

Three Decades of Research on Induced Hypocrisy: A Meta-Analysis

Daniel Priolo, Audrey Pelt, Roxane St. Bauzel, Lolita Rubens, Dimitri Voisin, Valérie Fointiat

▶ **To cite this version:**

Daniel Priolo, Audrey Pelt, Roxane St. Bauzel, Lolita Rubens, Dimitri Voisin, et al.. Three Decades of Research on Induced Hypocrisy: A Meta-Analysis. Personality and Social Psychology Bulletin, 2019, 45 (12), pp.1681-1701. 10.1177/0146167219841621 . hal-02475342

HAL Id: hal-02475342
https://amu.hal.science/hal-02475342

Submitted on 11 Feb 2020

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

Copyright

Three Decades of Research on Induced Hypocrisy: A Meta-Analysis

Abstract

Induced hypocrisy is a sequential, two-step, cognitive dissonance procedure that prompts individuals to adopt a pro-attitudinal behavior. The present meta-analysis of 29 published and 9 unpublished induced hypocrisy studies enabled us to test three key dissonance-related issues. First, is hypocrisy effective in promoting change in behavioral intention and behavior? Our analyses supported the idea that hypocrisy (vs. control) increased both behavioral intention and behavior. Second, does hypocrisy generate psychological discomfort? Results pertaining to this issue were inconclusive due to the small number of studies measuring psychological discomfort. Third, are both steps necessary to generate change? Effect sizes conform to the idea that the transgressions-only condition can increase both behavior and intention. Our meta-analysis raises a number of theoretical issues concerning the psychological processes underlying induced hypocrisy and highlights implications for practitioners.

Keywords: behavior, cognitive dissonance, induced hypocrisy, intention, psychological discomfort

Aronson, Fried, and Stone (1991) developed the induced hypocrisy paradigm as a way of convincing students to actually use condoms. Drawing on the knowledge that cognitive dissonance (Festinger, 1957) is capable of motivating cognitive and behavioral change, Aronson et al. designed a sequential procedure for inducing hypocrisy and thereby generating a form of cognitive dissonance. In contrast with induced compliance (Festinger & Carlsmith, 1959), induced hypocrisy is a way of prompting people to perform behaviors with which they agree. It achieves this by illustrating the gap between what a person knows he or she should do in a certain situation (socially desired behaviors) and what he or she actually did (transgressions). Numerous studies carried out over the last 35 years[1] have tested induced hypocrisy's ability to encourage behavior change in relation to a wide variety of issues, including health (Peterson, Haynes, & Olson, 2008), civic behavior (Stone et al., 1997), environmental protection (Fointiat, Priolo, Saint-Bauzel, & Milhabet, 2013), and road safety (Fointiat, Grosbras, & Somat, 2011).

After more than thirty-five years of research, a few uncertainties remain as to effectiveness in some applied fields (e.g., ecological behaviors; McGrath, 2018). A meta-analysis can be used to determine whether an intervention is effective and under what conditions the intervention works best (Cooper, Hedges, & Valentine, 2009). This kind of analyses can be applied to induced hypocrisy. Given the substantial empirical and theoretical advances achieved by hypocrisy studies, we conducted a meta-analysis to answer three key questions. First, is induced hypocrisy an effective way of changing intentions and behaviors.[2] Second, does hypocrisy arouse psychological discomfort, as predicted by cognitive dissonance theory? Third, are both steps of Aronson et al.'s procedure necessary in order to

[1] Even though Kantola, Syme, and Campbell (1984) carried out their study several years before Aronson et al.'s (1991) paper was published, the procedure they used was similar to induced hypocrisy (Stone & Fernandez, 2008) and met our inclusion criteria. Consequently, we included this study in our meta-analysis.

[2] Due to the small number of studies measuring attitude change, we decided to focus on behavioral intention and actual behavior.

generate the hypocrisy effect? For each question we tested the effects of four potential moderators: *Type of Publication* (high vs. low impact factor), *Consequences of Transgressions* (to oneself vs. to others), *Type of Study* (field vs. laboratory) and *Type of Participant* (students vs. non-students).

Induced hypocrisy: an overview

Inducing hypocrisy is a two-step procedure in which individuals publicly advocate a socially desirable behavior and then privately reflect on their own failures to conform to this behavior. The first step has been operationalized in many ways. For example, participants may be invited to encourage others to adopt a behavior by making a speech advocating that behavior in front of a video camera (Fointiat, Morisot, & Pakuszewski, 2008) or a voice recorder (Priolo & Liégeois, 2008). Alternatively, they may be asked to write a speech promoting the behavior (Son Hing, Li, & Zanna, 2002), sign a petition (Dickerson, Thibodeau, Aronson, & Miller, 1992), or read a message highlighting the behavior's normative character (Priolo et al., 2016). The common point of all the hypocrisy studies is the normative dimension of the promoted behavior during step 1. Priolo et al. (2016) provided evidence to support this assertion. Moreover, Fointiat (2008) showed that when the injunctive norm was added to the hypocrisy procedure (via step 1 for instance), it led to stronger behavioral changes. This could be explained by the cumulative normative aspects of the procedure. Because all these seemingly different ways of operationalizing hypocrisy have a normative dimension, we refer to this stage as the saliency of normative behavior step (SNB).

In the second step, participants are asked to recall their own past transgressions. They are reminded of the situations when they have failed to practice what they have just preached. Transgression recall is achieved by asking participants to list past transgressions (Aronson et al., 1991) or to fill in a questionnaire describing their transgressions (Harmon-Jones, Peterson,

& Vaughn, 2003). When the participants performed this step only, we will call this condition "transgressions-only"

According to Festinger (1957), the discrepancy between a cultural mores and a behavior arouses cognitive dissonance. What Festinger (1957) called cultural mores can be called social norms. Stone and Fernandez (2008) reviewed the literature on hypocrisy. They assumed that the gap between a normative standard (a social norm) and its transgression (past behaviors) arouses dissonance. This state of dissonance can be reduced by changing behavior. This conforms to the purpose of Stone and Fernandez (2008, p. 1025) when discussing the assumption that hypocrisy is "a form of dissonance that pushes people to take action". The present meta-analysis goes a step further by using empirical data to ascertain whether inducing hypocrisy increases either behavioral intention or behavior. In other words, is induced hypocrisy effective?

First key question: Is induced hypocrisy effective?

For induced hypocrisy to be considered effective, it must result in behavior change (Stone, Aronson, Crain, Winslow, & Fried, 1994). Hypocrisy is based on the idea that making people aware of their own hypocrisy motivates them to change their behavior, so it is more consistent with the normative behavior they have just advocated. Although most studies attest to the effectiveness of induced hypocrisy, some studies (Rubens, Gosling, Bonaiuto, Brisbois, & Moch, 2015) failed to find any significant difference between hypocrisy and control conditions. However, variations in reported findings may be due to differences in the way the target-behavior was assessed. For example, indirect measures have to be used to evaluate the effects of hypocrisy on behaviors, such as condom use, that cannot be measured directly for obvious ethical reasons. When studying condom use in new relationships, Stone et al.'s (1994) solution was to note how many participants bought condoms when they were given the opportunity to buy as many as they wished at a discounted price. As hypothesized, they found

that more participants bought condoms in the hypocrisy condition than in the control condition. Aronson et al.'s (1991) original study also focused on condom use. They circumvented the problem by assessing participants' intentions to use condoms. In fact, studies of induced hypocrisy have frequently used measures of behavioral intention, rather than actual behavior (Sénémeaud, Mange, Fointiat, & Somat, 2014). Behavioral intention is considered to provide an estimate of the motivational factors influencing behavior. For Ajzen (1991), it is the most proximal predictor of behavior.

However, many authors have questioned the strength of the link between intention and behavior (Rhodes & Dickau, 2012; Sweeney & Moyer, 2015). Webb and Sheeran (2006) showed that changing intention does not necessarily change behavior. Nevertheless, changes in behavioral intention have been shown to result in cognitive change, which can be attributed to the desire to reduce the dissonance created by induced hypocrisy. We clearly distinguish behavioral intention from behavior. We consider behavioral intention to be self-reported behavior likely to be performed in the near future. Behavior refers to an observable action. Consequently, we tested two hypotheses related to the effect of hypocrisy on behavior.

Hypothesis 1: Compared with a control condition, induced hypocrisy will increase behavioral intention.

Hypothesis 2: Compared with a control condition, induced hypocrisy will increase behavior.

We addressed our first key question by comparing hypocrisy groups and control groups (groups on which no intervention was performed) with respect to behavioral intention and with respect to behavior. Induced hypocrisy can be considered an effective way of prompting change if behavioral intention or behavior are greater in induced hypocrisy groups than in control groups.

When drawing up the induced hypocrisy paradigm, Aronson et al. (1991) suggested that hypocrisy has the potential to stimulate behavior change because it provokes cognitive dissonance. Evidence that inducing hypocrisy generates psychological discomfort, an important component of cognitive dissonance, would provide support for Aronson et al.'s assumption. This was the basis of our second key question.

Second key question: Does induced hypocrisy generate psychological discomfort?

Once participants have completed the SNB step, they are asked to recall their own counter-normative behaviors (transgression recall step). This makes them aware of the inconsistency between what they should do and what they actually did, thereby causing psychological discomfort. There is a consensus in the literature that people are motivated to reduce psychological discomfort, just as they are motivated to reduce dissonance (Stone & Fernandez, 2008). People can reduce their psychological discomfort in different ways, including attitude change (Yousaf & Gobet, 2013), act rationalization (Dickerson et al., 1992), trivialization (Fointiat et al., 2011), and self-affirmation (Stone et al., 1997). Act rationalization results in a change in behavior and/or intention; trivialization involves minimizing the importance of the normative behavior; and self-affirmation involves making salient positive aspects of the self-concept that are unrelated to the normative behavior.

Evidence supporting the idea that hypocrisy aroused a state of cognitive dissonance was first obtained using the misattribution paradigm (Fried & Aronson, 1995). Misattribution is the act of attributing psychological discomfort to an external source such as a medication one is taking or poor working conditions (Zanna & Cooper, 1976). People misattributing their dissonance to an external source are no more motivated to reduce it (Fointiat et al., 2011). Furthermore, the psychological discomfort produced by hypocrisy has frequently been found to be stronger than the discomfort caused by other experimental conditions (Hammons, 2010;

Yousaf & Gobet, 2013). Taken together, these studies support the view that inducing hypocrisy arouses a state of cognitive dissonance. Our third hypothesis was:

> **Hypothesis 3**: Reported psychological discomfort should be greater for participants in induced hypocrisy conditions than for participants in control conditions.

Examining the impact of induced hypocrisy on psychological discomfort could help to explain why induced hypocrisy is effective.

Third key question: Are two steps needed to induce hypocrisy?

In his first theoretical account of induced hypocrisy, Aronson (1999) maintained that both the SNB and transgression recall steps are necessary to arouse cognitive dissonance. Our meta-analysis allowed us to test this assertion by examining whether either of the two steps, the SNB alone or transgressions-only, is sufficient on its own to produce similar effects to induced hypocrisy.

Stone and Fernandez (2008), for example, noted certain cases in which no difference was found between the full induced-hypocrisy condition and SNB-only condition. They attributed this lack of difference to the SNB-only step providing an implicit reminder of past transgressions (transgression recall). This can occur when an individual promises to adopt a normative behavior while advocating it to others. If the SNB stage alone can produce the same effects as induced hypocrisy, this would call into question Aronson's (1999) assertion.

Reports of significant differences between control and transgressions-only conditions (Rubens, 2011, studies 0, B1, B2, and B4), and a number of failures to find differences between hypocrisy and transgressions-only conditions (Dickerson et al., 1992), also raised the question of whether both steps in the induced hypocrisy paradigm are required. These unexpected results appear to occur only in situations in which a well-internalized norm (e.g., anti-smoking norms) makes transgressing a social norm salient. In such cases, simply

recalling past transgressions may automatically activate the behavioral norm associated with these transgressions and thereby highlight a cognitive inconsistency capable of arousing cognitive dissonance. This cognitive dissonance would explain both the difference between transgressions-only and control conditions reported by some studies and why some studies have failed to find a difference in effect between hypocrisy and transgressions-only conditions.

In order to determine whether both steps in the hypocrisy procedure are necessary, we compared SNB-only and transgressions-only conditions with, on the one hand, induced hypocrisy conditions and, on the other hand, control conditions. Our hypotheses were:

Hypothesis 4: Behavioral intention will be greater for participants in hypocrisy conditions than for those in the SNB-only conditions;

Hypothesis 5: Target-behavior will be greater among participants in hypocrisy conditions than among those in the SNB-only conditions;

Hypothesis 6: Participants in transgressions-only conditions will report greater intention to adopt a target-behavior than those in control conditions.

All three of our key questions focus on the overall effect of induced hypocrisy; however, there are a number of factors which could moderate this effect.

Potential Moderators

Examining induced hypocrisy from both methodological and theoretical points of view revealed 14 potential moderator variables (for details see, methodology file). However, a lack of information allows us to only test the moderator effect of *Nature of Consequences, Type of Publication, Type of Study, and Type of Participant*.

Nature of Consequences of Transgression

According to a revised version of dissonance theory (Cooper & Fazio, 1984), the aversive consequences of a transgressive behavior is a necessary condition for arousing dissonance. Cooper and Fazio (1984) pointed out that sheer cognitive discrepancy was not sufficient. This point was contested by Harmon-Jones (2000) who showed that dissonance could be aroused without aversive consequences. These findings are in line with Thibodeau and Aronson's point of view (1992). They re-examined some experimental evidence and suggested that aversive consequences moderate the intensity of the resulting dissonance. In other words, dissonance is stronger when consequences are aversive (go against self-interest). According to Thibodeau and Aronson (1992) aversive consequences play a determinant role in the process of cognitive dissonance because competence and morality are threatened. In other words, these researchers explained that feeling responsible for aversive consequences is inconsistent with a positive self-concept. Consequently, the nature of transgressions can be analyzed to determine whether this factor moderates the induced hypocrisy effect.

In the induced hypocrisy paradigm, the consequences of transgression may be aversive not only for a person but also for a collective. We distinguished between self-targeted consequences (Morongiello & Mark, 2008) and other-targeted consequences (Rubens et al., 2015). In some studies, the consequences of transgressions could harm mainly the participant in the study. We categorized these transgressions as aversive for oneself (e.g., harm caused by smoking, Priolo & Liégeois, 2008). Conversely, some transgressions could have aversive consequences essentially for other persons (e.g., energy waste; Kantola et al., 1984). We categorized these transgressions as other-targeted. To be precise, the transgressions that harm only the participant are infrequent as are the transgressions that hurt only other people. The thematic of one study can present consequences that affect both the participant and other persons (road safety, condom use, ecological behaviors, etc.). However, we think that transgression consequences can be targeted either more towards oneself than others (smoking)

or more towards others than oneself (energy conservation). In the first case, the individual self is threatened whereas in the second self it is the collective self that is threatened. We assumed that inducing hypocrisy, whatever the consequences, would arouse cognitive dissonance. Although a person may consider negative consequences to be important whether they affect the self or others, they ascribe more importance to self-targeted consequences than to other-targeted consequences. According to Sedikides, Gaertner, Luke, O'Mara, and Gebauer (2013), these components of self-concept play important and meaningful roles in an individual's life. Because a person gives more importance to the personal self than to the collective self, one reacts more strongly when the personal self is threatened rather than the collective self (Gaertner et al., 2012).

This may partly explain some of the differences in effect sizes between studies. In order to determine whether the effects of induced hypocrisy differ according to the consequences of transgressions, we divided the studies into those with self-targeted consequences and those with other-targeted consequences. Four judges coded the studies independently and then discussed any cases on which their judgments differed until they came to a unanimous agreement.

Hypothesis 7: The effect of induced hypocrisy is stronger when consequences are self-targeted than when they are other-targeted

Type of Publication

In line with Grijalva and Zhang (2016), we tested for a moderating effect of *Type of Publication*. In our meta-analysis, this was a continuous moderator because we tested for differences in effect sizes according to the impact factor (high or low) of the publishing journal and whether the study was published or unpublished. We did this by calculating a score for each study based on if and where it was published. Unpublished studies were

attributed a score of 1, whereas published studies were attributed a score of 2 plus the impact factor of the publishing journal. For example, Stone et al. (1994) was published in a journal with an impact factor of 2.99, so its weighted score was 2.99 + 2 = 4.99. We used the resulting scores to determine whether there is any link between effect size and type of publication. We had no expectations about whether or how Type of Publication would moderate the effect of induced hypocrisy, so we did not formulate any hypotheses for this variable.

Type of Study

Some studies were conducted in laboratory settings (Eitel & Friend, 1999), whereas others were carried out in the field (Dickerson et al., 1992). Although laboratory studies are thought to be better at isolating the effect of a single factor, they are also believed to suffer from low external validity. Conversely, field studies have good external validity, but low internal validity. Field studies using the hypocrisy paradigm have tended to be carried out in highly ecological contexts in which most extraneous variables have been controlled for. We tested this assumption by comparing field studies and laboratory studies, as this factor may partially explain differences in the results reported by different studies. As for the nature of consequences variable, four judges coded the studies independently and then discussed any cases on which their judgments differed until they came to a unanimous agreement.

Anderson, Lindsay, and Bushman (1999) found that the effect sizes of laboratory and field studies are strongly correlated (r = .73), but their analyses did not show the expected low external validity of laboratory studies or low internal validity of field studies. They concluded that both types of study could produce valid results, if care is taken to control as many confounding variables as possible. We had no expectations about whether or how Type of Study would moderate the effect of induced hypocrisy, so we did not formulate any hypotheses for this variable.

