Responsibility and Reassurance Seeking: An Experimental Investigation

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ABSTRACT

Responsibility and reassurance seeking: An experimental investigation

Mark W. Leonhart

Excessive-reassurance-seeking (RS), conceptualized as a form of compulsive checking in obsessive-compulsive disorder (OCD), is distressing both for the seeker and for their loved ones. Experimentally increased responsibility leads to more checking symptoms and greater urges to seek reassurance. We hypothesized that under conditions of high responsibility (HR), participants would seek more reassurance than those in a low responsibility (LR) condition. Seventy-eight undergraduate participants were randomized to either HR or LR, completed a novel dishwashing task with a confederate, and were then given an opportunity to seek reassurance following ambiguous feedback. The number of instances of RS was reported by participants, confederates, and later coded by trained volunteers who were blind to the study's hypotheses and listened to recordings of RS conversations. HR participants reported greater urges to seek reassurance $t(76) = -2.891$, $p = .005$, $d = 1.23$; sought more reassurance, both according to confederates, $F(1, 76) = 10.741$, $p = .002$, $\eta_p^2 = .124$ and coders, $F(1, 76) = 6.872$, $p = .011$, $\eta_p^2 = .083$; but self-reported RS did not differ between conditions, $F(1, 76) = 1.480$, $p = .228$, $\eta_p^2 = .019$. Objective coding revealed that LR and HR participants did not differ on overt RS, $F(1, 76) = 1.258$, $p = .266$, $\eta_p^2 = .016$; however, HR participants sought more covert reassurance, $F(1, 76) = 18.079$, $p < .001$, $\eta_p^2 = .192$. Participant-reported responsibility decreased following RS, $t(47) = 2.457$, $p = .018$, $d = .35$, suggesting RS may function not only to reduce anxiety but also to transfer responsibility away from the seeker. Implications for cognitive models of and treatments for RS in OCD are discussed.

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Responsibility and Reassurance Seeking: An Experimental Investigation

Obsessive-compulsive disorder (OCD) is characterized by intrusive, anxiety-provoking thoughts (obsessions), and/or repetitive behaviour (compulsions; American Psychiatric Association, 2013; Rachman & Hodgson, 1980). It is a leading cause of disability globally and is present in all populations, cultural groups, and genders (APA, 2013; Radomsky et al., 2014; WHO, 2008). A key component of OCD symptomatology is excessive reassurance seeking (RS).

Central to most cognitive-behavioural conceptualizations of OCD is the idea that those with the disorder feel especially responsible for preventing harmful outcomes, especially to others (Salkovskis, 1985). Rachman (2002) further developed Salkovskis' theory of OCD by proposing a specific cognitive model of compulsive checking. In this model, perceptions of responsibility to prevent harm were proposed to interact with other cognitive domains to promote checking and/or RS behaviour. Excessive RS is a transdiagnostic phenomenon seen in depression and health anxiety, and is a hallmark behaviour in OCD (Kobori, Salkovskis, Read, Lounes, & Wong, 2012; Kobori & Salkovskis, 2013; Parrish & Radomsky, 2010). In depression, the function of RS is to gain information about perceived social threats (e.g., fear of losing a romantic relationship, loss of companionship; Coyne, 1976; Parrish & Radomsky, 2010; Kobori, et al. 2012). In health anxiety, information about the condition of a person's body and symptoms is typically sought repeatedly (Salkovskis & Warwick, 1986). However, in OCD, excessive RS involves repeatedly asking others for threat- or anxiety-reducing information about general threats (e.g., jeopardized personal safety, property damage, etc.; Parrish & Radomsky, 2010). RS is likely the most common way that OCD is observed in an interpersonal encounter (Kobori, et al., 2012; Kobori & Salkovskis, 2013). It can take the form of overt repetitive questioning

(e.g., “Do you think these dishes are clean enough?”) or covert statements which typically elicit a reassuring response (e.g., “It is OK to eat the food on these dishes because you saw me clean them earlier.”; Neal & Radomsky, 2015; Parrish & Radomsky, 2010; Rachman & Hodgson, 1980). Eventually, RS can become highly ritualized and can come to dominate numerous interpersonal interactions, leading to social difficulties for those who seek reassurance (Kobori et al., 2013; Salkovskis, Forrester, Richards, & Morrison, 1998); it can be immensely distressing for the reassurance seeker and for those from whom reassurance is sought.

That compulsive checking and RS share a similar counterproductive nature in OCD led - Rachman to conceptualize RS as a form of compulsive checking by proxy (2002). In fact, compulsive checking and RS may be functionally similar, as they both serve to decrease perceptions of harm and feelings of anxiety temporarily (Kobori et al., 2012; Parrish & Radomsky, 2010). Given that their function may be similar, compulsive checking and RS may be maintained by similar mechanisms, although this has yet to be demonstrated empirically (Parrish & Radomsky, 2011). Though the overall aim of RS is to gain a sense of certainty, it is also thought to transfer some perceived responsibility from the person with OCD to the person from whom s/he is seeking reassurance (Kobori et al., 2012). RS, then, may not only provide an opportunity for decreasing perceptions of harm, but may also disperse responsibility, making it a particularly persistent and problematic behaviour in OCD (Kobori et al., 2012; Kohlenberg & Vanenberge, 2007; Parrish & Radomsky, 2010; Rachman, 2002; Salkovskis, 1985; Whittal & O’Neill, 2003).

Multiple methods for experimentally examining the effect of increased (vs. decreased) responsibility on subsequent checking behaviour and related phenomena have been employed. These include contracts (Lopatka & Rachman, 1995; Radomsky, Rachman, & Hammond, 2001),

the presence or absence of the experimenter (Shafran, 1997), task importance (Arntz, Voncken, & Gooosen, 2007; Bouchard, Rhéaume, & Ladouceur, 1999; Ladouceur, Rhéaume, Freeston, Aublet, Jean, Lachance, Langlois, & De Pokomandy-Morin, 1995; Parrish & Radomsky, 2006), vignettes (Parrish & Radomsky, 2011), and leading participants to believe that incorrect task performance could result in (mild and temporary) harm to another person (Boschen & Vuksanovic, 2007; Reeves, Reynolds, Coker, & Wilson, 2010). Across the above-mentioned studies, decreased responsibility resulted in decreased urges to check and checking behaviour, as well as other aspects of OCD symptomatology.

