Acceptance of being guilty in the treatment of obsessive**-**compulsive disorder**.** *Psicoterapia Cognitiva e Comportamentale, Monograph Supplement*, 39-56.

D'Olimpio, F., Mancini, F., (2014a). Role of Deontological Guilt in Obsessive-Compulsive Disorder-Like Checking and Washing Behaviors. Clinical Psychological Science, doi:10.1177/2167702614529549

D'Olimpio, F., Mancini, F. (2014b). "Don't play God!": checking behaviors in deontological guilt feeling, presented at Rome Workshop on Experimental Psychopathology, Rome.

First, M. B., Spitzer, R. L., Gibbon, M., & Williams, J. B. W. (1996). *Structured Clinical Interview for DSM-IV axis I disorders: Patient edition* (SCID-I/P, Version 2.0). Washington, DC: American Psychiatric Press.

Franklin, S.A., McNally, R.J., & Riemann, B.C. (2009). Moral reasoning in obsessive–compulsive disorder**.** *Journal of Anxiety Disorders, 23,* 575–577.

Gangemi, A., Mancini, F., & van den Hout, M. (2007). Feeling guilty as a source of information about threat and performance. *Behaviour Research and Therapy, 45*, 2387–2396.

Gilbert, P. (2009). Introducing compassion-focused therapy. *Advances in psychiatric treatment*, *15,* 199–208

Greene, J. D., & Haidt, J. (2002). How (and where) does moral judgment work? *Trends in Cognitive Sciences, 6*, 517–523.

Greene, J., Sommerville, R. B., Nystrom, L. E., Darley, J. M., & Cohen, J. D. (2001). An fMRI investigation of emotional engagement in moral judgment. *Science, 293*, 2105–2108.

Greene, J.D., Cushman, F.A., Stewart, L.E., Lowenberg, K., Nystrom, L.E., & Cohen, J.D. (2009). Pushing moral buttons: The interaction between personal force and intention in moral judgment. *Cognition, 111*, 364–371.

Haidt, J., Björklund, F., & Murphy, S. (2000). Moral Dumbfounding: When Intuition Finds No Reason. August 10.

Huppert, J.D., & Zlotnick,E. (2012).Core fears,values, and obsessive-compulsive disorder: A preliminary clinical-theoretical outlook.*Psicoterapia Cognitivo eComportamentale, 18*, 1, 91-102.

Lopatcka, C., & Rachman, S. (1995). Perceived responsibility compulsive and checking: an experimental analysis. *Behaviour Research and Therapy, 33*, 673-684.

Mancini, F., Gangemi, A., Perdighe, C., & Marini, C. (2008). Not just right experience: Is it influenced by feelings of guilt? *Journal of Behaviour Therapy and Experimental Psychiatry, 39,* 162-176.

Mataix-Cols, D., Rosario-Campos, M. C., & Leckman, J. F. (2005). A multidimensional model of obsessive–compulsive disorder. *American Journal of Psychiatry, 162*, 228–238.

Moll, J., de Oliveira-Souza, R., Moll, F. T., Ignacio, F. A., Bramati, I. E., Caparelli-Daquer, E. M., & Eslinger, P. J. (2005). The moral affiliations of disgust: A functional MRI study. *Cognitive and Behavioral Neurology, 18*, 68–78.

Neubauer, A. C., & Fink, A. **(**2009**).** Intelligence and Neural efficiency. *Neuroscience & Biobehavioral Reviews, 33*, 1004–1023.

Niler, E.R., & Beck, S.J. (1989). The relationship among guilt, disphoria, anxiety and obsessions in a normal population. *Behaviour Research and Therapy, 27*, 213–220.

Prinz, J., & Nichols, S. **(**2010)**.** Moral Emotions. In J. Doris (ed.) *Moral Psychology Handbook*. Oxford: Oxford University Press, pp. 111-148.

Rachman, S. (1993). Obsessions, responsibility and guilt. *Behaviour Research and Therapy, 31*, 149–154.

Rachman, S. (2002). A cognitive theory of compulsive checking. *Behaviour Research and Therapy, 40*, 625–640.

Rachman, S., Radomsky, A.S., Elliott, C.M., & Zysk, E. (2012). Mental contamination: The perpetrator effect. *Journal of Behavior Therapy and Experimental Psychiatry, 43*(1), 587-593.

Radomsky, A.S., Shafran, R., Coughtrey, A.E., & Rachman, S. (2010). Cognitive-behavior therapy for compulsive checking in OCD. *Cognitive and Behavioral Practice, 17*, 119-131.

Rauch, S. L., Dougherty, D. D., Shin, L. M., Alpert, N. M., Manzo, P., Leahy, L., et al. (1998). Neural correlates of factor-analyzed OCD symptom dimensions: A PET study. *CNS Spectrums, 3,* 37–43.

Reuven, O., Liberman, N., & Dar, R. (2013). The Effect of Physical Cleaning on Threatened Morality in Individuals with Obsessive-Compulsive Disorder. *Clinical Psychological Science, 20***,** ***1-6***.

Rozin, P., Haidt, J., & McCauley, C.R. (2000): Disgust. In: Lewis M., Haviland-Jones J. (eds.). *Handbook of Emotions,* 2nd ed. New York: Guilford Press, pp. 673–653.

Salkovskis, P. M. (1985). Obsessional-compulsive problems: A cognitive-behavioral analysis. *Behaviour Research and Therapy, 23*, 571–583.

Shafran, R. (1997). The manipulation of responsibility in obsessive-compulsive disorder. *British Journal of Clinical Psychology, 36*, 397- 407.

Shallice, T. (2001). Theory of mind and the prefrontal cortex. *Brain, 124,* 247–248.

Shapiro, L.J., & Stewart, E.S. (2011). Pathological guilt: a persistent yet overlooked treatment factor in obsessive-compulsive disorder. *Annual Clinical Psychiatry, 23*, 63–70.

Shin, L.M., Dougherty, D.D., Orr, S.P., Pitman, R.K., Lasko, M., Macklin, M.L., Alpert, N.M., Fischman, A.J., & Rauch, S.L. (2000). Activation of anterior paralimbic structures during guilt-related script-driven imagery. *Biological Psychiatry*, *48*, 43–50.

Sunstein, C. (2005). Moral heuristic. *Behavioral and Brain Sciences, 28*, 531–573.

Takahashi, H., Yahata, N., Koeda, M., Matsuda, T., Asai, K., & Okubo Y. (2004). Brain activation associated with evaluative processes of guilt and embarrassment: an fMRI study. *Neuroimage, 23,* 967–974.

Vos, S.P.F., Huibers, M.J.H., & Arntz, A. (2012). Experimental investigation of targeting responsibility versus danger in cognitive therapy of obsessive-compulsive disorder. *Depression and Anxiety, 29*, 629-637.

Wroe, A. L., & Salkovskis, P. M. (2000). Causing harm and allowing harm: a study of beliefs in obsessional problems. *Behaviour Research and Therapy, 38*, 1141–1162.

Zhong, C.B., & Liljenquist, K. (2006). Washing away your sins: threatened morality and physical cleansing. *Science, 313,* 1451-1452.