Type of Participant

Studies may also differ in respect to the type of participants involved, most notably, whether they were students or non-students. This is the case for both laboratory studies (students in Eitel & Friend, 1999; non-students in Morongiello & Mark,) and field studies (students in Dickerson et al., 1992; non-students in Fointiat, 2004). Student participants have been described as "a very narrow data base" (Sears, 1986, p. 527) that gives a distorted portrait of human nature, and the external validity of results obtained by studies with student participants has often been questioned, especially in the field of experimental social psychology. In addition, according to Henrich, Heine, and Norenzayan (2010, p. 61), samples of people drawn from Western, Educated, Industrialized, Rich, and Democratic (WEIRD) societies are particularly unusual and "the least representative population one could find for generalizing about humans". Consequently, we felt it was important to test for the impact of Type of Participant on the effects of induced hypocrisy. Again, four judges coded the studies independently and then discussed any cases on which their judgments differed until they came to a unanimous agreement.

Method

Identification of induced hypocrisy studies

Although our objective was to identify all published and unpublished studies dealing with induced hypocrisy, for practical reasons we restricted our search to papers written in English or in French. We searched 15 databases[3] over a period extending up to February 2017 and using just two keywords: "hypocrisy" (subject term) and "cognitive dissonance" (full text). The most recent article we found was published in June 2016 (Priolo et al., 2016). In

[3] Web of Science, Academic Search Premier, Business Source Complete, EconLit, Entrepreneurial Studies Source, ERIC, FRANCIS, MEDLINE, MLA International Bibliography, PsychEXTRA, PsychINFO, PsychARTICLE, Psychology and Behavioral Sciences Collection, Soc Index with Full text, SPORTDiscus with Full text.

addition, we conducted manual searches of our own files in order to find studies that did not appear in the electronic searches. Unpublished studies were identified by examining book chapters, literature reviews, and unpublished papers on induced hypocrisy (secondary sources). We also contacted five international psychology associations and two research networking websites (see methodology file for details). Finally, we sent emails to researchers in the induced hypocrisy field, asking them for details of any unpublished studies in their possession. In total, we identified 66 published and unpublished studies carried out between 1984 and 2016.

Inclusion and exclusion criteria

Our initial corpus of papers included all studies that:

1. Examined the induced hypocrisy procedure as defined above. Therefore, we excluded studies involving other paradigms, such as induced compliance (Heitland & Bohner, 2010), moral hypocrisy (Lammers & Stapel, 2011), and vicarious hypocrisy (Barden, Rucker, & Petty, 2005; Thompson, Kyle, Swan, Thomas, & Vrungos, 2002). In some studies, we did not take into account conditions in which participants were assigned to a crossed factor, such as misattribution (Fried & Aronson, 1995) or self-affirmation (Yousaf & Gobet, 2013), in addition to an induced-hypocrisy condition. These misattribution and self-affirmation conditions are excluded and just the standard induced hypocrisy conditions are examined in the meta-analysis.

2. Were reported in scientific journals, conference proceedings, book chapters, or doctoral theses (published or unpublished). However, we excluded three studies reported in master's theses (Biga, 2004; Dossett, 2009; Goldonowicz, 2012). Two of them did not provide the necessary data to run our analyses (Biga, 2004;

Dossett, 2009). The authors give information about an interaction effect with induced hypocrisy but do not mention the main effect of induced hypocrisy alone. For the third one (Goldonowicz, 2012) two methodological issues led us not to consider it. On one hand, data collection was carried out one month after the experimental induction. On the other hand, the induction was collective and not individual.

3. Included at least the classic induced hypocrisy condition as defined above (including both steps). This led us to exclude six studies (Aitken, McMahon, Wearing, & Finlayson, 1994; Desrichard & Monteil, 1994; Fernandez-Dols et al., 2010; Harmon-Jones et al., 2003; Takaku, 2001; Takaku, Weiner, & Ohbuchi, 2001).

4. Mentioned the statistical data needed for our analyses. Where necessary, we wrote directly to authors to obtain the information we needed. We excluded three theoretical studies (Freijy & Kothe, 2013; Stone & Fernandez, 2008; Stone & Foccella, 2011) and four studies that did not provide the statistical data needed for our analyses (Bator & Brian, 2007; Matz & Wood, 2005; Peterson et al., 2008; Stone & Fernandez, 2011).

Finally, because the aim of induced hypocrisy is to prompt changes in behavioral intention or behavior, we excluded four studies which measured attitude change (Martinie & Fointiat, 2010; McConnell & Brown, 2010; McGrath & Ward, 2014, McKimmie et al., 2003).

These criteria led us to reject 28 studies (Table 1), leaving us with a final corpus 38 studies (Table 2).

Meta-analytic procedure

We carried out our meta-analysis in line with the recommendations made by Borenstein, Hedges, Higgins, and Rothstein (2009). First, because the studies in our corpus reported effect sizes in a variety of ways, including *t*-tests (Stone et al., 1994), χ^2-tests (Fointiat, 2008), and *F*-tests (Morongiello & Mark, 2008), we used Arthur, Bennett, and Huffcutt's (2001) formulae to transform all reported effect sizes into correlation coefficients, *r*. We then transformed these effect sizes so that the correlation coefficient was positive when behavioral intention or behavior was greater in the induced hypocrisy condition than in the control condition. Finally, we used a Fisher's z transformation to calculate weighted effect sizes. Second, we used a random effects model (for analyses without moderators) and a mixed effects model (for analyses including moderators) in order to take into account the wide range of studies (country, type of participant, type of behavior, and implementation procedure). We used Comprehensive Meta-Analysis 3 software to estimate these models (Borenstein et al., 2009) and completed our analyses by using the Metafor package in R (Viechtbauer, 2010).

In addition, because our analyses had to take into account studies that used more than one measure of the same construct (Fointiat & Grosbras, 2007, multiple behavioral measures), in which case effect sizes are statistically dependent, we followed Lipsey and Wilson's (2001) recommendation and averaged the relevant effect sizes. This procedure yielded a single mean effect size for each sample. For studies that included longitudinal measures (Hammons, 2010; Pelt, 2016), we calculated effect sizes using only the data collected just after the experimental induction.

Finally, we used the regression method described by Borenstein et al. (2009) to test the impact of potential moderators on the effect sizes. At least three studies in each condition were needed in order to run the categorical-moderator analyses.

Results

First key question: Is induced hypocrisy effective?

Effect of hypocrisy versus control on behavioral intention

Specific inclusion criteria. In order to determine whether induced hypocrisy increases behavioral intention, we had to identify studies that included a direct measure of intention without any intervention (control condition). We consider behavioral intention to be self-reported behavior likely to be performed in the near future. Consequently, our analysis was based on 19 studies (Figure 1) that compared hypocrisy and control conditions.

Overall effect of hypocrisy versus control. Results varied between a small and a moderate correlation coefficient for the effect of induced hypocrisy on behavioral intention, r = .35, 95% CI = [.22, .46], z = 5.02, p < .001. The participants in the hypocrisy condition tended to report greater behavioral intention than participants in the control condition. This result supports hypothesis 1. There was substantial variability in effect sizes across studies, τ^2 = 0.07, Q(18)= 75.06, p < .001, I^2 = 76%, which supports the idea of using a random effects model. Effect sizes and the precision with which each effect was estimated are shown as a forest plot (Figure 1).

Moderators of the effect of hypocrisy versus control. We conducted a separate mixed-effects meta-regression analysis for each of the four moderators. Results are summarized in Table 3. Type of Participant (students vs. non-students), Type of Study (field vs. laboratory) and Nature of Consequences (self vs. others) were analyzed as categorical variables, whereas Type of Publication was analyzed as a continuous variable. None of the moderators considered individually had a statistically significant effect on behavioral intention. These results do not support hypothesis 7, according to which Nature of Consequences should

moderate the effect of hypocrisy, with larger effect sizes in the case of self-targeted consequences than in the case of other-targeted consequences.

INSERT TABLE 3

INSERT FIGURE 1

Publication bias in the effect of hypocrisy versus control. Because all methods of testing for publication bias have limitations (Field & Gillet, 2010), we used four complementary techniques: funnel plot, trim and fill (Duval & Tweedie, 2000), *p-curve* analysis (Simonsohn, Nelson, & Simmons, 2014), and R-index (Schimmack, 2016). Funnel plots and detailed results of *p-curve* are provided in the supplementary materials.

Given the limitations of funnel plot (Vevea & Woods, 2005), we applied the trim and fill method. The resulting values were unchanged, supporting the idea that hypocrisy effect sizes are not distorted by publication bias. Then, we used APP 4.052 (http://www.p-curve.com/app4/) to run *p-curve* analyses (Simonsohn et al., 2014; Simonsohn, Simmons, and Nelson, 2015). Both binomial test (share of significant results $p < .025$; $p = .029$) and Stouffer's Method continuous test on the full *p-curve* ($z = -6.27$, $p < .0001$) showed the curve to be significantly right-skewed. These results failed to demonstrate a clear evidence for a publication bias. Finally, we used the procedure described by Schimmack (2016) to test for possible inflation of effect sizes. This involved determining the "success rate" of induced hypocrisy studies. Sixty-six percent of the studies in our corpus reported a significant effect of induced hypocrisy on behavioral intention. Although many of the studies were underpowered, as is shown by the median observed power of just .73, we obtained an R-index of .80, indicating that the proportion of significant results reported is not greater than the expected proportion of significant results. This is consistent with the result of the trim and fill analysis.

Taken together, these results show that the effect sizes for the impact of hypocrisy on behavioral intention are not inflated. However, the samples included in most of the studies were too small to maximize the chances of obtaining a significant result. Assuming the effect size r =.35, we estimated that studies would have a total sample of 46 participants to achieve a power of .80. This was the case for eight of the nineteen studies.

Effect of hypocrisy versus control on behavior.

Specific inclusion criteria. In order to determine whether hypocrisy increases behavior we needed to identify those studies that assessed behavior directly without any intervention (control condition). We defined a behavior as an observable action. Thus, only ten studies remained (Figure 2).

INSERT FIGURE 2

Overall effect of hypocrisy versus control. The mean correlation coefficient for the effect of hypocrisy (vs. control) on behavior was small to moderate, r = .30, 95% CI = [.10, .48], z = 2.90, p = .004, indicating that participants in hypocrisy conditions were more likely to adopt a target-behavior than participants in control conditions. This result supports hypothesis 2. However, there was a large variability in effect sizes, τ^2 = 0.09, $Q(9)$= 60.29, p < .001, I^2 = 85.1% (Figure 2).

Moderators of the effect of induced hypocrisy versus control. Table 4 summarizes the results of the four simple meta-regression analyses we carried out in order to test the effects of the moderators. In line with hypothesis 7, the Nature of Consequences (self vs. others) variable moderated the effect of hypocrisy, $Q(1)$ = 5.15, p = .02, τ^2 =.03, I^2 = 60.53%, with hypocrisy having a greater effect when participants thought their transgressions would have consequences for themselves, r = .48, 95% CI = [.15, .71], rather than for others, r = .20, 95% CI = [.08, .31]. Figure 3 provides details of this moderation.

INSERT TABLE 4

INSERT FIGURE 3

Publication bias in the effect of hypocrisy versus control. We used the same tests for publication bias as in our analysis of the effect of hypocrisy on behavioral intention (see supplementary materials for more details). Applying the trim and fill method did not change the effect sizes, suggesting that they are not distorted by a publication bias. Then, we performed a *p-curve* analysis. According to a binomial test (share of significant results $p < .025$; $p = .5$) the curve was not right-skewed but it was according to a Stouffer's Method continuous test on the full p-curve ($z = -2.28$, $p = .009$). A larger number of studies with sufficient power are needed for the *p-curve* analysis to provide more informative results. Forty-four percent of the studies reported a significant effect. Overall, the studies had a median observed power of .47, and an R-index of .55, indicating that the proportion of significant results reported did not exceed the expected proportion of significant results. Hence, in the case of behavior, effect sizes for induced hypocrisy compared with control groups do not appear to be inflated. Nevertheless, most of the studies were based on relatively small samples and were therefore underpowered. Assuming an effect size r=.30, an a priori power analysis showed that studies should include at least 64 participants to achieve a power of .80. This was the case for two of the ten studies.

Second key issue: Does hypocrisy generate psychological discomfort?

Effect of hypocrisy versus control

Specific inclusion criteria. We had to identify studies that measured psychological discomfort in both the hypocrisy and control conditions. After applying this criterion, only seven studies remained (Figure 4).

Overall effect of hypocrisy versus control. The confidence interval of the correlation coefficients overlapped zero, $r = .18$, 95% CI = [-.02, .36], $z = 1.8$, $p = .07$. These results revealed that hypocrisy studies did not provide evidence that participants in hypocrisy conditions reported more psychological discomfort than those in control conditions. This result does not support hypothesis 3. We found significant variability in effect sizes, $\tau^2 = 0.04$, $Q(6) = 16.97$, $p = .009$, $I^2 = 64.6\%$ (Figure 4). The small number of studies prevented us testing for the effects of potential moderators. We did not test for publication bias.

INSERT FIGURE 4

Third key issue: Are two steps necessary?

To answer this question, we had to perform several comparisons. Concerning behavioral intention, we compared the effects of hypocrisy versus SNB-only, the effects of SNB-only versus control condition, the effects of hypocrisy versus transgressions-only, and the effects of transgressions-only versus control condition. Concerning behavior, we compared the effects of hypocrisy versus SNB-only and the effects of SNB-only versus control condition. Too few studies examined the effects of transgression-only recall on behavior to run the appropriate comparisons.

Effect of hypocrisy versus SNB-only on behavioral intention.

Specific inclusion criteria. We had to identify studies that assessed behavioral intention after participants had advocated the normative behavior (SNB-only condition). Sixteen studies met this criterion (Figure 5).

Overall effect of hypocrisy versus SNB-only. In line with hypothesis 4, we found a small to moderate correlation coefficient, $r = .30$ (95% CI = [.21, .37]), $z = 6.69$, $p < .001$, with participants in hypocrisy conditions reporting greater behavioral intention than those in SNB-only conditions. Differences in effect sizes were non-significant, $\tau^2 = 0.01$, $Q(15)=$

21.86, $p = .11$, $I^2 = 31.4\%$ (Figure 5). This may be due to the small number of studies included in the analysis; therefore, we tested potential moderators of the effect of hypocrisy vs. SNB alone.

INSERT FIGURE 5

Impact of potential moderators on the effect of hypocrisy versus SNB-only. We tested the same moderators using the same procedure as previously. Table 5 summarizes the results of the four simple regression analyses. The Type of Publication seems to be a moderator of this effect, $Q(1) = 7.72$, $p = .006$, $\tau^2 = .00$, $I^2 = 0.83\%$, with effect sizes tending to be larger in studies published in higher impact factors journals, $b = .07$, $z = 2.78$, $p = .03$ (Table 5).

INSERT TABLE 5

Publication bias in the effect of hypocrisy versus SNB-only. Applying the trim and fill method resulted in the values being corrected downward. Effect size was small to moderate, $r_{corrected} = .25$ (95% CI = [.15, .34]), suggesting that effect size is distorted by a publication bias. We then ran *p-curve* analyses. Both a binomial test (share of significant results $p < .025$; $p = .035$) and a Stouffer's Method continuous test on the full p-curve ($z = -3.71$, $p = .001$) showed that the curve was significantly right-skewed (see supplementary materials). These results argue against the presence of a publication bias. Finally, 44% of the studies reported a significant effect. Median observed power was .44 and the R-index was .44, which shows that the proportion of significant results reported is not greater than the expected proportion of significant results. Hence, the effects on behavioral intention of hypocrisy versus SNB-only were not inflated. Nevertheless, the results of the trim and fill analysis suggest the presence of inflation. We considered this effect size to be equal to $r_{corrected} = .25$ (95% CI = [.15, .34]). Once again, most of the studies were underpowered. An a priori power

analysis based on a power of .80 and a corrected effect size, $r_{corrected}$, of .25, shows that studies need to include at least 86 participants in order to maximize the chances of obtaining a significant result. Only seven of the sixteen studies included in these analyses met this criterion.

Effect of SNB-only versus control on behavioral intention.

Specific inclusion criteria. To achieve this objective, we only considered studies including both SNB-only condition and control condition. Eight studies met this criterion (Figure 6).

Overall effect of SNB-only versus control. The confidence interval of the correlation coefficients overlapped zero, $r = .16$ [95 CI = -.06, .36], $z = 1.39$, $p = .16$. These results do not conform to the idea that participants of SNB-only conditions reported greater intention to adopt a target-behavior than those in control conditions. Differences in effect sizes were substantial, $\tau^2 = 0.08$, $Q(7) = 25.84$, $p < .001$, $I^2 = 72.9\%$ (see forest plot, Figure 6). Because determining the effect of SNB-only was not the main aim of papers on hypocrisy, we did not test for publication bias. The small number of studies prevented us testing for moderation effects.

INSERT FIGURE 6

Effects of hypocrisy versus SNB-only on behavior.

Specific inclusion criteria. To reach this objective, we identified studies which assessed acceptance of the target-behavior after participants had advocated the normative behavior (SNB-only condition). Eight studies met this criterion (Figure 7).

Overall effect of hypocrisy versus SNB-only. We found a small to strong correlation coefficient, $r = .45$ (95% CI = [.10, .70]), $z = 2.44$, $p = .01$, consistent with the idea that

participants in hypocrisy conditions were more likely to adopt a target-behavior than those in SNB-only conditions. This result supports hypothesis 5. Heterogeneity of the effect sizes were large, $\tau^2 = 0.28$, $Q(7) = 59.18$, $p < .001$, $I^2 = 88.2\%$ (Figure 7). The small number of studies prevented us testing for the potential moderating effect of Nature of Consequences (self vs. others). Nevertheless, we ran meta-regression analyses to test the remaining moderators.