Responsibility has been manipulated in the specific context of RS via experimental task importance (e.g., whether the participant was completing a colour-sorting task or an pill-sorting procedure in which performance would used to establish a safe and effective vitamin and pill distribution program in a third-world country) and vignettes (i.e., participants were asked to provide subjective responses as if they were in the situation depicted in text), in which increased responsibility resulted in greater urges to seek reassurance (Parrish & Radomsky, 2006, 2011). Despite the above evidence, the experimental investigation of RS in the laboratory is relatively limited (Halldorsson, 2015; Neal & Radomksy, 2015; Parrish & Radomsky, 2006, 2011). Previous research examined the effect of perceptions of increased (vs. decreased) responsibility on checking and urges to seek reassurance. However, it is yet unclear whether experimental manipulations of responsibility in the laboratory can elicit to corresponding increases (vs. decreases) in actual RS behaviour. Thus, previous research lacked a clear means of promoting the occurrence and method of measuring RS behaviour in the laboratory in response to increased responsibility.

Neal & Radomsky (2015) developed an experimental methodology to elicit RS in the laboratory and a new measure of RS which compared participant-reported, confederate-reported, and objectively-coded ratings of the frequency of participants' RS during a conversation with a partner following a contamination-related dishwashing task. They found that participant-reported RS was greater when paired with a familiar (vs. unfamiliar) partner, but objective coding revealed no difference. To the best of our knowledge, an experiment designed to assess whether augmented responsibility causes greater RS behaviour has not been conducted.

The present experiment was designed to fill this gap in the literature by examining the effects of a responsibility manipulation on resulting aspects of RS. Specifically, the study was designed to test four hypotheses. The first hypothesis was that participants in conditions of high responsibility (HR) would report greater urges to seek reassurance than those in the low responsibility condition (LR). Secondly, it was hypothesized that those in the HR condition would engage in more RS than LR participants as reported by participants, a confederate, and objective coders. The third hypothesis was that HR participants would seek more overt and covert reassurance than those in the LR condition. The final hypothesis was that RS would facilitate a transfer of responsibility, such that participants would report a decrease in perceived responsibility for the experimental task following RS.

Method

Participants

Seventy-eight undergraduate participants were recruited via Concordia University Psychology Department's Participant Pool or in-class recruitment by the experimenter. The mean age of participants was 23.63 (*SD* = 5.13, range = 19-42) years. Seventy-three (93.6% of the) participants were female.

Participants were eligible to participate if they were able to read, speak, and understand English. They were unable to sign-up for the study if they participated in a previously conducted experiment in which a similar protocol was used (Neal & Radomsky, 2015).

Measures

Rating of responsibility. Participants were asked to rate the extent to which they felt responsible for the proper completion of the dishwashing task on a scale from 0 – 100, such that 0 represented feeling not at all responsible and 100 represented feeling completely responsible.

Rating of urges to seek reassurance. Participants were asked to rate their urges to seek reassurance on a scale from 0 – 100, wherein 0 represented no urge whatsoever and 100 represented an extreme urge to seek reassurance.

Reassurance Seeking Checklist (RSC). The RSC is a five-item measure developed by Neal and Radomsky (2015) to assess instances of RS during a conversation with another person or while talking aloud to themselves. The RSC was designed to be completed by the participant and by the person from who they sought reassurance following a conversational opportunity for RS. An objective coder, blind to the study's hypotheses also used the RSC to provide an objective measure of participants' overt and covert RS (Neal & Radomsky, 2015).

The authors of the RSC argued that internal consistency may not be appropriate and may actually be undesirable in this measure, given that participants are allowed to express *any* concerns about any aspect of the dishwashing task. Given the idiographic nature of participants' concerns, it was argued that a high internal consistency among responses is unlikely.

The authors developed a guide for coders when determining the frequency of overt and covert RS. This guide consisted of a step-by-step procedure used to determine a) whether RS was present, b) whether it was overt (e.g., direct questions) or covert (e.g., subtle statements),

and c) about which aspect of the dishwashing task the RS was directed (e.g., the dirtiness of the garbage, etc.). This guide was used in the present study to train coders and aide in their decision-making.

Objective-coding. The audio recording of the conversation (see below) was coded by two trained raters who were blind to condition assignment and to the study's hypotheses. Interrater reliability for the total number of instances of objectively-coded overt and covert RS was assessed using two-way mixed, absolute agreement, average-measures intra-class correlations (ICC; Hallgren, 2012; McGraw & Wong, 1996) to indicate the degree to which coders agreed on how many instances of overt and covert RS occurred during the recorded conversation between participants and the confederate. The interrater reliability for coding of overt RS was excellent (*ICC* = .848). Reliability for covert RS was good (*ICC* = .683).

Credibility ratings. Two credibility ratings were obtained for both the degree to which the participants felt the garbage was dirty and the degree to which they believed the responses from the confederate, each on a scale from 0 to 100, such that 0 represented not at all believable and 100 represented completely believable.

Materials

Mock contaminant: garbage bin. A garbage bin was used as the source of contamination. It was filled with objects that appeared to be dirty and were described as used facial tissues, dirty paper towels, used plastic wrap, old coffee grounds, soiled latex cleaning gloves, and fruit peels. Participants were given a list of the contents of the garbage bin to enhance the salience of contamination threat. In reality, all of the contents of the garbage were clean but were made to appear dirty.

Equipment for dishwashing task. Coffee mugs were placed next to the laboratory sink. Fill lines were indicated on the sink and a wash basin. Several different plastic containers were filled with mild cleansers (i.e., dish soap, baking soda, and water). A measuring spoon and stir stick were used to measure and mix the cleaning solutions. Cups were placed on a regular kitchen dish rack following the washing procedure.

Confederate. Three confederates were recruited and trained by the experimenter. They were given extensive practice scripts to ensure that they would all interact similarly for all participants.

Responsibility Contract. A contract similar to those used by Lopatka and Rachman (1995) and Radomsky, Rachman, and Hammond (2001) was employed to manipulate responsibility. HR participants signed to indicate that they understood they would be held completely responsible for any harm that may occur from eventual use of the cups. LR participants signed the contract to indicate that they understood that they would not be held at all responsible for any harm that may have occurred from the eventual use of the cups. Whichever section not completed by the participant was completed by the confederate.

Written instructions for dishwashing task. Instructions were provided to the participant on laminated paper. They indicated how to complete the dishwashing task developed for this study from beginning to end in a step-by-step fashion. The dishwashing task and instructions were designed to be unfamiliar to increase the probability that participants may be uncertain as to whether the cups were sufficiently clean and to prevent participants from resorting to 'typical' dishwashing behaviour.

Procedures

Participants were tested individually. They were told that the study's purpose was to collect normative data about the efficacy of a new dishwashing procedure, such that the data could be used to better understand how people with OCD follow specific instructions to complete highly structured tasks. Following the provision of informed consent, the dishwashing procedure was explained and participants were randomized to either the LR or HR condition. The experimenter informed participants that they would be videotaped during the dishwashing procedure.

In the HR condition, the participant was told that s/he would take turns with the confederate every two steps "actually washing" or "just reading" the instructions for the procedure. S/he was reminded to take the task seriously as illness had resulted in the past by careless completion of the task. S/he was asked to sign the contract acknowledging that s/he would be considered completely responsible for any harm that resulted from eventual use of the cups.

In the LR condition, the participant was given the same instructions about the dishwashing procedure. S/he was told that s/he was "just assisting" other participant. S/he was asked to sign the contract acknowledging that s/he understood that s/he was not at all responsible.

The confederate was given complementary information (e.g., confederates paired with HR participants were given LR information and *vice versa*). Once the contract was signed, participants were told that the cups would be clean if the instructions were followed exactly as written.

The experimenter put on gloves and submerged the cups into the garbage. He provided the participant with a list of the contents of the garbage bin, and then he placed the

'contaminated' cups next to the kitchen sink. The experimenter then left the room before the dishwashing procedure began.

Following the completion of the dishwashing task, the participant was asked to complete a questionnaire in a separate testing room, preventing her/him from checking the cups. This first questionnaire consisted of ratings of responsibility and urges to seek reassurance. Upon completion of the questionnaire, the experimenter returned and said that there had been a problem with the video recording, preventing confirmation of the proper completion of the task. The participant was then asked to discuss the task with the confederate, specifically to ask any questions or talk with the confederate to resolve any uncertainty s/he may have about the procedure and/or the cleanliness of the cups. If in the HR condition, the participant was told that s/he would make the final decision as to whether the task was completed exactly as the instructions dictated. In the LR condition, the confederate was to make the final decision. The experimenter stressed the importance of this decision as one of the three would soon be randomly assigned to drink from one of the cups. The confederate began each conversation by stating, "The cups seem clean to me". The ensuing audio-recorded conversation was later coded (using the objectively-coded version of the RSC) for instances of reassurance seeking. The researcher returned and asked the participant to complete a battery of questionnaires, which included ratings of responsibility and urges to seek reassurance, the RSC, and the credibility checks. Once the participant completed the questionnaires, s/he was fully debriefed.

Results

Data cleaning

Key variables contained no missing values or univariate outliers. Skewness and kurtosis values for all variables were all within acceptable limits (Tabachnick & Fiddel, 2007). There

were univariate outliers on objectively-coded overt (n = 1) and covert RS (n = 1), as well as on the confederate-rated (n = 1), and participant-rated RSC (n = 2). All univariate outliers were converted into the next greatest value within +/- 3.29 standard deviations, as recommended by Tabachnick & Fiddell (2007). When examined, there were no multivariate outliers.

Manipulation check

An independent samples *t*-test indicated that HR participants perceived themselves as significantly more responsible for the proper completion of the dishwashing task (M = 85.27, SD = 18.89) than those in the LR condition (M = 55.51, SD = 28.47), $t(76) = 5.440$, $p < .001$, d = 1.23 (see Figure 1).

Urge to seek reassurance

The first hypothesis was that HR would result in greater urges to seek reassurance. An independent samples *t*-test indicated that HR participants reported a greater urge to seek reassurance (M = 53.66, SD = 30.47) than LR participants (M = 33.28, SD = 31.78), $t(76) = -2.891$, $p = .005$, with a medium-sized effect, $d = 0.65$ (see Figure 2; Rosenthal & Rosnow, 1984).

Reassurance seeking

The second hypothesis was that HR would result in greater participant-reported, confederate-reported, and objectively-coded RS than LR. To assess this, a one-way MANOVA was conducted wherein condition was the independent variable and participant-reported, confederate-reported, and objectively-coded RS were the dependent variables.

The multivariate test indicated a significant difference between the HR and LR conditions, *Wilk's Lambda* = .867, $F(3, 74) = 3.775$, $p = .014$, of medium effect size, $\eta_p^2 = .133$ (Cohen, 1988), see Table 2 and Figure 3. Univariate analyses indicated no differences in participant-reported RS between the HR and LR conditions, $F(1, 76) = 1.480$, $p = .228$, and a

small effect size of $\eta_p^2 = .019$. However, those in the HR condition sought more reassurance than LR condition participants according to both confederate ratings of RS, $F(1, 76) = 10.741$, $p = .002$, $\eta_p^2 = .124$ (medium effect size), and objectively-coded RS, $F(1, 76) = 6.872$, $p = .011$, $\eta_p^2 = .083$ (small effect size; Cohen, 1988).

Overt vs. covert reassurance seeking

It was hypothesized that HR would result in greater objectively-coded overt and covert RS. To evaluate this, a one-way MANOVA was conducted with condition as the independent variable and objectively-coded overt and covert RS as the dependent variables.

There was a statistically significant multivariate difference between the HR and LR conditions, *Wilk's Lambda* = .793, $F(2, 75) = 9.811$, $p < .001$, which was a large effect, $\eta_p^2 = .207$ (Cohen, 1988). Univariate analyses indicated that HR participants ($M = 1.09$, $SD = 1.55$) did not seek more overt RS than LR participants ($M = .73$, $SD = 1.27$), $F(1, 76) = 1.258$, $p = .266$, $\eta_p^2 = .016$. This was a small effect (Cohen, 1988). However, HR participants sought more covert RS ($M = 1.35$, $SD = 1.13$) than LR participants ($M = .42$, $SD = .75$), $F(1, 76) = 18.079$, $p < .001$, and this effect size was large, $\eta_p^2 = .192$ (Cohen, 1988; see Figure 4).

Transfer of responsibility

The final hypothesis was that RS would foster a transfer of responsibility away from participants who sought reassurance. Participants were first dummy-coded as having (vs. having not) sought reassurance based on the objective coding data. Only those participants who sought overt and/or covert reassurance ($N = 48$) were included in the analysis.