INSERT FIGURE 7

Moderators of the effect of hypocrisy versus SNB on behavior-only. Table 6 summarizes the results of the three simple regression analyses. The effect of "Type of Publication" was significant $Q(1) = 3.94$, $p < .05$, $\tau^2 = .17$, $I^2 = 84.88\%$. This result supports the idea that effect sizes tend to be larger in studies published in higher impact factor journals, $b = .16$, $z = 1.98$, $p = .047$. The effect of "Type of Study" was also significant $Q(1) = 9.18$, $p < .003$, $\tau^2 = .10$, $I^2 = 78.2\%$, with laboratory studies ($r = .77$, 95% CI = [.27, .94]) reporting larger effect sizes than field studies ($r = .20$, 95% CI = [.05, .34]) for hypocrisy versus SNB-only (Figure 8).

INSERT TABLE 6

INSERT FIGURE 8

Publication bias in the effect of hypocrisy versus SNB-only. The results of the trim and fill method suggest that the effect size is not distorted by a publication bias. We did not run *p-curve* analyses, because of the small number of studies (only 3) reporting significant results. Thirty-eight percent of the studies reported a significant effect. The median observed power was .46 and the R-index was .54, indicating that the proportion of significant results reported does not exceed the expected proportion of significant results. Hence, the sizes of the effect of hypocrisy versus SNB-only on behavior are not inflated. Nevertheless, most of the studies were underpowered. An a priori power analysis based on a power of .80 and an effect

size r=.45 showed that studies need to include at least 52 participants. Given the difference between field studies and laboratory studies, we also estimated a theoretical sample size for field studies. Field studies should include at least 150 participants. The five field studies in our corpus had far fewer than 150 participants, which could explain their lack of power.

Effect of SNB-only versus control on behavior.

Specific inclusion criteria. As previously, we considered only studies including both SNB-only condition and a control condition. Six studies met this criterion (Figure 9).

Overall effect of SNB-only versus control. The confidence interval of the correlation coefficients overlapped zero, r = .17, 95% CI = [-.01, .0.35], z = 1.81, p = .07. These results indicated that difference between these two conditions was small or even nil. Differences in effect sizes seemed to be important, τ^2 = 0.02, $Q(5)$= 10.09, p = .07, I^2 = 50.4% (Figure 9). Nevertheless, the small number of studies prevented us testing for moderator effects.

Because testing the effect of SNB-only was not the main goal of papers on induced hypocrisy, we did not test for publication bias.

INSERT FIGURE 9

Effect of hypocrisy versus transgression-only on behavioral intention.

Specific inclusion criteria. The aim of this analysis was to determine whether two steps are necessary to arouse dissonance, or whether the transgression recall step alone is sufficient. Consequently, we considered only studies including a transgressions-only condition, in which participants were only reminded of their transgressions, and a control condition. Eight studies met this criterion (Figure 10).

Overall effect of hypocrisy versus transgressions-only. The confidence interval of the correlation coefficients overlapped zero, r = .18 (95% CI = [-.04, .35]), z = 1.58, p = .11,

indicating that we cannot conclude that participants in hypocrisy conditions report greater behavioral intention than those in transgression-only conditions. Heterogeneity between effect sizes is large, $\tau^2 = 0.06$, $Q(7) = 23.58$, $p < .001$, $I^2 = 70.32\%$ (Figure 10) but due to a small number of studies we did not test moderator effects. We did not run analyses for publication bias, because theorists of induced hypocrisy were not interested in comparing hypocrisy and transgressions-only conditions.

INSERT FIGURE 10

Effect of transgressions-only versus control on behavioral intention.

Specific inclusion criteria. We applied the same criteria as for the comparison of hypocrisy versus transgressions-only; the same eight studies were considered (Figure 11).

Overall effect of transgressions-only versus control. In line with hypothesis 6, we found a small to moderate correlation coefficient, $r = .25$, 95% CI = [.08, .41], $z = 2.92$, $p = .003$, consistent with the idea that participants in transgressions-only conditions reported greater behavioral intention than those in control conditions. Differences in effect sizes were large, $\tau^2 = 0.03$, $Q(7) = 16$, $p = .03$, $I^2 = 56.2\%$ (Figure 11) but due to a small number of studies we did not test moderator effects. Because most hypocrisy theorists have not considered such a difference between transgressions-only and control conditions, we did not test for publication bias in relation to this effect.

INSERT FIGURE 11

INSERT TABLE 7

Discussion

This first meta-analysis of induced hypocrisy throws light onto three key questions: Is hypocrisy an effective way of changing intentions and behaviors? Does hypocrisy arouse

psychological discomfort? Are both steps necessary for obtaining the effects of induced hypocrisy? Table 7 summarizes the results.

Concerning the first question, our meta-analysis supported the idea that hypocrisy induction had a moderate effect on both behavioral intention (r = .35) and behavior (r = .30). In other words, participants in hypocrisy conditions seemed to be more inclined to adopt a target-behavior than those in control conditions. This effect was moderated by the nature of the consequences of transgressions (self vs. others), as the effect of induced hypocrisy (vs. control) on behavior was stronger when consequences were self-targeted (r = .48) rather than other-targeted (r = .19). These results support the idea that people usually give more importance to the personal self than to the collective self (Gaertner et al., 2012). Because the induced hypocrisy paradigm allows participants to be reminded of both types of consequences (for the self and for others) of transgressions, future studies could compare the effects of transgression recall of a self-targeted consequence (e.g., risk for themselves of not using a condom) with increasing transgression recall of an other-targeted consequence (e.g., risk for others of not using a condom). The dissonance aroused by self-targeted transgressions may be stronger than that aroused by other-targeted transgressions. As our meta-analysis was based on a small number of studies, the results should be interpreted cautiously. Further research is needed before reliable conclusions about hypocrisy effectiveness should be made.

Our second key question was whether inducing hypocrisy leads to cognitive dissonance, manifested as psychological discomfort. We found that the effect of hypocrisy (vs. control) was weak nay nil. We cannot reject the hypothesis stating that induced hypocrisy does not arouse psychological discomfort. However, alternative explanations can be mentioned. First, the absence of significant results could be due to the small number of studies (k = 7). Second, the method used to assess cognitive dissonance may have affected results. For example, some studies used scales combining questions related to psychological

discomfort, irritability, and distress (Yousaf & Gobet, 2013), whereas others used Elliot and Devine's (1994) discomfort subscale (Priolo et al., 2016). This heterogeneity of measures could have added error that cannot be explained by induced hypocrisy. Third, the moment of the discomfort measure can be questioned. Indeed, Martinie, Olive, Milland, Joule and Capa (2013) showed that negative affects did not appear immediately after dissonance induction. Consequently, variations in delay between the hypocrisy induction and the discomfort measure could explain why certain studies found strong effect sizes (Priolo & Liégeois, 2008) and others did not (Yousaf & Gobet, 2013). Fourth, we could consider that cognitive dissonance is not accurately measured with the dissonance thermometer (Elliot & Devine, 1994) or other self-reported measures. This type of measure could be biased by the social desirability effect (Crowne & Marlowe, 1964). Thus, we could assume that participants are not always willing to admit that they feel bad about something they did in the past. To prevent this bias authors could use other discomfort measures such as facial EMGs (Martinie et al., 2013), neural activity (Harmon-Jones, Harmon-Jones, Fearn, Sigelman, & Johnson, 2008) or implicit measures of affect (Quirin, Kazén, & Kuhl, 2009).

The third key question was whether or not two steps are needed to change behavioral intention or behavior. Two main conclusions can be drawn from our results. First, induced hypocrisy seems to be more effective in prompting changes in intention or behavior than SNB-only. Second, the difference between the effects of induced hypocrisy and transgressions-only (Table 7) is small even nil. The transgression recall step seems to arouse a similar motivational state such as induced hypocrisy. There are two possible explanations for this. First, we may consider that the procedure itself makes the normative behavior salient. Indeed, the experimenters tell the participants what the study is about or what behavior they promote. Like most studies focused on socially desired behaviors (e.g., pro-environmental behaviors), recalling past transgressions after having been told about the context of the study

may highlight a cognitive inconsistency and arouse cognitive dissonance. We could also consider that solely recalling past transgressions may automatically activate their associated normative behavioral standards, thereby highlighting a cognitive inconsistency and arousing cognitive dissonance. In both cases, adopting a new behavior consistent with the normative standard is a way of reducing this dissonance. Further research is needed to better understand the mechanisms leading the transgression recall step alone to cause hypocrisy or another form of dissonance motivating behavior change. Second, the discrepancy between a normative standard and a transgression may generate normative deviance with no psychological discomfort. Such situations may generate worry about social disapproval and therefore lead individuals to adopt a normative behavior as a way of overcoming this worry and maintaining a positive self-image.

The present meta-analysis supports the effectiveness of hypocrisy in prompting behavior change. It could open the way for practitioners in a wide range of fields, including environmental protection, public health, road safety, and education, to develop practical interventions that can be implemented in the field. In fact, hypocrisy is a relatively simple procedure that can be used to promote adoption of a desirable behavior. Even though the difference between induced hypocrisy and transgressions-only is small, we would recommend using the two-step hypocrisy procedure in order to ensure the normative standard is activated. Nevertheless, in situations where it is impossible to implement the full procedure, practitioners could use transgression recall step alone, shorter and easier to implement in the field.

Perspectives and Limitations

The results of our meta-analysis suggest several research perspectives. First, questions remain about whether hypocrisy arouses dissonance or not. This raises the issue of the processes underlying the effects of hypocrisy: cognitive dissonance or social deviance?

Further research should explore this issue, which could be related to the measure of psychological discomfort. We mentioned that self-reported measures could bias the assessment of this variable. Alternatives, like neural activity (Harmon-Jones et al., 2008) or facial EMGs (Martinie et al., 2013) exist but they are uneasy to implement in an induced hypocrisy procedure. The simplest method could use an implicit assessment of psychological discomfort. For example, Quirin, et al. (2009) created a tool based on non-words that can be used to assess psychological discomfort without the participant's awareness. Studies using appropriate measures are needed to ascertain whether cognitive dissonance is indeed the key factor underlying the effects of hypocrisy.

A second research perspective draws on the construal-level theory of psychological distance (Trope & Liberman, 2010). Psychological distance with respect to the consequences of transgressions could moderate the effect of hypocrisy. In other words, dissonance should be stronger when the psychological distance from the consequences of transgressions is small rather than large. Hence, it would be interesting to compare the effectiveness of hypocrisy when participants believe the consequences of transgressions are short-term (small temporal distance), affect people close to them (small social distance), and are very likely (small hypothetical distance), rather than when they are long-term, affect strangers, and unlikely.

Another reason for conducting further research is to overcome the limitations of previous studies, many of which lacked statistical power due to small sample sizes. In fact, many of the studies in our corpus had an observed power of less than .50. Hence, in order to effectively test the ability of induced hypocrisy to produce behavior change, we would recommend future studies recruit at least 55 participants per condition. With a moderate effect size (r = .30), this would give a statistical power of .95. Going even further, it would be interesting to test the hypocrisy paradigm on very large samples (more than 1000 participants), which could be done via doorhangers, mailshots, or email, etc. Using such

"remote" means to induce hypocrisy and collect data would also provide information about the importance of face-to-face contact in generating the effects of induced hypocrisy. In other words, is the effect reliant on direct interaction with the participant? Evidence that indirect interactions are effective would open the way for including induced hypocrisy procedures in mass campaigns to promote target behaviors.

References

References marked with an asterisk indicate studies included in the meta-analysis.

Aitken, C. K., McMahon, T. A., Wearing, A. J., & Finlayson, B. L. (1994). Residential water use: Predicting and reducing consumption. *Journal of Applied Social Psychology*, *24*(2), 136–158. https://doi.org/10.1111/j.1559-1816.1994.tb00562.x

Ajzen, I. (1991). Theory of planned behavior. *Organizational Behavior and Human Decision Processes, 50*(2), 179–211. https://doi.org/10.1016/0749-5978(91)90020-T

Anderson, C. A., Lindsay, J. J., & Bushman, B. J. (1999). Research in the psychological laboratory: Truth or triviality? *Current Directions in Psychological Science*, *8*(1), 3–9. https://doi.org/10.1111/1467-8721.00002

Aronson, E. (1999). Dissonance, hypocrisy, and the self-concept. In E. Harmon-Jones & J. Mills (Eds.), *Cognitive dissonance: Progress on a pivotal theory in social psychology* (pp. 103–126). Washington, DC: American Psychological Association.

*Aronson, E., Fried, C., & Stone, J. (1991). Overcoming denial and increasing the intention to use condoms through the induction of hypocrisy. *American Journal of Public Health, 81*(12), 1636–1638. doi:10.2105/AJPH.81.12.1636

Arthur, W., Bennett, W., & Huffcutt, A. I. (2001). *Conducting meta-analysis using SAS*. Mahwah, NJ: Erlbaum.

Barden, J., Rucker, D. D., & Petty, R. E. (2005). 'Saying one thing and doing another': Examining the impact of event order on hypocrisy judgments of others. *Personality and Social Psychology Bulletin, 31*, 1463–1474. doi:10.1177/0146167205276430

Bator, R. J., & Bryan, A. (2007). *Revised hypocrisy manipulation to induce commitment to exercise.* Poster presented at the annual conference of the American Psychological Association, San Francisco, CA.

Biga, A. (2004). *Hypocrisy induction to alter selection decisions among aversive racists: Analyzing the role of external motivation to respond without prejudice* (doctoral dissertation). University of South Florida, Tampa, FL.

Borenstein, M., Hedges, L. V., Higgins, J. P. T., & Rothstein, H. R. (2009). Cumulative meta-analysis. In M. Borenstein, L. V. Hedges, J. P. T. Higgins, & H. R. Rothstein (Eds.), *Introduction to meta-analysis* (pp. 371–376). Chichester, UK: John Wiley & Sons.

Cooper, J., & Fazio, R. H. (1984). A new look at dissonance theory. *Advances in experimental social psychology, 17*, 229–266. https://doi.org/10.1016/S0065-2601(08)60121-5

Cooper, H., Hedges, L. V., & Valentine, J. C. (2009). *The handbook of research synthesis and meta-analysis, 2nd ed*. (H. Cooper, L. V. Hedges, & J. C. Valentine, Eds.). New York, NY: Russell Sage Foundation.

Crowne, D., & Marlowe, D. (1964). *The approval motive: Studies in evaluative dependence.* New York: Wiley.

Desrichard, O., & Monteil, J.-M. (1994). When dissonance is also memory based. *Psychological Reports, 75*(3), 1331–1336. http://dx.doi.org/10.2466/pr0.1994.75.3.1331

*Dickerson, C., Thibodeau, R., Aronson, E., & Miller, D. (1992). Using cognitive dissonance to encourage water conservation. *Journal of Applied Social Psychology, 22*(11), 841-854. doi:10.1111/j.1559-1816.1992.tb00928.x

Dossett, A. P. (2009). *Inducing hypocrisy as a means of mass persuasion* (doctoral dissertation). The Ohio State University, Columbus, OH.

Duval, S., & Tweedie, R. (2000). Trim and fill: A simple funnel-plot–based method of testing and adjusting for publication bias in meta-analysis. *Biometrics*, *56*(2), 455–463. doi:10.1111/j.0006-341X.2000.00455.x

Eitel, P., & Friend, R. (1999). Reducing denial and sexual risk behaviors in college students: A comparison of a cognitive and a motivational approach. *Annals of Behavioral Medicine*, *21*(1), 12–19. https://doi.org/10.1007/BF02895028

Elliot, A., & Devine, P. (1994). On the motivational nature of cognitive dissonance: Dissonance as psychological discomfort. *Journal of Personality and Social Psychology, 67*(3), 382–394. doi:10.1037/0022-3514.67.3.382

Fernández-Dols, J. M., Aguilar, P., Campo, S., Vallacher, R., Janowsky, A., Rabbia, H., Brussino, S., & Lerner, M. J. (2010). Hypocrites or maligned cooperative participants? Experimenter induced normative conflict in zero-sum situations. *Journal of Experimental Social Psychology, 46*(3), 525–530. https://doi.org/10.1016/j.jesp.2010.02.001

Festinger, L. (1957). *A theory of cognitive dissonance*. Stanford, CA: Stanford University Press.

Festinger, L., & Carlsmith, J. M. (1959). Cognitive consequences of forced compliance. *The Journal of Abnormal and Social Psychology, 58*(2), 203–210. http://dx.doi.org/10.1037/h0041593

Field, A. P., & Gillett, R. (2010). How to do a meta-analysis. *British Journal of Mathematical and Statistical Psychology*, *63*(3), 665–694. doi:10.1348/000711010X502733

*Fointiat, V. (2004). 'I know what I have to do, but ...' when hypocrisy leads to behavioral change. *Social Behavior and Personality, 32*(8), 741–746. doi:10.2224/sbp.2004.32.8.741

*Fointiat, V. (2008). Being together in a situation of induced hypocrisy. *Current Research in Social Psychology, 13*(12)*,* 145–153. doi:10.1.1.135.3787

*Fointiat, V., & Grosbras, J. M., (2007). "Dire une chose et en faire une autre": de la déclaration de liberté dans le paradigme de l'hypocrisie induite ["Saying one thing and not doing it": the impact of freedom in the induced hypocrisy paradigm]. *Psychologie Française, 52*(4), 1–14. doi:10.1016/j.psfr.2006.12.005

*Fointiat, V., Morisot, V., & Pakuszewski, M. (2008). Effects of past transgressions in an induced hypocrisy paradigm. *Psychological Reports, 103*(2), 625–633. doi:10.2466/pr0.103.2.625-633

*Fointiat, V., Priolo, D., Saint-Bauzel, R., & Milhabet, I. (2013). Justifier nos transgressions pour réduire notre hypocrisie ? Hypocrisie induite et identification des transgressions [Justifying our counter-normative behaviors. Induced hypocrisy and transgressions identification]. *Revue Internationale de Psychologie Sociale – International Review of Social Psychology, 26*(4), 49–78.