A paired-samples *t*-test was conducted to evaluate the impact of seeking either overt or covert reassurance on participants' ratings of perceived responsibility over time. Participant-reported responsibility measured after completing the dishwashing task ($M = 79.58$, $SD = 22.27$)

decreased after seeking reassurance (M = 74.66, SD = 26.05), $t(47) = 2.457$, $p = .018$, which was a small effect $d = 0.35$ (see Figure 5; Rosenthal & Rosnow, 1984).

Credibility Checks

Participants perceived the mock contaminant as dirty (M = 61.38, SD = 29.34), and appear to have found believable the responses from the confederate (M = 76.28, SD = 21.38).

Discussion

We sought to experimentally examine the impact of increased (vs. decreased) responsibility on RS. Experimental examinations of responsibility in the context of OCD symptomatology are a growing and important area of research (Arntz et al., 2007; Boschen, & Vuksanovic, 2007; Ladouceur et al., 1995; Ladouceur et al., 1997; Lopatka & Rachman, 1995; Radomsky et al., 2001; Shafran, 1997); they are particularly rare in the context of RS (Parrish & Radomsky, 2006, 2011), though not always successful (Badham, 2012). In this study, the manipulation of responsibility was successful; participants in the HR condition reported feeling significantly more responsible for the proper completion of the dishwashing task than those in the LR condition.

Urges to seek reassurance were greater in the HR condition than in the LR condition. This replicates previous research in which experimental manipulations of responsibility resulted in corresponding changes to urges to seek reassurance (Parrish & Radomsky, 2006, 2011). Confederate-reported and objectively-coded RS were also greater in the HR condition than the LR condition. However, participant-reported RS did not differ between the HR and LR conditions. This lack of difference is a curious finding.

One possible explanation is power. Though the HR participants reported seeking more reassurance than those in the LR condition, this difference did not reach statistical significance.

That said, if the issue is one of power, it leaves open the question as to why the effect of responsibility on self-reported RS may be lower than those associated with confederate reports or via objective coding.

It could be that HR participants were motivated by interpersonal concerns and attempts to carefully ask for reassurance (Kobori et al., 2012). Because confederates were unfamiliar, participants may have been distracted from accurately encoding instances of RS by desires to prevent embarrassment and carefully asking for reassurance. As such, the ability of participants to recall the frequency of their RS may have been affected. In a previous experiment (Neal & Radomsky, 2015), when familiarity of the source of reassurance was manipulated, participants and confederates reported seeking significantly more reassurance with a familiar other than an unfamiliar other (i.e., a trained confederate participant), but objective coding revealed no difference. The contrast between the present experiment's findings and these results may indicate that familiarity affects RS differently than responsibility. It may be that that responsibility affects RS behaviour more than perceptions of RS; whereas familiarity may affect perceptions of RS more than it does RS behaviour.

A related explanation may be that participants were attempting to conceal their RS attempts. Objectively-coded covert RS was greater in the HR condition than the LR condition. However, there was no difference in objectively-coded overt RS between the HR and LR conditions. Because participants were unfamiliar with the confederates, they may have wanted to avoid any negative impact on the relationship they were developing with the confederate. Because overt RS is easily detectable, participants may have utilized covert RS to more carefully request safety-related information with less obvious social risk (e.g., personal embarrassment, annoying the confederate, etc.). A previous qualitative analysis of excessive RS in people with

OCD revealed two key themes associated with excessive RS: reluctance to seek reassurance for its potential negative impact on the relationship they had with other people, and carefully asking for reassurance to avoid detection of RS, embarrassment, guilt, shame, and/or offending the source of reassurance (Kobori et al., 2012). Indeed, when asked why they did not seek more reassurance in post-experiment debriefing questions, some participants in the present study indicated that they felt they had to carefully solicit safety-related information from the other person in such a way that minimized the detection of RS and minimize negative repercussions (e.g., embarrassment to self, offending confederate, etc.). A small selection of participant-reported reasons for withholding from seeking more reassurance are as follows: "Only discussed what I thought was necessary and relevant", "I did not want to seem too anxious", "She was a stranger, I didn't want her to feel like I didn't trust her ability to handle a task", "I did not want the other person to feel uncomfortable", and "I didn't want it to look like I was accusing her of not doing it properly". This preference for covert RS in the presence of unfamiliar others is consistent with patterns of concealment in OCD (Neal & Radomsky, 2015; Newth & Rachman, 2001).

Participants reported decreases in responsibility after having sought reassurance. This likely transfer of responsibility due to RS has been posited but had not been empirically demonstrated (Kobori et al., 2012; Parrish & Radomsky, 2010). To the best of our knowledge, this is the first experiment to demonstrate a transfer of responsibility away from the seeker. Temporary reductions in anxiety have been thought to reinforce compulsive checking and RS (Rachman, 2002; Salkovskis, 1985, 1999; Parrish & Radomsky, 2010). It may be that reductions in distressing perceptions of responsibility also reinforce RS.

The present experiment is not without limitations. The undergraduate sample limits generalizability. There may have been demand characteristics such that the manipulation check reflected participants' intentions to comply with their perception of the purpose of the experimental manipulation rather than reflecting true differences in perceived responsibility. Additionally, responsibility was measured with only a single item prompt, which may have been too simplistic a method to fully encapsulate a complex construct. We did not ask the participants to report the degree to which they felt the confederates were responsible; this limits somewhat our ability to conclude that the observed decrease in responsibility over time was the result of a perceived transfer of responsibility. While all participants rated the believability of the confederate's responses as at least somewhat believable, the interaction may have been perceived as more artificial than conversations participants may have with significant others. Finally, a similarly-designed study could be conducted with a clinical sample to collect more conclusive evidence of the functional role of perceptions of responsibility to prevent harm in leading to and maintaining excessive RS in those suffering from OCD. Therefore, the obtained results should be interpreted with caution.

Despite its limitations, the present experiment provides important information. The findings are generally consistent with Rachman's cognitive model of compulsive checking (2002), and with the conceptualization of RS as a form of checking by proxy. The data also highlight the key role that responsibility plays in OCD (Parrish & Radomsky, 2010; Salkovskis, 1985, 1999). The experiment replicates previous research, which found that increased responsibility leads to increased urges to seek reassurance (Parrish & Radomsky, 2006, 2011). Parrish & Radomsky utilized a pill sorting task (2006) and written vignettes (2011) to manipulate responsibility and asked participants to report their urges to seek reassurance. The present study

extended these findings using a somewhat more ecologically valid scenario (e.g., dishwashing and decision-making about the cleanliness of cups from which someone may drink). It utilized not only self-report measures of RS but also behavioural measures of both overt and covert RS through the use of an objectively-coded version of the RSC (Neal & Radomsky, 2015).

This study provides further evidence in support of improving cognitive interventions in the clinic by strategically targeting maladaptive appraisals of inflated personal responsibility to prevent harm in an effort to decrease RS. Based on this and previous literature in this area, interventions could be improved and more strategically implemented to better target responsibility in the context of RS. Their impact on RS has the potential to expand the scope of existing CBT interventions for OCD and foster new research into the phenomenology, function, and treatment of excessive RS in OCD.

Table 1

Instructions for dishwashing procedure

Step	Instruction
1	Fill sink water from **Tap 1** up to **Fill Line 1**.
2	Add 2 measures of **Green Cleanser** to sink.
3	Add 2 measures of **Red Cleanser** to sink.
4	Stir cleanser solution in sink gently with **Stir Spoon** for 10 seconds
5	Add 5 measures of **Blue Cleanser** to sink.
6	Wait 10 seconds.
7	Add water from **Tap 1** to **Basin** up to **Fill Line 1**.
8	Immerse one cup in cleanser solution in the sink, and then wait 10 seconds.
9	Stir cleanser solution in the sink vigorously with **Stir Spoon** for 5 seconds.
10	Wait 5 seconds.
11	Remove the cup from sink and immerse into water in **Basin**.
12	Wait for 10 seconds.
13	Remove the cup from **Basin** and place on **Drying Rack**.
14	Repeat steps 8-13 for remaining cups.

Table 2

Participant-reported, confederate-reported, and objectively-coded reassurance seeking.

	Responsibility Condition	*M*	*SD*
Participant-reported RS	LR	5.54	5.00
	HR	7.15	6.61
Confederate-reported RS	LR	1.67	2.17
	HR	3.72	3.26
Objectively-coded RS	LR	2.53	2.19
	HR	3.96	2.69

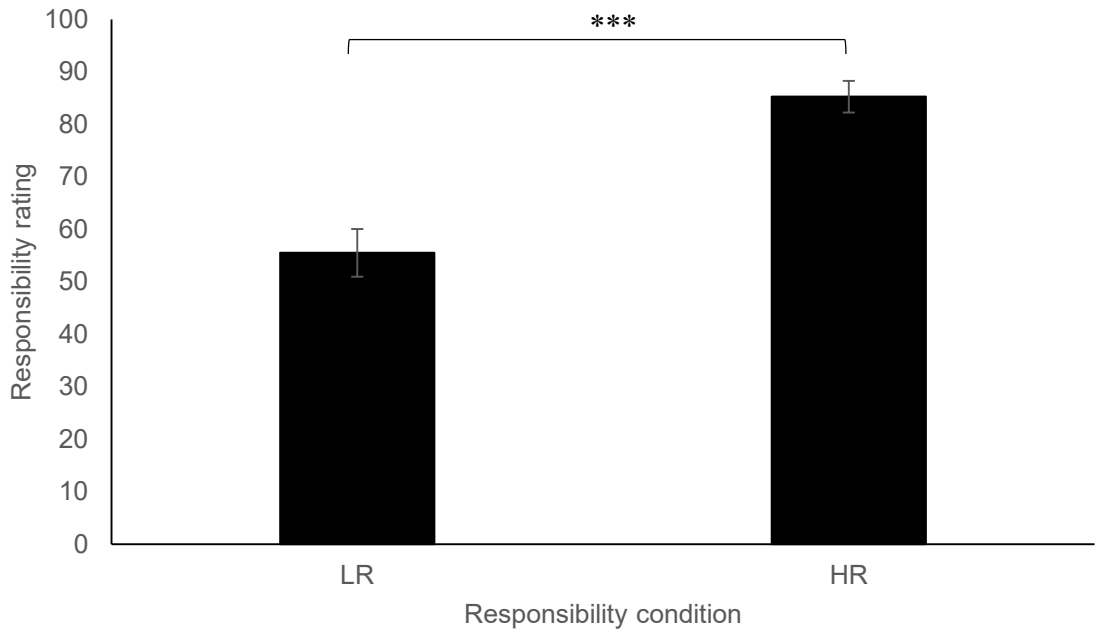

Figure 1. Mean ratings of responsibility by condition.