*Fointiat, V., Somat, A., & Grosbras, J.M., (2011). Saying, but not doing: Induced hypocrisy, trivialization, and misattribution. *Social Behavior and Personality, 39*(4), 465–476. doi:10.2224/sbp.2011.39.4.465

Freijy, T., & Kothe, E. J. (2013). Dissonance-based interventions for health behaviour change: A systematic review. *British Journal of Health Psychology*, *18*(2), 310–337. doi:10.1111/bjhp.12035

*Fried, C. B. (1998). Hypocrisy and identification with transgressions: A case of undetected dissonance. *Basic and Applied Social Psychology, 20*(2)*,* 145–154. doi:10.1207/s15324834basp2002_6

*Fried, C. B., & Aronson, E. (1995). Hypocrisy, misattribution, and dissonance reduction. *Personality and Social Psychology Bulletin, 21*(9)*,* 925–933. doi:10.1177/0146167295219007

Gaertner, L., Sedikides, C., Luke, M., O'Mara, E. M., Iuzzini, J., Jackson, L. E., Wu, Q. (2012). A motivational hierarchy within: Primacy of the individual self, relational self, or collective self? *Journal of Experimental Social Psychology, 48*(5), 997–1013. http://doi.org/10.1016/j.jesp.2012.03.009

Goldonowicz, J. M. (2012). *Cognitive dissonance in the classroom: The effects of hypocrisy on academic dishonesty* (master's thesis). University of Central Florida, Orlando, FL.

Grijalva, E., & Zhang, L. (2016). Narcissism and self-insight: A review and meta-analysis of narcissists' self-enhancement tendencies. *Personality and Social Psychology Bulletin*, *42*(1), 3–24. doi:10.1177/0146167215611636

*Hammons, M. E. (2010). *Examining the hypocrisy paradigm as an intervention for modifying high-risk alcohol use behaviors among college students* (doctoral dissertation). University of Central Florida, Orlando, FL.

Harmon-Jones, E. (2000). Cognitive dissonance and experienced negative affect: Evidence that dissonance increases experienced negative affect even in the absence of aversive consequences. *Personality and Social Psychology Bulletin*, *26*(12), 1490-1501.

Harmon-Jones, E., Peterson, H., & Vaughn, K. (2003). The dissonance-inducing effects of an inconsistency between empathy and knowledge of past failures to help: Support for the

action-based model of dissonance. *Basic and Applied Social Psychology, 25,* 69–78. doi:10.1207/S15324834BASP2501_5

Harmon-Jones, E., Harmon-Jones, C., Fearn, M., Sigelman, J. D., & Johnson, P. (2008). Left frontal cortical activation and spreading of alternatives: Tests of the action-based model of dissonance. *Journal of Personality and Social Psychology*, *94*(1), 1–15. https://doi.org/10.1037/0022-3514.94.1.1

Heitland, K., & Bohner, G. (2010). Reducing prejudice via cognitive dissonance: Individual differences in preference for consistency moderate the effects of counter-attitudinal advocacy. *Social Influence*, *5*(3), 164–181. https://doi.org/10.1080/15534510903332261

Henrich, J., Heine, S., & Norenzayan, A. (2010). The weirdest people in the world? *Behavioral and Brain Sciences, 33*(2-3), 61–83. doi:10.1017/S0140525X0999152X

*Kantola, S. J., Syme, G. J., & Campbell, N. A. (1984). Cognitive dissonance and energy conservation. *Journal of Applied Psychology, 69*(3), 416–421. doi:10.1037/00219010.69.3.416

Lammers, J., & Stappel, D. A. (2011). Abstraction increases hypocrisy. *Journal of Experimental Social Psychology, 48*, 475–480.

*Liégeois, A. (2005). *La cognition sociale à l'aide de la promotion de la consommation durable: Les cas de l'automaticité comportementale et de l'hypocrisie induite [Social cognition helping the promotion of sustainable consumption: The case of behavioral automaticity and induced hypocrisy]* (doctoral dissertation). Louvain-la-Neuve: Université catholique de Louvain, Louvain-la-Neuve, BE.

Lipsey, M. W., & Wilson, D. B. (2001). *Practical meta-analysis.* Thousand Oaks, CA: Sage.

*Lopez, A., Lassarre, D., & Rateau, P. (2011). Dissonance et engagement: Comparaison de deux voies d'intervention visant à réduire les ressources énergétiques au sein d'une collectivité territoriale [Dissonance and commitment: Comparison of two ways of intervention to reduce energy resources within a territorial administration]. *Pratiques Psychologiques, 17*(3), 263–284. doi:10.1016/j.prps.2010.02.003

Martinie, A. M., & Fointiat, V. (2010). Enfreindre sans craindre: Tolérance à la dissonance dans le paradigme de l'hypocrisie induite [Breaking the rules, it doesn't matter: Tolerance to dissonance in induced-hypocrisy paradigm]. *Psychologie Française, 55*(1), 41–47. doi:10.1016/j.psfr.2010.02.003

Martinie, M. A., Olive, T., Milland, L., Joule, R. V., & Capa, R. L. (2013). Evidence that dissonance arousal is initially undifferentiated and only later labeled as negative. *Journal of Experimental Social Psychology*, *49*(4), 767-770. doi.org/10.1016/j.jesp.2013.03.003

Matz, C. D., & Wood, W. (2005). Cognitive dissonance in group: The consequences of disagreement. *Journal of Personality and Social Psychology, 88*(1), 22–37. doi:10.1037/0022-3514.88.1.22

McConnell, A. R., & Brown, C. M. (2010). Dissonance averted: Self-concept organization moderates the effect of hypocrisy on attitude change. *Journal of Experimental Social Psychology*, *46*(2), 361–366. doi:10.1016/j.jesp.2009.10.019

McGrath, A. L. (2018). Encouraging ecological behaviour through induced hypocrisy and inconsistency: A commentary. *Journal of Environmental Psychology*, *56*, 1-2. doi.org/10.1016/j.jenvp.2018.01.005

*McGrath, A., & Ward, M. (2014, February). *Reducing cognitive dissonance after an act of hypocrisy: A comparison of dissonance reduction modes*. Paper presented at the 15th

Annual Meeting of The Society for Personality and Social Psychology, Austin, Texas, February 13–15.

*McKimmie, B. M., Terry, D. J., Hogg, M. A., Manstead, A. S. R., Spears, R., & Doosje, B. (2003). I'm a hypocrite, but so is everyone else: Group support and the reduction of cognitive dissonance. *Group Dynamics: Theory, Research, and Practice, 7*(3)*,* 214–224. doi:10.1037/1089-2699.7.3.214

*Morrongiello, B. A., & Mark, L. (2008). Practice what you preach: Induced hypocrisy as an intervention strategy to reduce children's intentions to risk take on playgrounds. *Journal of Pediatric Psychology, 33*(10), 1117–1128. doi:10.1093/jpepsy/jsn011

*Pelt, A. (2016). *Pourquoi ? Comment faire ? De la nature du comportement prosocial dans l'hypocrisie induite ? [Why? How? Prosocial behavior nature in the induced hypocrisy]* (doctoral dissertation). Université de Lorraine, Metz, FR.

Peterson, A. A., Haynes, G. A., & Olson, J. M. (2008). Self-esteem differences in the effects of hypocrisy induction on behavioral intentions in the health domain. *Journal of Personality, 76*(2), 305–322. doi:10.1111/j.1467-6494.2007.00487.x

*Priolo, D., & Liégeois, A. (2008). Prôner une norme et la transgresser: Le rôle des normes sociales dans le paradigme de l'hypocrisie induite [The role of social norms in the induced hypocrisy paradigm]. *Cahiers Internationaux de Psychologie Sociale*, *79*(3), 37–50. doi:10.3917/cips.079.0019

*Priolo, D., Milhabet, I., Codou, O., Fointiat, V., Le Barbenchon, E., & Gabarrot, F. (2016). Encouraging ecological behaviour through induced hypocrisy and inconsistency. *Journal of Environmental Psychology, 47,* 166–180. doi:10.1016/j.jenvp.2016.06.001

Quirin, M., Kazén, M., & Kuhl, J. (2009). When nonsense sounds happy or helpless: The Implicit Positive and Negative Affect Test (IPANAT). *Journal of Personality and Social psychology*, *97*(3), 500–516. http://dx.doi.org/10.1037/a0016063

Rhodes, R. E., & Dickau, L. (2012). Experimental evidence for the intention-behavior relationship in the physical activity domain: A meta-analysis. *Health Psychology*, *31*(6), 724–727. http://dx.doi.org/10.1037/a0027290

*Rubens, L. (2011). *Être engagé, informé ou hypocrite: Quels leviers pour favoriser les comportements pro-environnementaux?[Being committed, informed or hypocritical: How to trigger action to promote pro-environmental behavior?]* Sarrebruck, DE: Éditions Universitaires Européennes.

*Rubens, L., Gosling, P., Bonaiuto, M., Brisbois, X., & Moch, A. (2015). Being a hypocrite or committed while I am shopping? A comparison of the impact of two interventions on environmentally friendly behavior. *Environment and Behavior, 47*(1)*,* 3–16. doi:10.1177/0013916513482838

Schimmack, U. (2016). The replicability-index: Quantifying statistical research integrity. Retrieved from https://wordpress.com/post/replication-index.wordpress.com/920

Sears, D. O. (1986). College sophomores in the laboratory: Influences of a narrow data base on social psychology's view of human nature. *Journal of Personality and Social Psychology, 51*(3), 515–530.

Sedikides, C., Gaertner, L., Luke, M. A., O'Mara, E. M., & Gebauer, J. E. (2013). A three-tier hierarchy of self-potency : Individual self, relational self, collective self. In M. P. Zanna & J. M. Olson (Eds.), *Advances in Experimental Social Psychology* (Vol. 48, pp. 235–295). London: Academic Press.

*Sénémeaud, C., Mange, J., Fointiat, V., & Somat, A. (2014). Being hypocritical disturbs some people more than others: How individual differences in preference for consistency moderate the behavioral effects of the induced-hypocrisy paradigm. *Social Influence, 9*(2), 133–148. doi:10.1080/15534510.2013.791235

Simonsohn, U., Nelson, L. D., & Simmons, J. P. (2014). P-curve: A key to the file drawer. *Journal of Experimental Psychology: General*, *143*(2), 534–547. doi:10.1037/a0033242

Simonsohn, U., Simmons, J. P., & Nelson, L. D. (2015). Better p-curves: Making p-curve analysis more robust to errors, fraud, and ambitious p-hacking, a reply to Ulrich and Miller (2015). *Journal of Experimental Psychology: General, 144*(6), 1146–1152. http://dx.doi.org/10.1037/xge0000104

*Son Hing, L. S., Li, W., & Zanna, M. P. (2002). Inducing hypocrisy to reduce prejudicial responses among aversive racists. *Journal of Experimental Social Psychology, 38*(1), 71–78. doi:10.1006/jesp.2001.1484

*Stone, J., Aronson, E., Crain, A. L., Winslow, M. P., & Fried, C. B. (1994). Inducing hypocrisy as a means of encouraging young adults to use condoms. *Personality and Social Psychology Bulletin, 20*(1)*,* 116–128. doi:10.1177/0146167294201012

Stone, J., & Fernandez, N. (2008). To practice what we preach: The use of hypocrisy and cognitive dissonance to motivate behavior change. *Social and Personality Psychology Compass, 2*(2)*,* 1024–1051. doi:10.1111/j.1751-9004.2008.00088.x

Stone, J., & Fernandez, N. (2011). When thinking about less failure causes more dissonance: The effect of elaboration and recall on behavior change following hypocrisy. *Social Influence, 6*(4), 199–211. doi:10.1080/15534510.2011.618368

Stone, J., & Focella, E. (2011). Hypocrisy, dissonance and the self-regulation processes that improve health. *Self and Identity, 10*(3)*,* 295–303. doi:10.1080/15298868.2010.538550

*Stone, J., Wiegand, A. W., Cooper, J., & Aronson, E. (1997). When exemplification fails: Hypocrisy and the motive for self-integrity. *Journal of Personality and Social Psychology, 72*(1)*,* 54–65. doi:10.1037/0022-3514.72.1.54

Sweeney, A. M., & Moyer, A. (2015). Self-affirmation and responses to health messages: A meta-analysis on intentions and behavior. *Health Psychology, 34*(2), 149–159. doi:10.1037/hea0000110

Takaku, S. (2001). The effects of apology and perspective taking on interpersonal forgiveness: Introducing a dissonance-attribution model of interpersonal forgiveness. *Journal of Social Psychology*, *141*(4), 494–508. doi:10.1080/00224540109600567

Takaku, S., Weiner, B., & Ohbuchi, K. (2001). A cross-cultural examination of the effects of apology and perspective taking on forgiveness. *Journal of Language and Social Psychology, 20*(1-2)*,* 144–167. doi:10.1177/0261927X01020001007

Thompson, S. C., Kyle, D., Swan, J., Thomas, C., & Vrungos, S. (2002). Increasing condom use by undermining perceived invulnerability to HIV. *AIDS Education and Prevention*, *14*(6), 505–514. https://doi.org/10.1521/aeap.14.8.505.24115

Trope, Y., & Liberman, N. (2010). Construal-level theory of psychological distance. *Psychological Review*, *117*(2), 440–463. http://dx.doi.org/10.1037

Vevea, J. L., & Woods, C. M. (2005). Publication bias in research synthesis: Sensitivity analysis using a priori weight functions. *Psychological Methods, 10*(4), 428–443. doi:10.1037/1082-989X.10.4.428

Viechtbauer, W. (2010). Conducting meta-analyses in R with the metafor package. *Journal of Statistical Software, 36*(3), 1–48.

Webb, T. L., & Sheeran, P. (2006). Does changing behavioral intentions engender behavior change? A meta-analysis of the experimental evidence. *Psychological Bulletin, 132*(2), 249–268. doi:10.1037/0033-2909.132.2.249

*Yousaf, O., & Gobet, F. (2013). The emotional and attitudinal consequences of religious hypocrisy: Experimental evidence using a cognitive dissonance paradigm. *The Journal of Social Psychology, 153*(6), 667–686. doi:10.1080/00224545.2013.814620

Zanna, M. P., & Cooper, J. (1976). Dissonance and the attribution process. In J. H. Harvey, W. J. Ickes, & R. F. Kidd (Eds.), *New directions in attribution research* (Vol. 1, pp. 199–217). Hillsdale, NJ: Erlbaum.

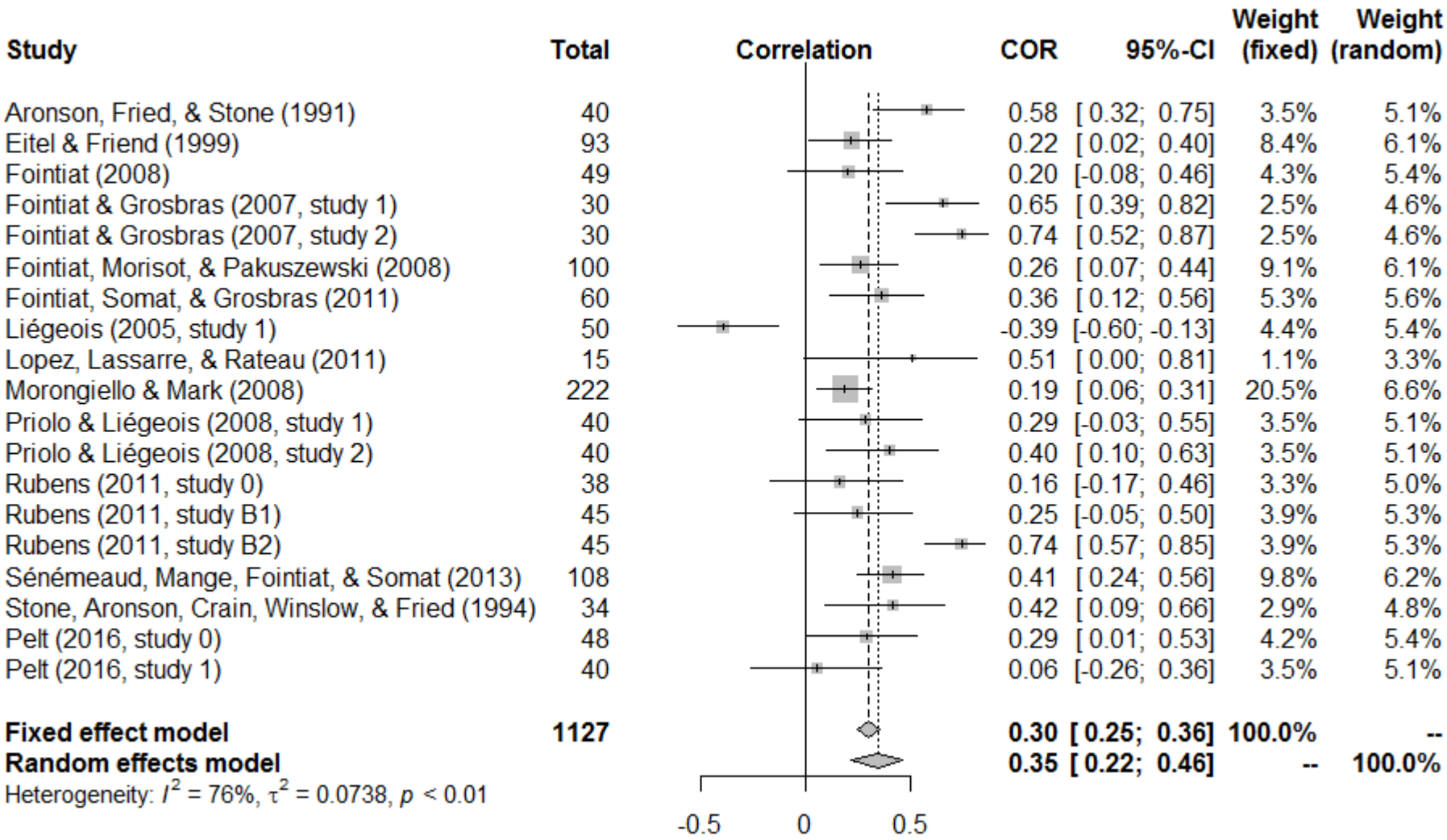


Figure 1. The forest plot of included effect sizes of hypocrisy vs. control on intention; Total = sample sizes; COR = coefficient correlation