*** $p < .001$

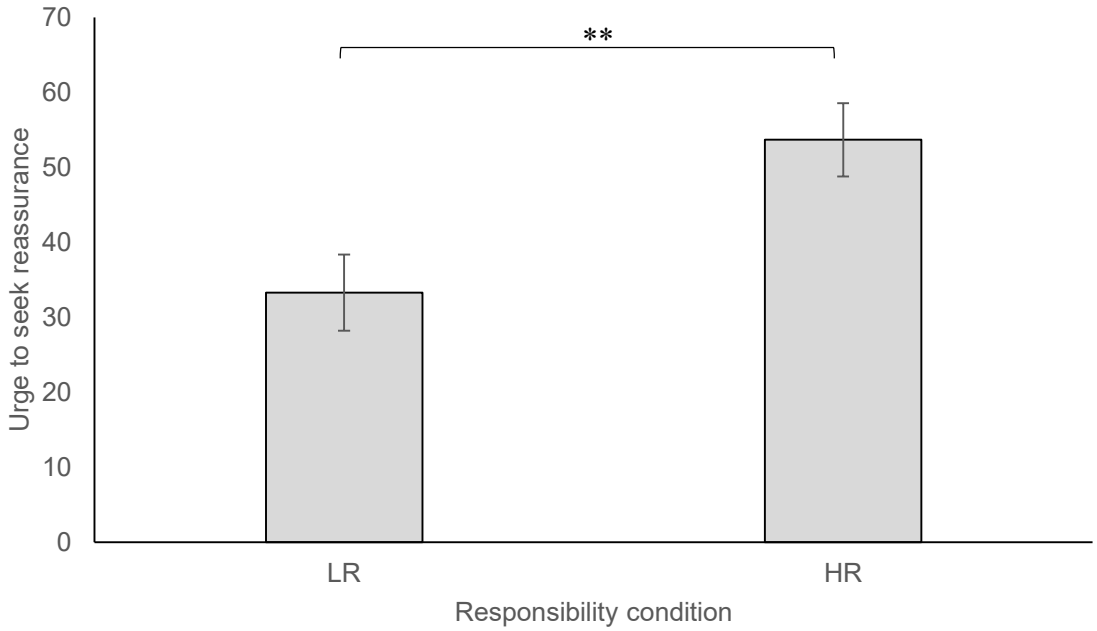

Figure 2. Mean ratings of urge to seek reassurance by condition

** $p < .01$

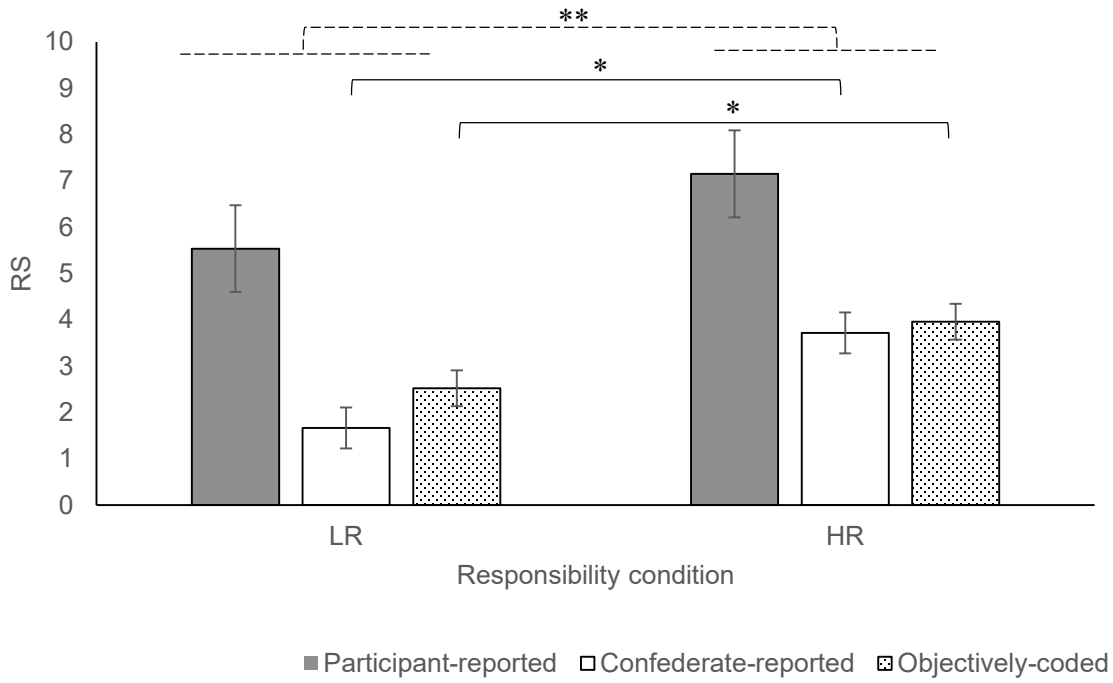

Figure 3. Mean number of reassurance seeking instances by condition.

Dotted lines indicate the multivariate effect; solid lines indicate univariate effects.

** $p < .01$, * $p < .05$

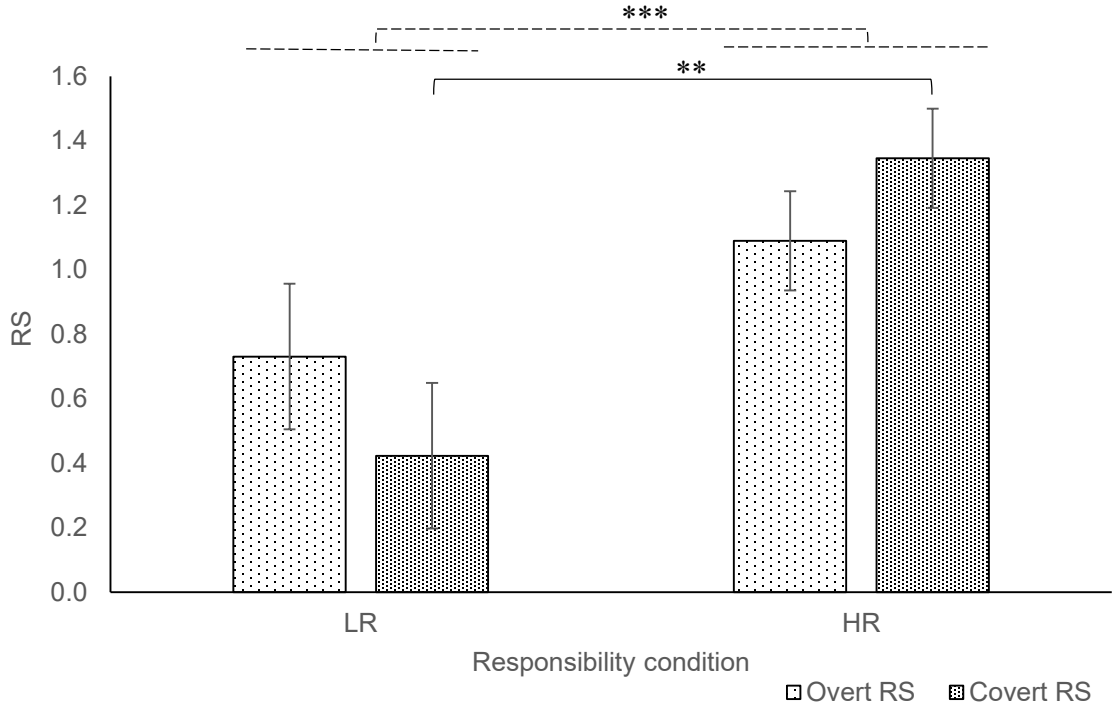

Figure 4. Mean objectively-coded overt and covert reassurance seeking by condition. Dotted lines indicate the multivariate effect; solid lines indicate the univariate effect. *** $p < .001$, ** $p < .01$.