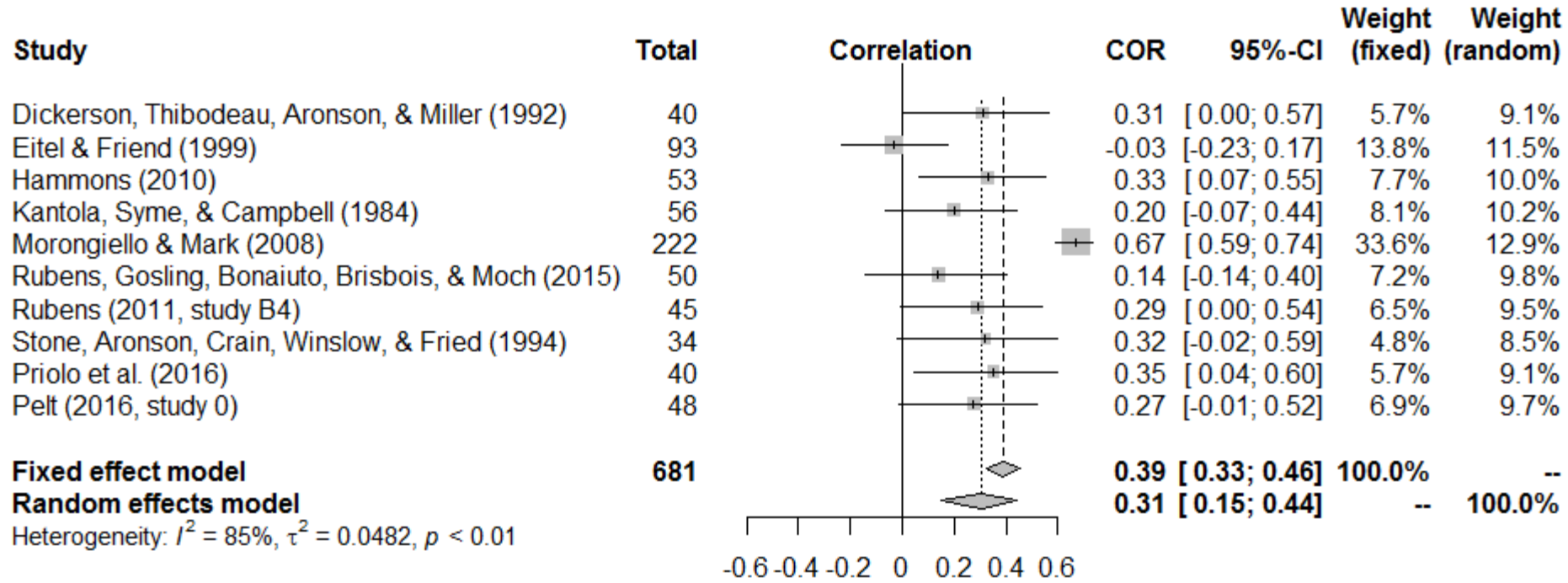


Figure 2. The forest plot of included effect sizes of hypocrisy vs. control on behavior; Total = sample sizes; COR = coefficient of correlation

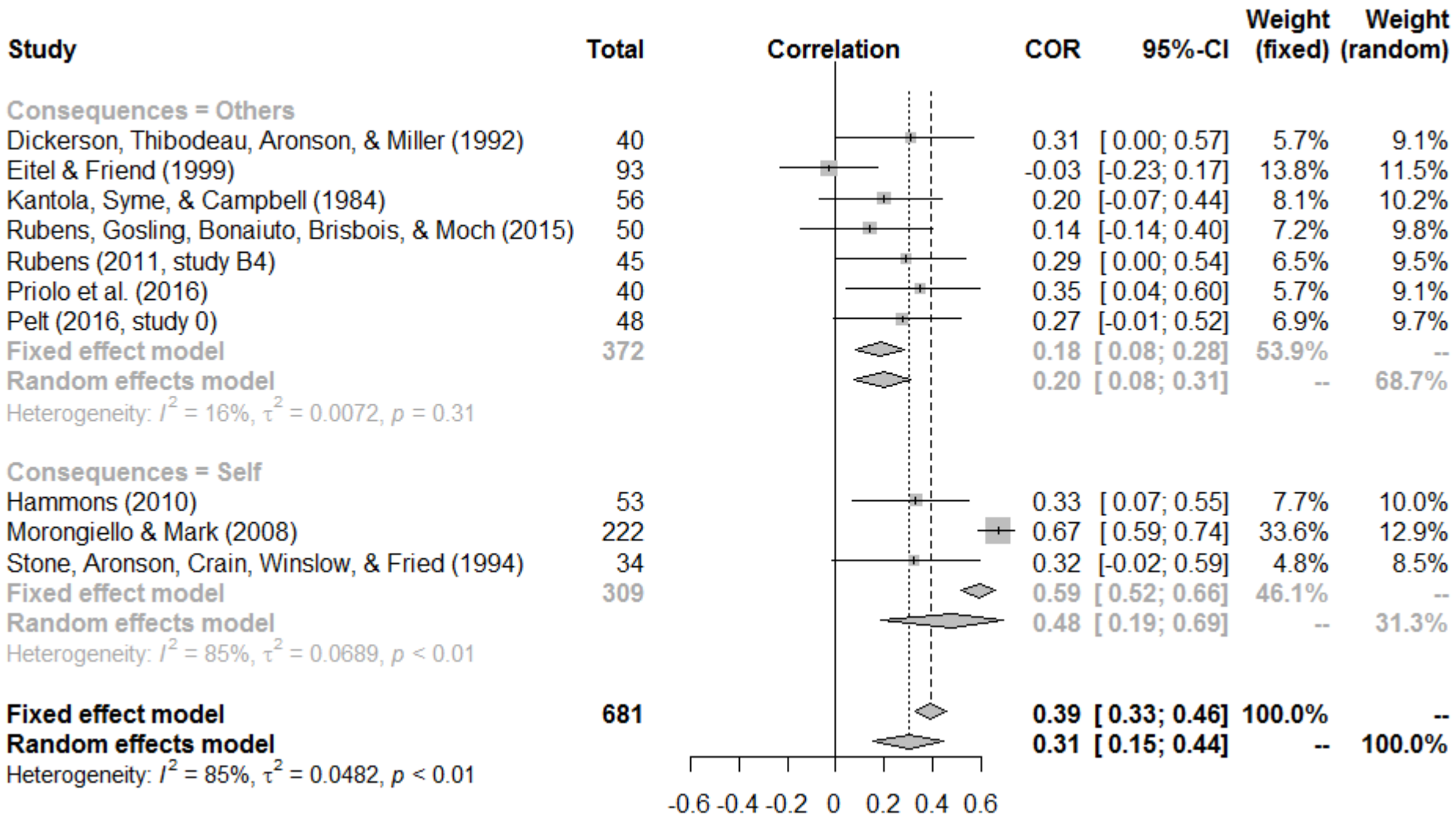


Figure 3. The forest plot of effect sizes of hypocrisy vs control on behavior separating studies by the moderator "Consequences"; Total = sample sizes;

COR = coefficient of correlation

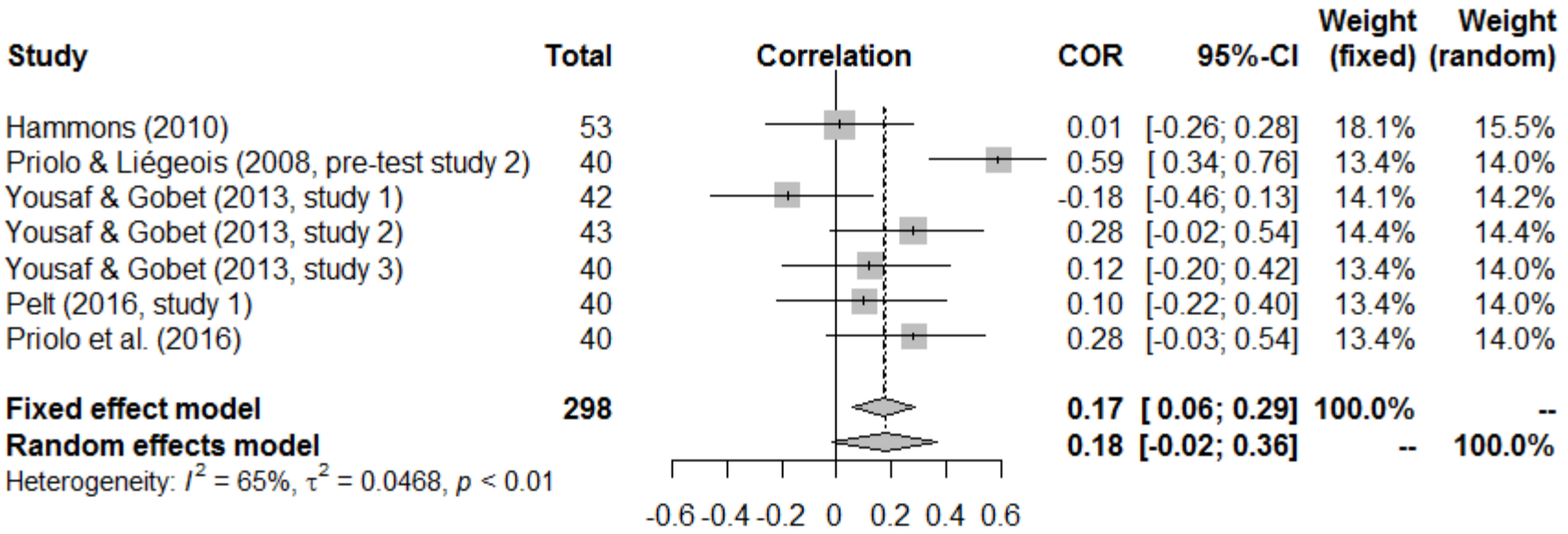


Figure 4. The forest plot of included effect sizes of hypocrisy vs. control on psychological discomfort; Total = sample sizes; COR = coefficient of correlation

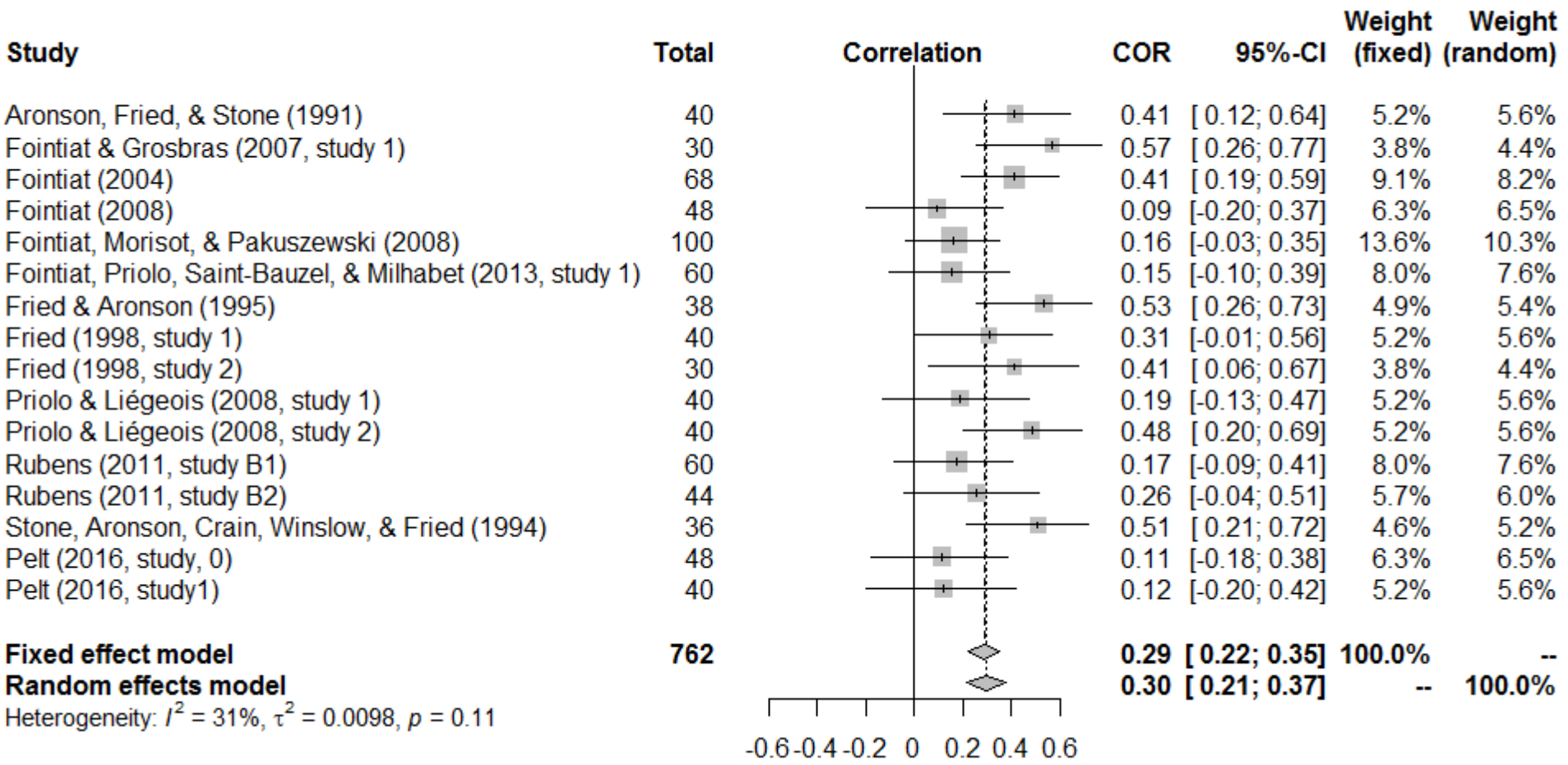


Figure 5. The forest plot of included effect sizes of hypocrisy vs. saliency of the normative behavior-only on intention; Total = sample sizes; COR = coefficient of correlation

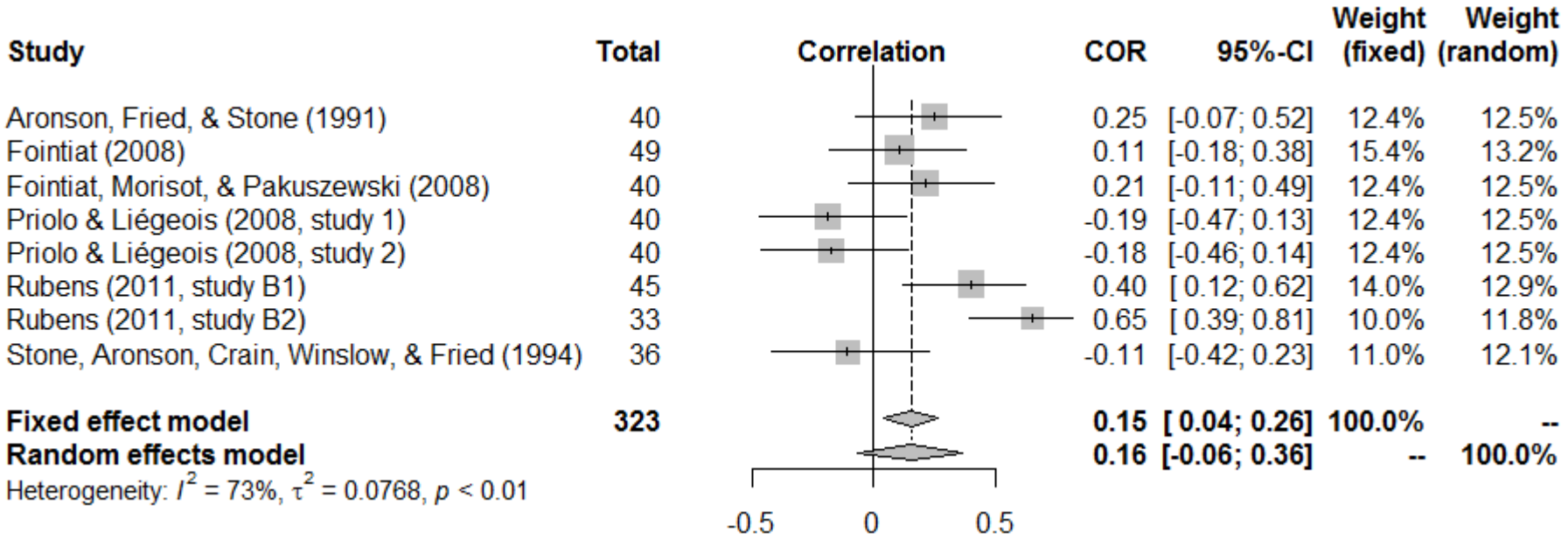


Figure 6. The forest plot of included effect sizes of saliency of the normative behavior-only vs. control on intention; Total = sample sizes; COR = coefficient of correlation

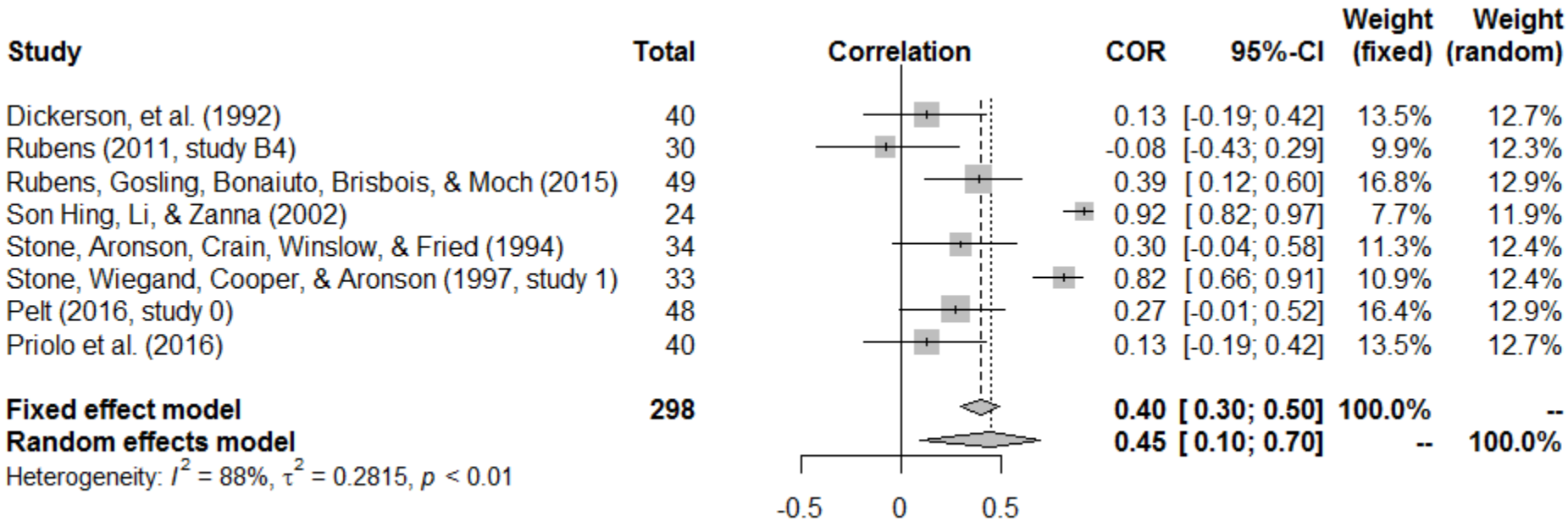


Figure 7. The forest plot of included effect sizes of hypocrisy vs. saliency of the normative behavior-only on behavior; Total = sample sizes; COR = coefficient of correlation of correlation

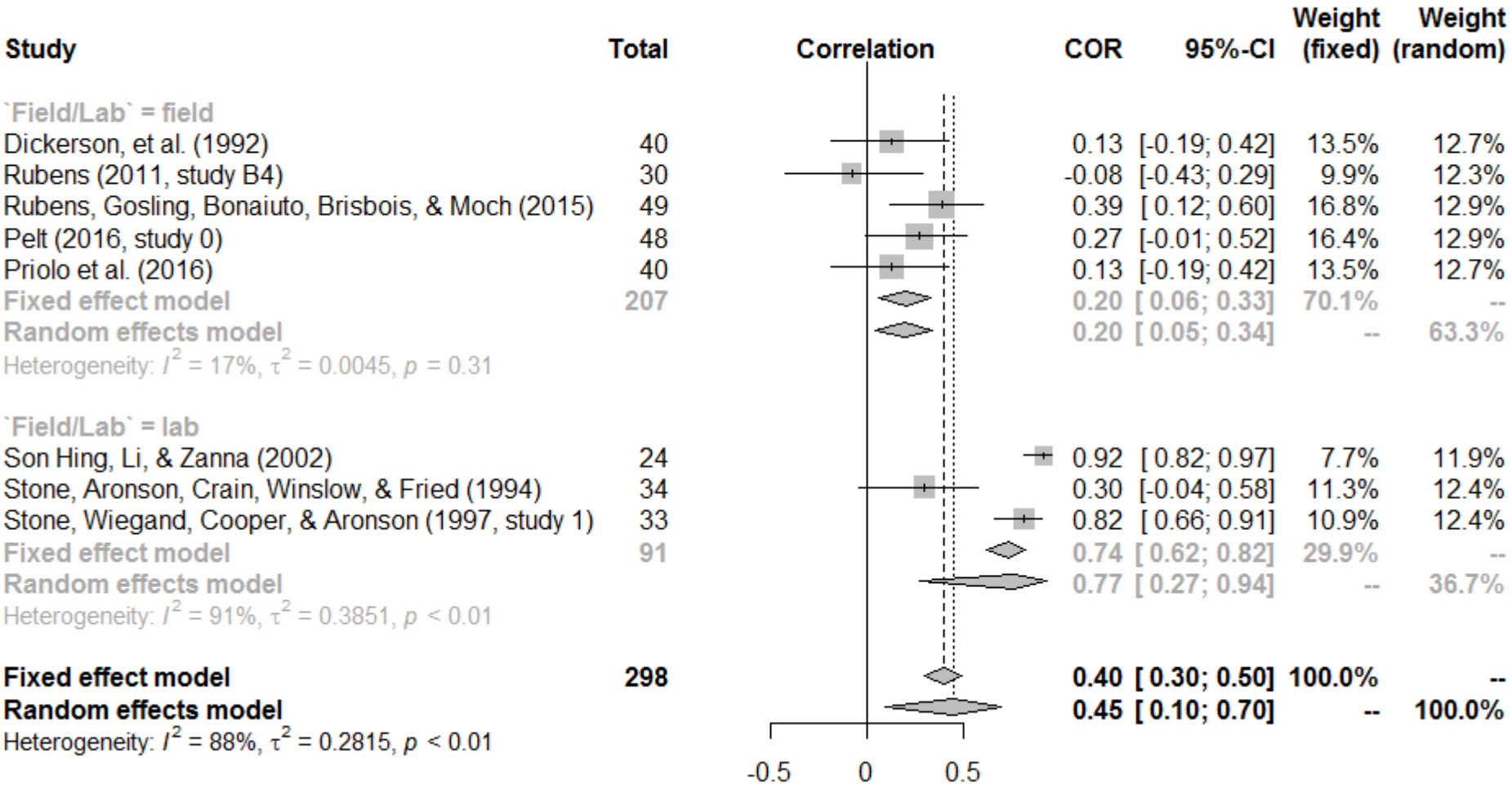


Figure 8. The forest plot of effect sizes of hypocrisy vs saliency of the normative behavior-only on behavior separating studies by the moderator "Study type"; Total = sample sizes; COR = coefficient of correlation

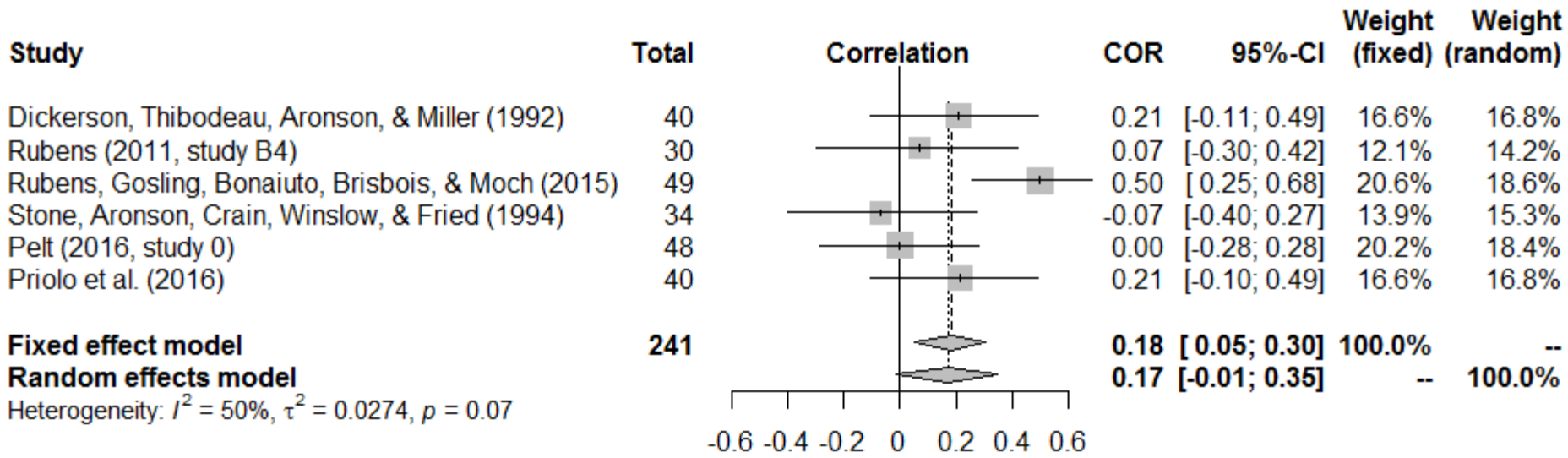


Figure 9. The forest plot of included effect sizes of saliency of the normative behavior-only vs. control on behavior; Total = sample sizes; COR = coefficient of correlation

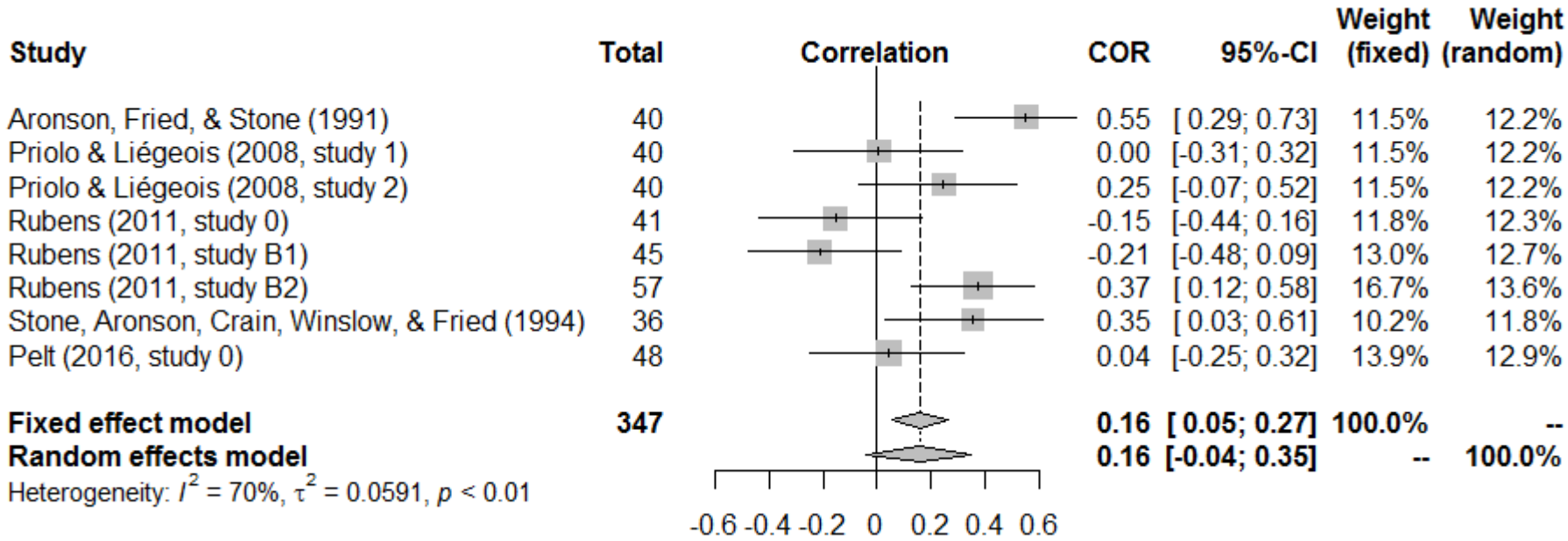


Figure 10. The forest plot of included effect sizes of hypocrisy vs. transgressions-only on intention; Total = sample sizes; COR = coefficient of correlation

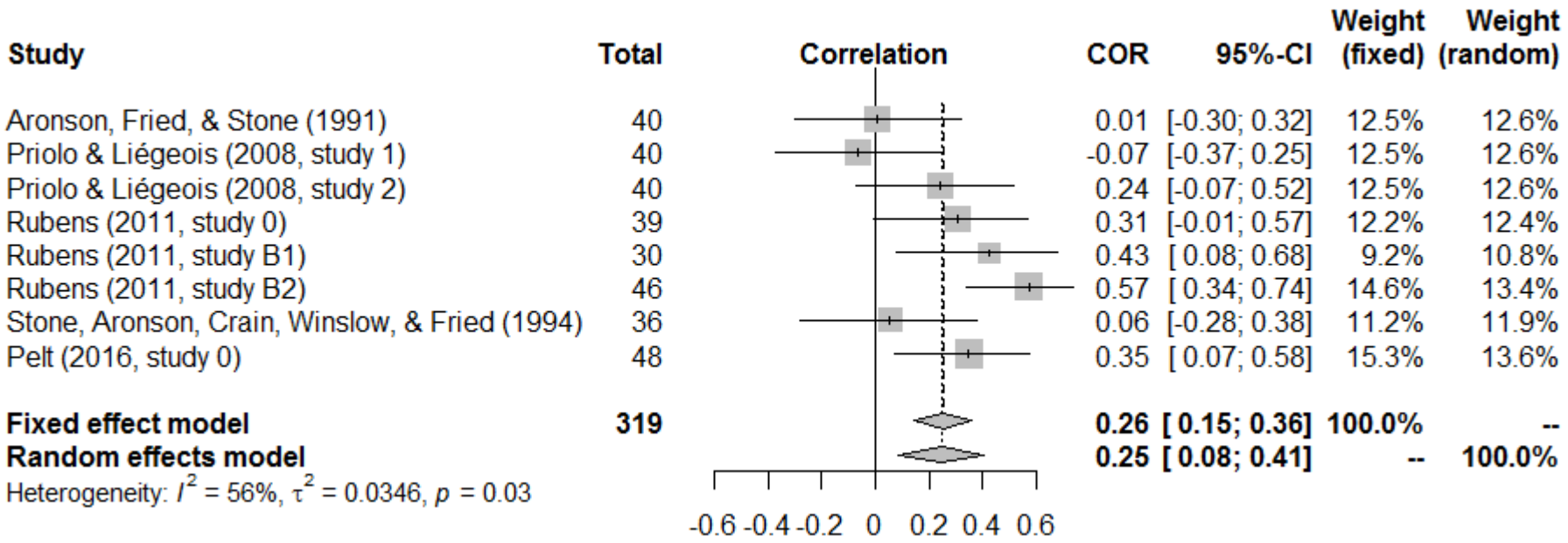


Figure 11. The forest plot of included effect sizes of transgressions-only vs. control on intention; Total = sample sizes; COR = coefficient of correlation

Tables

Table 1

Excluded Studies

References
Aitken, Mcmahon, Wearing, & Finlayson (1994)
Barden, Rucker, & Petty (2005)
Bator & Bryan (2007)
Biga (2004)
Desrichard & Monteil (1994)
Dossette (2009)
Fernandez-Dols, Aguilar, Campo, Vallacher, Janowsky, Rabbia, Brussino, & Lerner (2010)
Fointiat, Priolo, Saint-Bauzel, & Milhabet (2013,study 2)
Freijy & Kothe (2013)
Goldonowicz (2012)
Harmon-Jones, Peterson, & Vaughn (2003)
Heitland & Bohner (2010)
Lammers & Stapel (2011)
Martinie & Fointiat (2010)
Matz & Wood (2005)
McConnell & Brown (2010)
McGrath & Ward (2014, study 2)
McKimmie, Terry, Hogg, Manstead, Spears, & Doosje (2003, principal study)
Pelt (2016, studies 2 & 3)
Peterson, Haynes & Olson (2008)
Stone & Fernandez (2011)
Stone & Foccella (2011)
Stone, Wiegand, Cooper, & Aronson (1997, study 2)
Takaku (2001)
Takaku, Weiner, & Ohbuchi (2001)
Thompson, Kyle, Swan, Thomas, & Vrungos (2002)
Vinski & Tyron (2009)

Note: Studies are listed by alphabetical order of author.