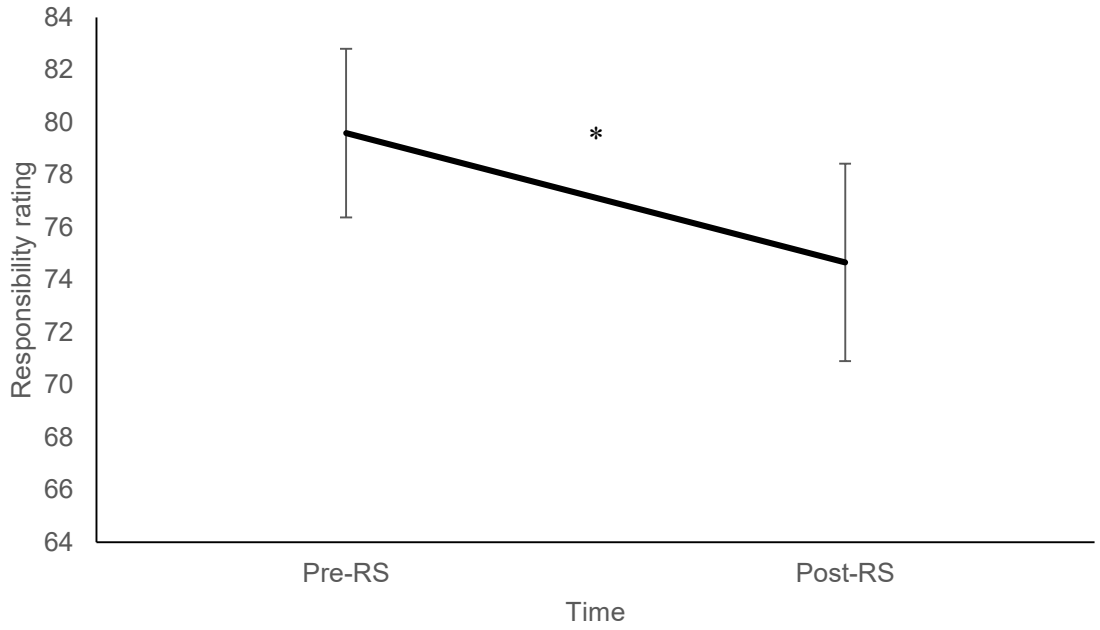

Figure 5. Participant ratings of responsibility over time.

* $p < .05$.

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Appendix A

Image of the mock contaminant, the garbage can

Appendix B

List of the contents of the garbage can provided to participants

<u>All Washed Up! Contents of Garbage</u>

- Used facial tissues
- Used paper towels, cardboard tube, and its plastic packaging
- Used coffee grounds and filters
- Used aluminium food wrapper
- Dirty latex gloves used to clean kitchen
- Old orange peel

Appendix C

Dishwashing equipment

Appendix D

Guidelines and script for confederates

Confederate instructions and script

i. General appearance and demeanour:

You are meant to appear as another undergraduate Concordia student who is participating in this study, and you will be introduced accordingly. You should appear entirely naïve to the study procedures, lab layout, and lab personnel. You should come across as being nice and polite, but a bit disinterested as well. You should interact with the other person as though it's your first experiment ever.

Your role is that of an actor; although everyone has their own unique personalities, this is not the time to express them. You are playing the role of an undergraduate participant, and it is of utmost importance that you stay in your role throughout the duration of the study (even if you think the other person couldn't see you, e.g., if you are standing behind the participant during the dishwashing task).

ii. Start of the study:

You will be waiting in the lab's grad student room (**215.05**) until the participant arrives. Once I usher the participant into the lab storage room (**215.01**), please quietly exit the lab, wait a minute and then knock on the lab door. I will bring you into the lab storage room as if you were another undergraduate participant arriving for the study. You will be seated in the laboratory storage room with the participant. I will welcome you both to the study and proceed to briefly explain the experiment, the voluntary nature of the experiment, the participant pool credits/cash draw, confidentiality, and the consent forms. I will give you a consent form to sign. Please sign it to make it appear more believable that you are a fellow undergraduate. Once the consent forms have been signed, I will escort you and the participant to the laboratory kitchen (**215.03**).

iii. Dishwashing task:

I'll explain the dishwashing task of the study and will explain where each of you will stand in the room during the task. You'll explicitly be asked not to say anything or provide any clues as to how you think the participant is doing with your body language. When I ask if either you or the participant have any questions before we get started, you can say "no" and give a little shake of your head in whatever way feels most natural to you. I'll ask you and the participant to indicate that the dishwashing task is completed by opening the laboratory kitchen door and/or ringing the bell. Please open the lab kitchen door and/or ring the bell or encourage the participant to do so as quickly as possible without seeming rushed, both to keep the study moving along and so as to not leave the participant time to ask you questions/talk to you about what was just done.

iv. Post-task questionnaire

Once I get back to the kitchen, I'll load up the online questionnaire containing the visual analog scales of responsibility and other measures. I'll say, "I've got your questionnaire here. All of the instructions are there for you, but please let me know if you have any questions. Ring the bell or open the door when you are finished. You can start whenever you're ready."

To this you will respond:

If the participant is in the high responsibility condition you will say, " **'Please rate the extent to which you feel your performance on this task could affect the well-being of others.' I guess not at all because I'm just the washer and s/he is the instructor, and I signed that contract that said I would not be held responsible if something bad happened. I just move the slider to the left then? (**I will respond, "Yes. That's right."). **OK."**
If the participant is in the low responsibility condition you will say, "'**Please rate the extent to which you feel your performance on this task could affect the well-being of others.' I guess a lot because I'm the instructor and s/he is just the washer, and I signed that contract that said I would be held completely responsible if something bad happened. I just move the slider to the right then? (**I will respond, "Yes. That's right."). **OK."**
If the participant is in the shared responsibility condition you will say, "'**Please rate the extent to which you feel your performance on this task could affect the well-being of others.' I guess partially, like half-way, because we worked together, and I signed that contract that said I would be equally responsible if something bad happened. I just move the slider to the middle then? (**I will respond, "Yes. That's right."). **OK."**
We want to standardize these responses, especially now that there is more than one confederate.
While these lines are written for you, please try to make them sound as natural as possible.
I will then say something like, "Oh, sorry. If you could just answer the questions on the computer, that would be better. Please stay here while I set up (the participant) in the other room". I will then escort the participant back to the **215.01** where s/he will complete the questionnaire. I will wait a few minutes for the participant to complete the questionnaire.
I will then come to you first, sound concerned, and ask you to come with me for a minute. I will knock on the participant's door to pause their work on the questionnaires (which they have probably completed). I will ask you to sit down next to the participant.
I will explain that the recording did not work and so I could not determine if the cups are clean. I will then pull out an audio recorder and ask that you and the confederate to talk aloud and decide if the cups are clean. I will ask you and the participant to ring the bell or open the door as soon as you decide on an answer. **Please start this discussion with, "The cups seem clean to me."**
Please respond to the participants' in a manner consistent with what is discussed on page 1.
I will return once you or the participant opens the door or rings the bell. I will usher you into another room
It's important that you complete the questionnaires honestly!
Next, I'll ask you to come back to the kitchen with me.
If at any point during the dishwashing task the participant asks you whether you believe the study or have doubts about the experimenter, you can address them directly by saying casually and with a bit of surprise, "I haven't done many of these studies but it seems okay to me" or "No, it makes sense to me…" or something along those lines. The point is to affirm that you have no doubts, to make it seem that you were surprised by them asking that, and to try to dissuade any of the participant's doubts with your certainty. Do <u>not</u> ask the participant why they feel that way or engage in a long conversation.

v. Post-task conversation:

The participant will be told to talk through any questions that came up for them either during the dishwashing task or afterwards, and will be told that s/he can either do this just aloud to him/herself, or can talk with you. React appropriately with the participant's decisions (i.e., don't force

the participant to talk with you or interject if they've chosen to just talk through the steps aloud to themselves).
Remember **not** to nod, say "mmhmm", or say "okay" as the participant is talking.
If s/he chooses to ask you questions:
Your role in the conversation is to answer the participant, but to do so in a way that is vague, with a component of truth, rather than direct and reassuring.
Examples of responses:

Participant (as Washer): "I grabbed the cups, dipped it in the water for 5 seconds, right?"
You: "Hmm… well I saw you pick up the cup for sure and it looked like you lowered it into the water, but I couldn't see what you were doing with the plate once it was in the sink so I'm not totally sure about that part."

Participant (as Washer): "Did you see me wash the cup?"
You: "It was kind of hard to see from where I was standing but I saw you pick up the plate."

Participant (as Instructor): "Do you think the cups are clean?"
You: "Probably?… You were the person with the instructions, so I would think that you would know better than me whether we followed the instructions and cleaned the cups."

Participant: "I added Cleanser 1 and then Cleanser 2. Did you see if I added enough measures of each?"
You: "That's a good question… I definitely saw you pick them up and put them into the cleaning solution, but I don't really remember how many times you did it."

Participant: "The instructions said I was supposed to let the cups soak for 10 seconds. Do you think I let them soak long enough?"
You: "The cups soaked, but I wasn't keeping track of time that closely so I couldn't really tell."

Participant: "This is a weird way to clean cups. I have no idea if I did it correctly or if they are clean to drink from"
You: "Yeah, I have never seen cups cleaned like this before. I don't know how clean they really are."

→ Generally, there are 3 themes of responses that you should stick to:

1) "I couldn't quite see you"
2) "I saw you but I'm not sure what the instruction meant."
3) "Well I *think* it's okay…" (said in an uncertain tone)

Phrases/words that are okay to use to begin your sentences:

1) To express uncertainty:
    - "I'm not really sure…"
    - "I'm not 100% certain…"
    - "I couldn't tell…"

- "I'm not positive…"
- "That's a good question…"

2) To express that you couldn't see:
   - "I couldn't tell from where I was standing…"
   - "I'm not super confident that I saw everything you were doing from there…"
   - "I might've missed something from where I was standing…"
   - "I was having a hard time seeing everything that you were doing…"
   - "It was tough for me to see from there…"
   - "I couldn't see that well since you were standing in front of the sink…"
   - "My view of the sink was kind of blocked from over there…"
   - "From my angle over there I couldn't really see…"

3) To express that the instructions were really novel:
   - "Yeah, they are a little different…"
   - "It really was hard to tell what the pictures meant…"
   - "Yeah, I've never washed cups like that before…"

4) To answer a direct question of your opinion (e.g., "What do you think…?"):
   - "Probably… you were the one doing it though… what do you think?"
   - "That's a good question… I guess it's probably okay but what do you think?"
     If the participant then asks the *exact* same question again (any question except regarding the cleanliness of the plates), respond by saying something along the lines of:
     - **"Yeah, from what I could see it's fine."**
       I.e., your response should be UNAMBIGUOUS in this instance!

     → If you're asked a direct question about whether you think the plates are clean, answer in a way that would redirect their thoughts back to whether they followed the instructions properly, such as the following:
     "That's a really good question… I think at the beginning she said that if you followed the instructions then the plates would be clean…and I couldn't really see everything, so what do you think – did you follow the instructions properly?"

The "take-home message":
Whenever possible, you want to give some factual information while staying vague. Remember that you want to appear that you're trying, that you want to be helpful, that you're confused by the instructions, that you couldn't see everything, that you're not totally confident, but that you're not a total write-off as an information source!

If you're asked questions about what program or year you're in, the default response is to say that you're a first-year psychology student. If you know the person in any way (e.g., had classes with them in the past), respond in a way that won't blow your cover! Acceptable responses in

those instances would be to say things like, “I’m a (3rd or 4th year… whichever coincides with what the person would expect given the classes etc. they saw you in previously) psych student” or “I’m finishing up my psych degree… still need a few more credits!”

Appendix E

Responsibility contract

All Washed Up! Contract

1. I, (*participant in charge*), and I, (*participant just assisting*) will take turns **every two steps** of the procedure reading the instructions and actually washing according to a new step-by-step procedure developed by the laboratory to thoroughly decontaminate everyday items. Whoever is in charge will start in the washing position and complete **two steps** of the procedure exactly as they are read, at which point s/he will switch to the reading position. The other participant will start by just reading **two steps** of the instructions for the procedure to the one in charge exactly as written, at which point s/he will switch to the washing position.

2. I, (*participant in charge*), understand that I am in charge of ensuring that the task is properly and safely completed. I understand that I will be **completely** responsible for any harm that occurs during or after this experiment due to the cups. I understand that I will be held responsible only for harm due to the cups.

3. I, (*participant just assisting*), understand that I will be held **not at all** responsible for any harm.

Participant in Charge _____ **Other Participant** _____

Witness _____ **Date** _____