Table 2

Summary of All Studies Included in the Meta-Analysis

Study	Measures	Experimental group	Type of participants	Types of studies	Nature of consequence	Type of publication
Aronson, Fried, & Stone (1991)	INT	CTR, SNB, TRANS	STD	LAB	SLF	6,55
Dickerson, Thibodeau, Aronson, & Miller (1992)	BHV	CTR, SNB, TRANS	STD	FLD	OTH	2,79
Eitel & Friend (1999)	BHV INT	CTR	STD	LAB	OTH	6,14
Fointiat & Grosbras (2007, study 1)	INT	CTR, SNB	STD	LAB	OTH	2,37
Fointiat & Grosbras (2007, study 2)	INT	CTR	STD	LAB	OTH	2,37
Fointiat (2004)	INT	SNB	N-STD	FLD	OTH	2
Fointiat (2008)	INT	CTR, SNB	STD	LAB	OTH	2
Fointiat, Morisot, & Pakuszewski (2008)	INT	CTR, SNB	STD	LAB	OTH	2,34
Fointiat, Priolo, Saint-Bauzel, & Milhabet (2013, study 1)	INT DCF	SNB	STD	LAB	OTH	2
Fointiat, Somat, & Grosbras (2011)	INT	CTR	STD	LAB	OTH	2,31
Fried & Aronson (1995)	INT	SNB	STD	LAB	OTH	4,99
Fried (1998, study 1)	INT	SNB	STD	LAB	OTH	3,16
Fried (1998, study 2)	INT	SNB	STD	LAB	OTH	3,16
Hammons (2010)	BHV DCF	CTR	STD	LAB	SLF	1
Kantola, Syme, & Campbell (1984)	BHV	CTR	N-STD	FLD	OTH	6,79

Table 2. continued

Liégeois (2005, study 1)	INT	CTR	STD	LAB	OTH	1
Lopez, Lassare, & Rateau (2011)	INT	CTR	N-STD	FLD	OTH	2,33
McGrath & Ward (2014, study 1)	DCF	SNB	STD	LAB	SLF	1
McKimmie, Terry, Hogg, Manstead, Spears, & Doosje (2003, pilot study)	DCF	SNB	STD	LAB	OTH	3,173
Morongiello & Mark (2008)	BHV INT	CTR	N-STD	FLD	SLF	4,28
Pelt (2016, study 0)	BHV	CTR, SNB, TRANS	N-STD	FLD	OTH	1
Pelt (2016, study 1)	BHV INT DCF	CTR	STD	LAB	OTH	1
Priolo (2016, pre-test study)	BHV DCF	CTR, SNB, TRANS	STD	FLD	OTH	4,4
Priolo & Liégeois (2008, study 1)	INT	CTR, SNB, TRANS	STD	FLD	SLF	2
Priolo & Liégeois (2008, study 2)	INT	CTR, SNB, TRANS	N-STD	FLD	SLF	2
Priolo & Liégeois (2008, pretest study 2)	DCF	CTR	STD	LAB	SLF	2
Rubens (2011, study 0)	INT	TRANS	STD	LAB	OTH	1
Rubens (2011, study B1)	INT	CTR, SNB, TRANS	N-STD	FLD	OTH	1
Rubens (2011, study B2)	INT	CTR, SNB, TRANS	N-STD	FLD	OTH	1
Rubens (2011, study B4)	BHV	CTR, SNB, TRANS	N-STD	FLD	OTH	1

Table 2. continued						
Rubens, Gosling, Bonaiuto, Brisbois, & Moch (2015)	BHV	CTR SNB	N-STD	FLD	OTH	4,61
Sénémeaud, Mange, Fointiat, & Somat (2013)	INT	CTR	N-STD	FLD	SLF	2,98
Son Hing, Li, & Zanna (2002)	BHV	SNB	STD	LAB	OTH	4,5
Stone, Aronson, Crain, Winslow, & Fried (1994)	BHV INT	CTR SNB, TRANS	STD	LAB	SLF	4,9
Stone, Wiegand, Cooper, & Aronson (1997, study 1)	BHV	SNB, TRANS	STD	LAB	SLF	6,73
Yousaf & Gobet (2013, study 1)	DCF	CTR	STD	LAB	SLF	3,38
Yousaf & Gobet (2013, study 2)	DCF	CTR	STD	LAB	SLF	3,38
Yousaf & Gobet (2013, study 3)	DCF	CTR	STD	LAB	SLF	3,38

Note: Studies are listed by alphabetical order of author; N: number of participants; Measure(s): behavioral (BHV), intention (INT) and discomfort (DCF); Experimental group: control (CTR), normative saliency (SNB), transgression only (TRANS); Type of participants: student (STD) vs. non-student (N-STD); Type of studies: field (FLD) vs. laboratory (LAB); Nature of consequence: self-targeted (SFL) vs. others-targeted (OTH); Type of publication: 1 for unpublished studies, 2 + impact factor for published studies

Table 3

Moderation of Hypocrisy (vs. Control) Effect on Intention. Results of the Simple Meta-Regression Analysis per Moderator

Variables	Intercept	B	SE	z	P	τ^2	I^2	R^2
Participants (students vs. non-students)	0.32	0.10	0.14	0.77	.44	0.06	77.7%	<.0001
Type of studies (field vs. laboratory)	0.32	0.09	0.14	0.66	.50	0.06	77.1%	<.0001
Consequences (self vs. others)	0.37	-0.01	0,14	-0,14	.89	0.06	77.38%	<.0001
Type of publication	0.28	0.03	0.04	0.76	.44	0.06	77.31%	<.0001

Note: We used mixed effects model.

Table 4

Moderation of Hypocrisy (vs. Control) Effect on Behavior. Results of the Simple Meta-Regression Analysis per Moderator

Variables	Intercept	b	SE	z	p	τ^2	I^2	R^2
Participants (students vs. non-students)	0.26	0.10	0.20	0.55	.58	0.08	81.34%	.19
Type of studies (field vs. laboratory)	0.20	0.15	0.21	0.73	.46	0.08	81.54%	.19
Consequences (self vs. others)	0.55	-0.34	0.15	-2.27	.02	0.03	60.53%	.69
Type of publication	0.41	-0.03	0.06	-0.44	.65	0.10	86.31%	00

Note: We used mixed effects model.

Table 5

Moderation of Hypocrisy (vs. Only-SNB) Effect on Intention. Results of the Simple Meta-Regression Analysis per Moderator

Variables	Intercept	b	SE	z	p	τ^2	I^2	R^2
Participants (students vs. non-students)	0.31	0.01	0.10	-0.10	.92	0.01	36.01%	.00
Type of studies (field vs. laboratory)	0.32	-.03	0.10	-.38	.70	0.01	35.93%	.00
Consequences (self vs. others)	0.43	0.16	0.10	-1.45	.15	0.00	25.65%	.25
Type of publication	0.12	0.07	0.02	2.78	.03	0.00	11.11%	.73

Note: We used mixed effects model.

Table 6

Moderation of Hypocrisy (vs. Only-SNB) Effect on Behavior. Results of the Simple Meta-Regression Analysis per Moderator

Variables	Intercept	b	SE	z	p	τ^2	I^2	R^2
Participants (students vs. non-students)	0.64	-0.65	0.37	-1.16	.24	0.23	88.75%	.00
Type of studies (field vs. laboratory)	1	-.82	0.27	-3.04	.003	0.10	78.2%	.53
Type of publication	-0.15	0.16	0.08	1.98	.05	0.17	84.88%	.25

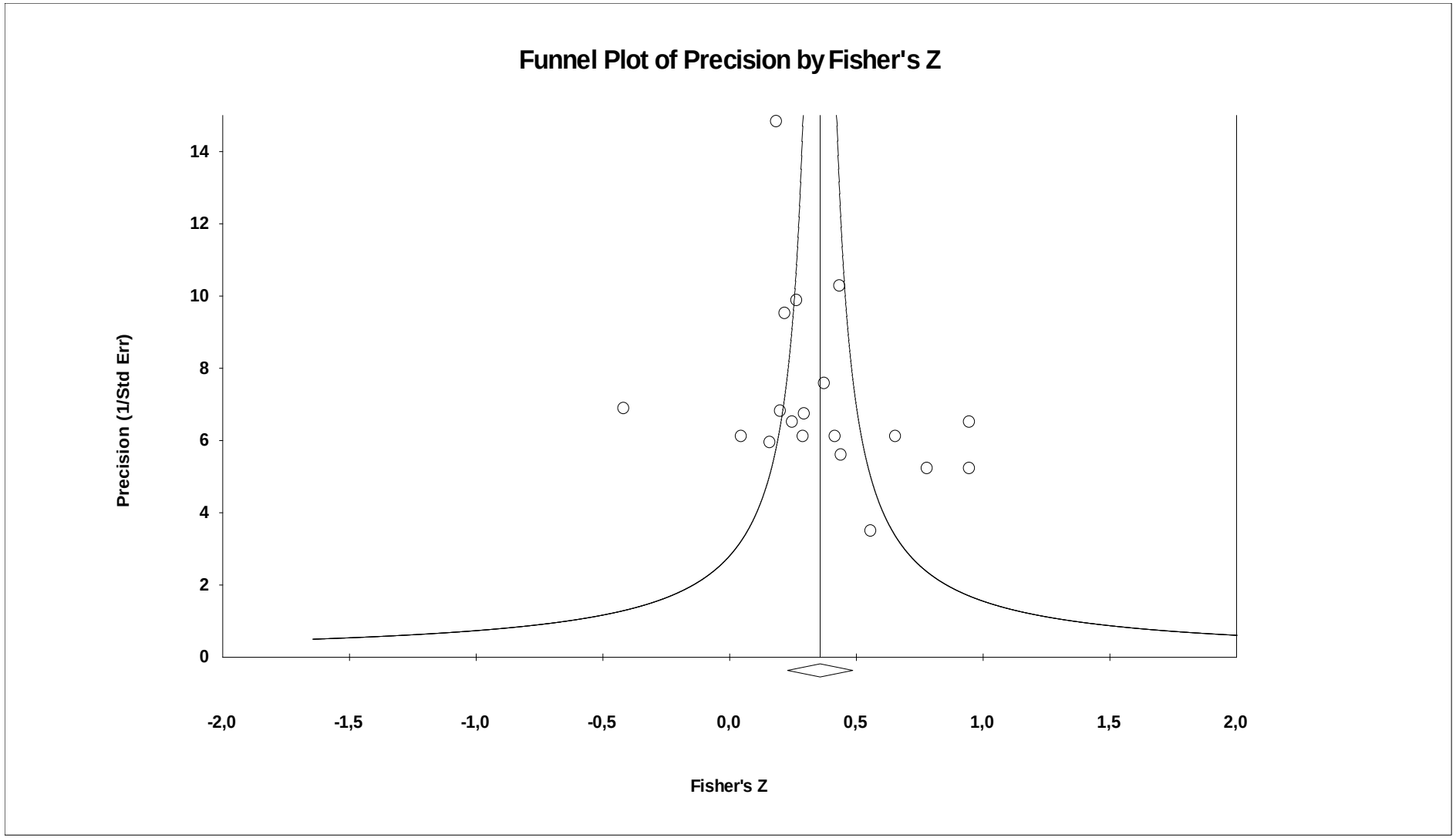
Note: We used mixed effects model.

Table 7

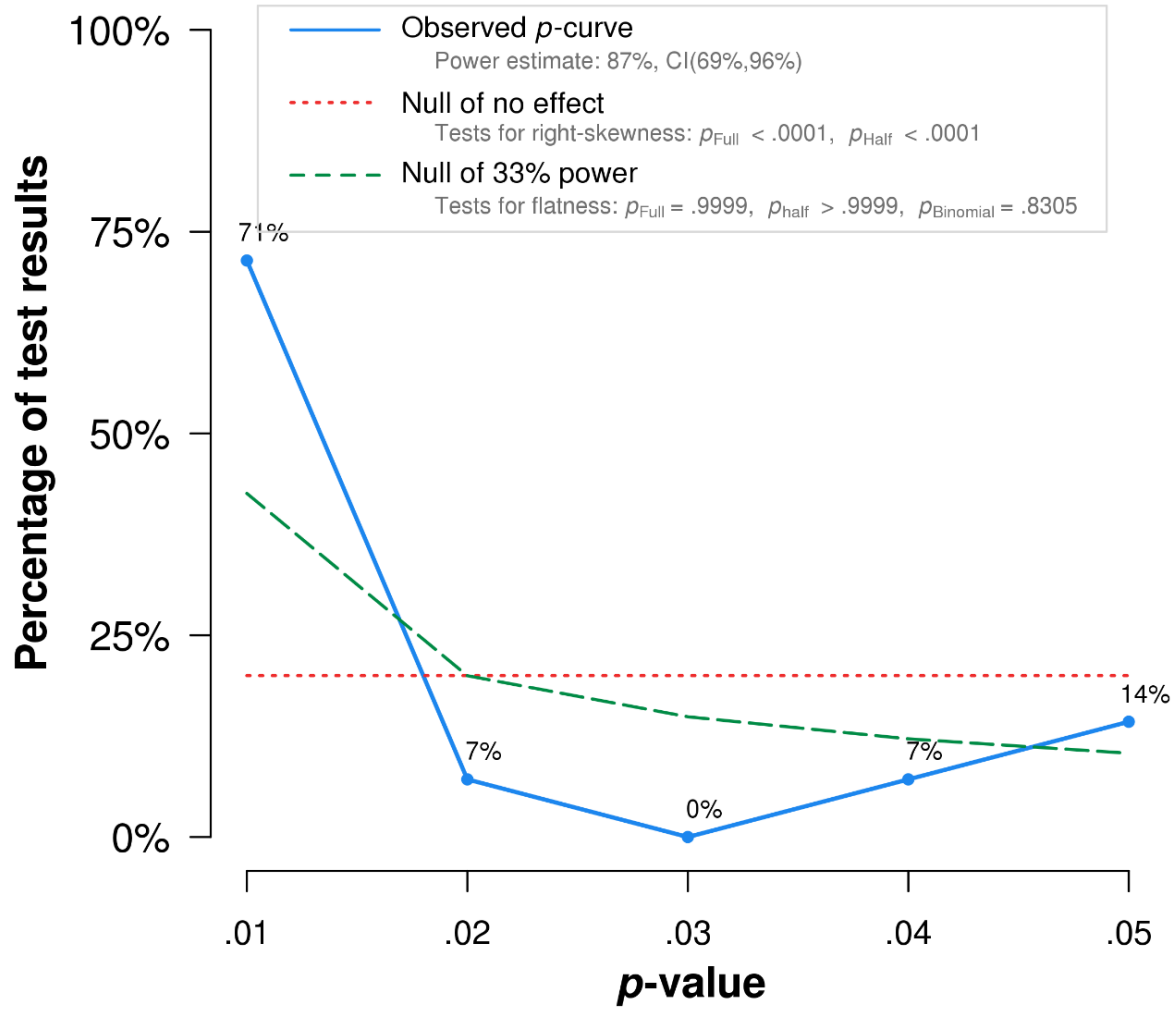
Synthesis of all effect sizes

Type of comparison	Hypocrisy vs. Control DV: Intention k = 19 N = 1127	Hypocrisy vs. Control DV: Behavior k = 10 N = 681	Hypocrisy vs. Control DV: Discomfort k = 7 N = 298	Hypocrisy vs. SNB DV: Intention k = 16 N = 762	Hypocrisy vs. SNB DV: Behavior k = 8 N = 298	SNB vs. Control DV: Intention k = 8 N = 323	SNB vs. Control DV: Behavior k = 6 N = 241	Mindfulness vs. Control DV: Intention k = 8 N = 319	Mindfulness vs. Hypocrisy DV: Intention k = 8 N = 347
Overall effect corrected	r = .35**	r = .30**	r = .18	r = .25**	r = .45**	r = .16	r = .17	r = .25**	r = .18
Participants Students Non-student	NM	NM	NT	NM	NT	NT	NT	NT	NT
Consequences Self Others	NM	 r = .48* r = .19*	NT	NM	NT	NT	NT	NT	NT
Studies Field Lab	NM	NM	NT	NM	 r = .20* r = .77**	NT	NT	NT	NT
Type of publications	NM	NM	NT	b = .07*	b = .16**	NT	NT	NT	NT

Note: DV = Dependent Variable; SNB = Salience of the normative behavior; NM = No moderation; NT = Not Tested; * p < .05; ** p < .01

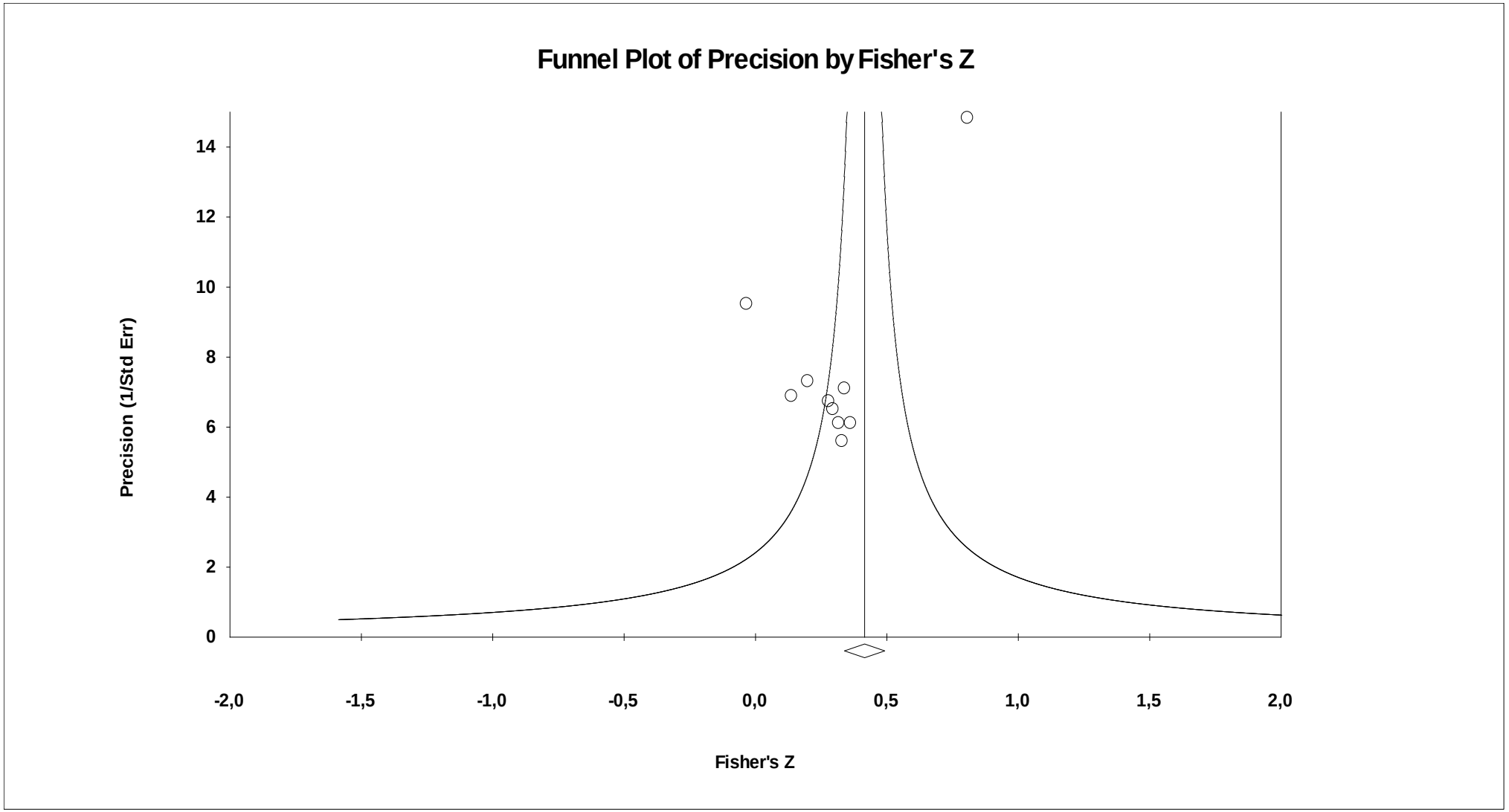


Additional figure A. Funnel plot of studies of comparing hypocrisy vs. control conditions on intention

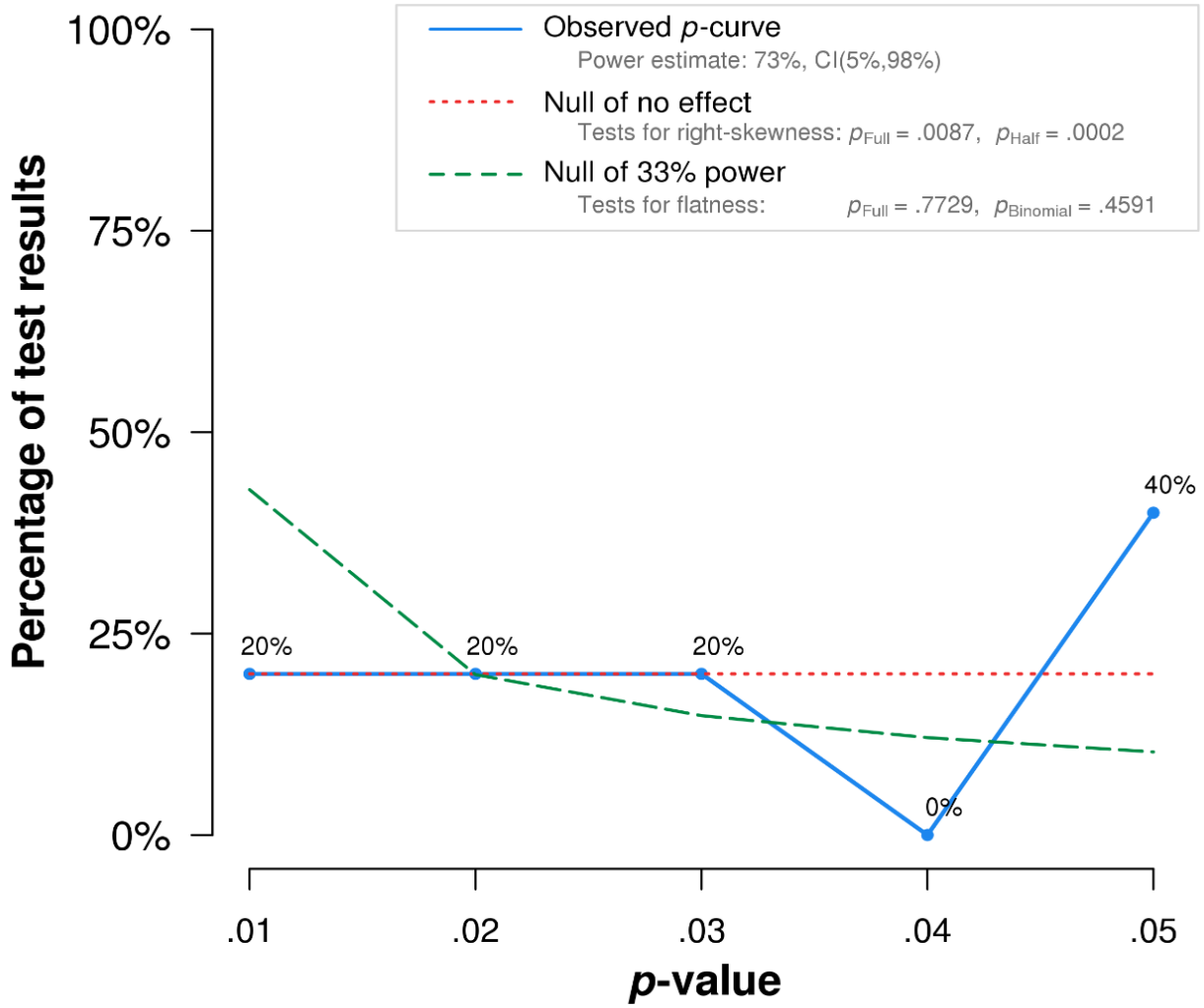


Note: The observed *p*-curve includes 14 statistically significant ($p < .05$) results, of which 11 are $p < .025$.
There were 5 additional results entered but excluded from *p*-curve because they were $p > .05$.

Additional figure B. p-curve of studies of comparing hypocrisy vs. control conditions on intention

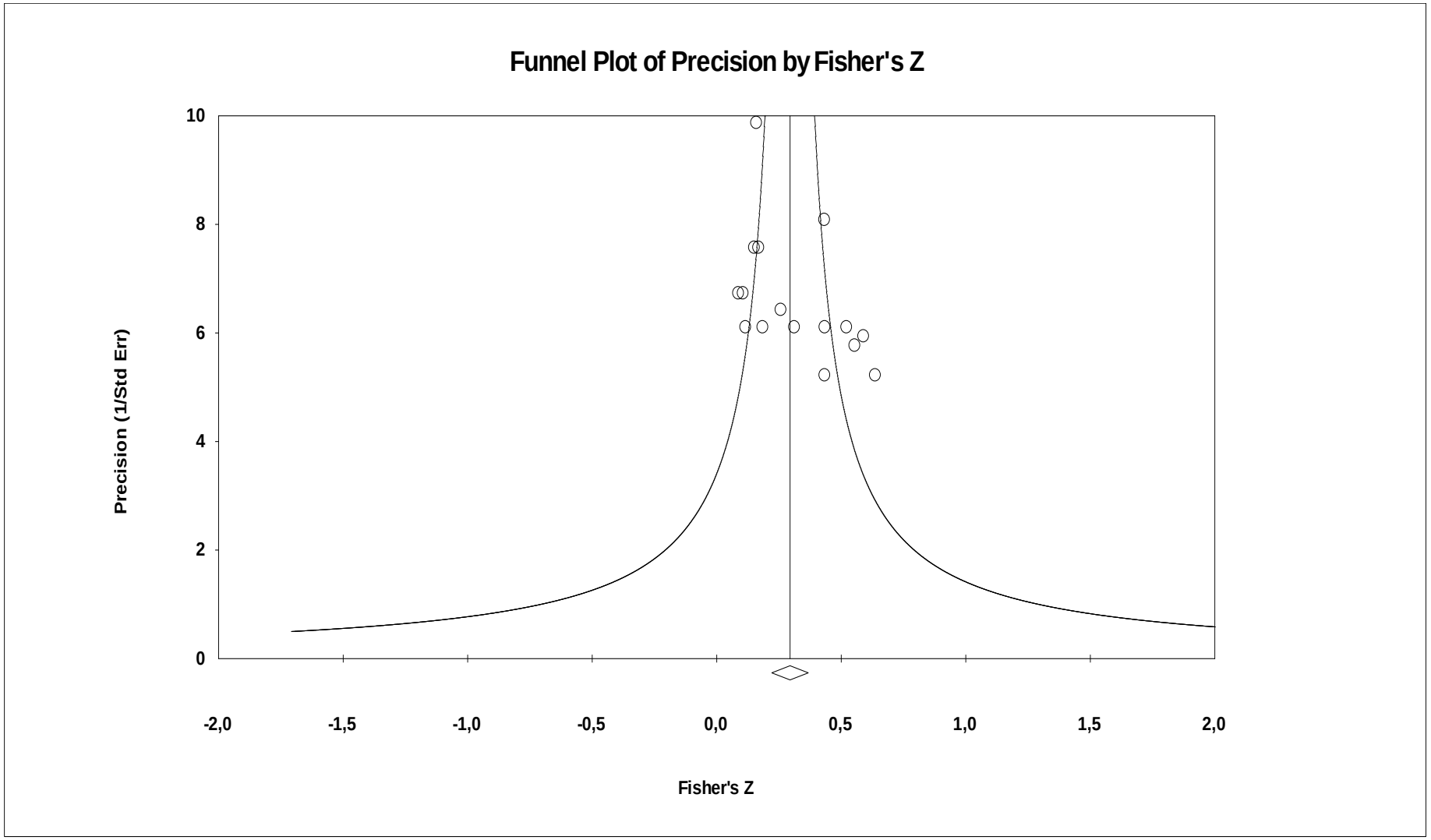


Additional figure C. Funnel plot of studies of comparing hypocrisy and control conditions on behavior

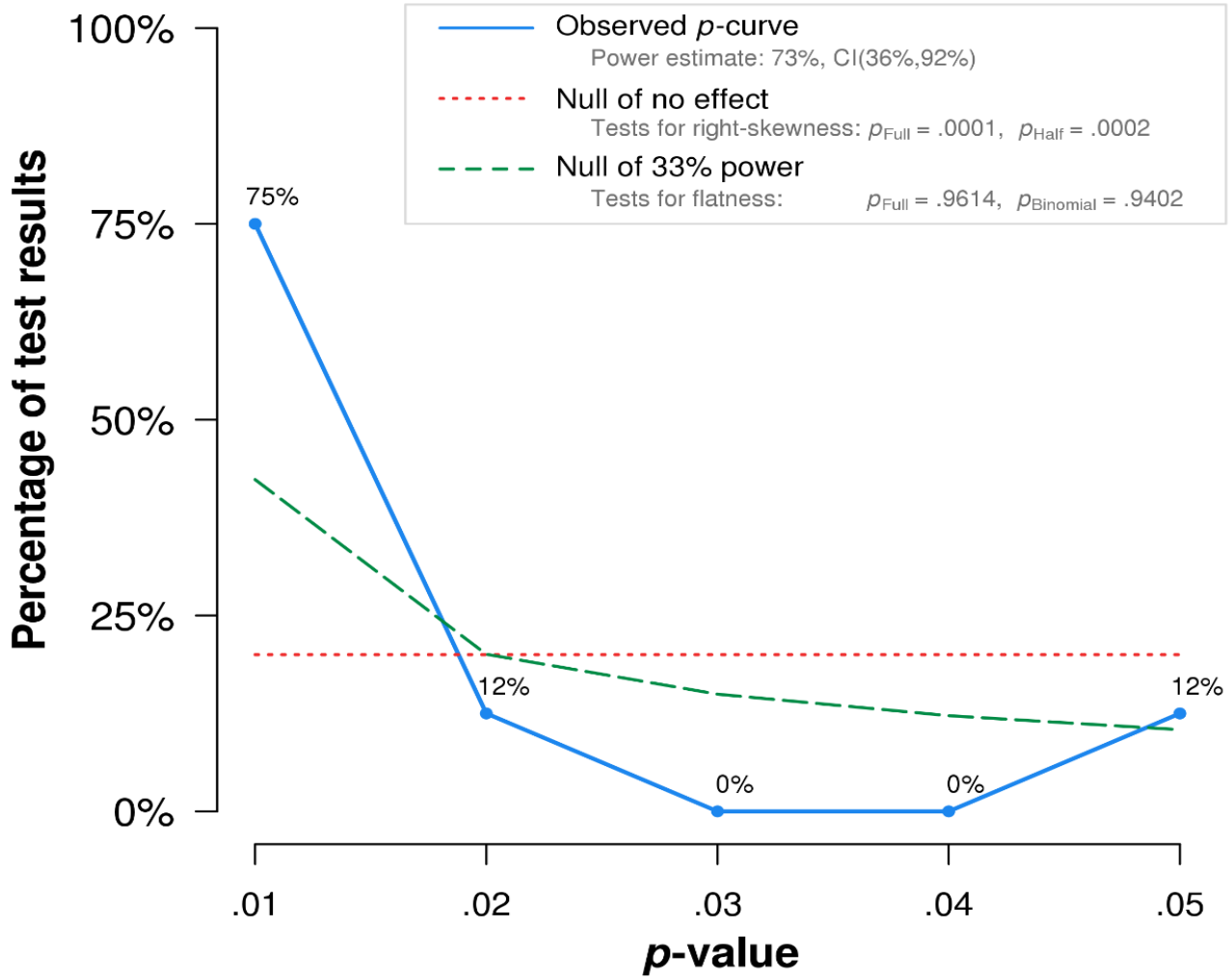


Note: The observed *p*-curve includes 5 statistically significant ($p < .05$) results, of which 3 are $p < .025$.
There were 5 additional results entered but excluded from *p*-curve because they were $p > .05$.

Additional figure D. p-curve of studies of comparing hypocrisy and control conditions on behavior

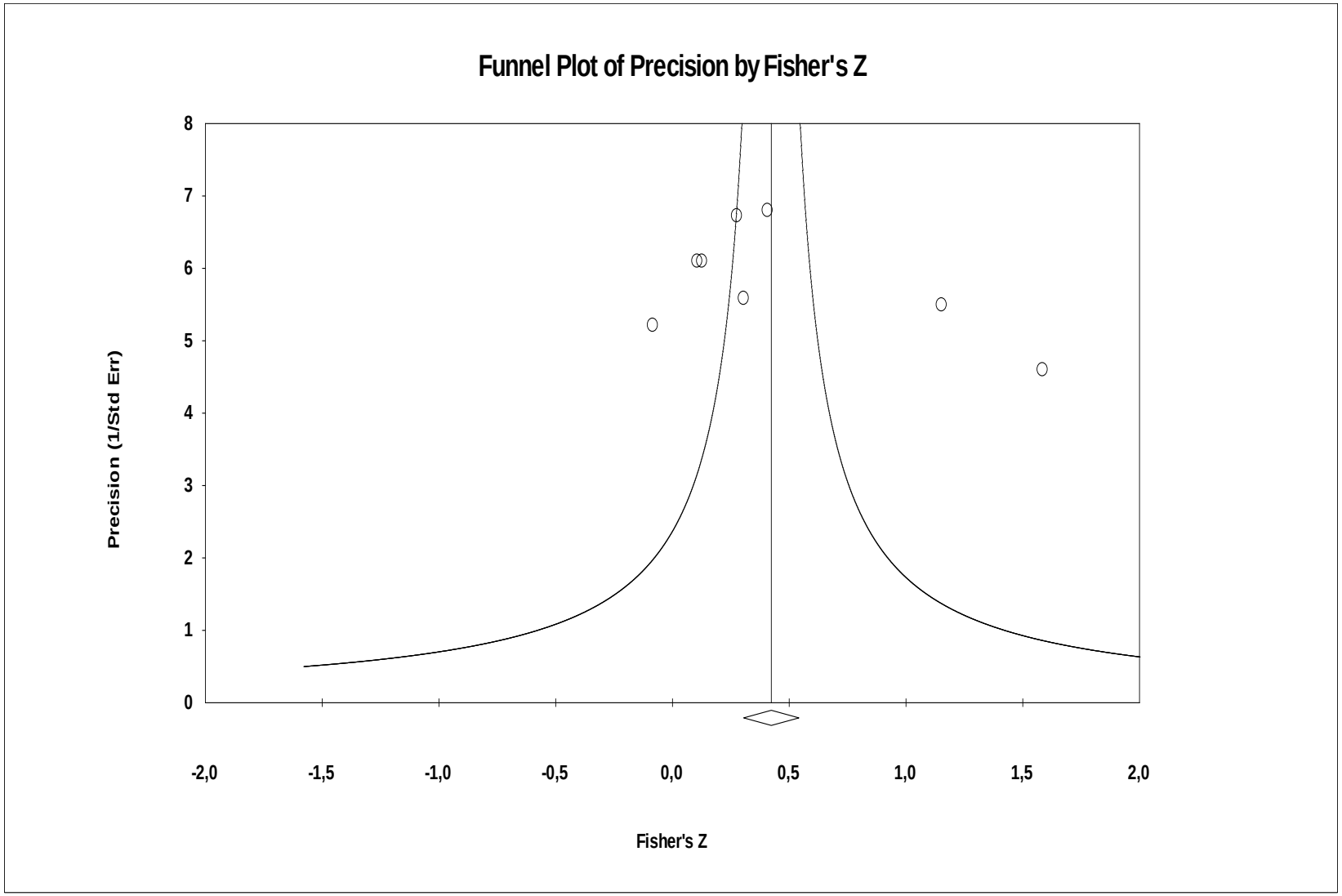


Additional figure E. Funnel plot of studies of comparing hypocrisy and only-SNB conditions on intention



Note: The observed *p*-curve includes 8 statistically significant ($p < .05$) results, of which 7 are $p < .025$.
There were 8 additional results entered but excluded from *p*-curve because they were $p > .05$.

Additional figure F. p-curve of studies of comparing hypocrisy and only-SNB conditions on intention



Additional figure G. Funnel plot of studies of comparing hypocrisy and only-SNB conditions on behavior

Acknowledgements

We wish to thank April McGrath and Blake McKimmie for sending us their data and complementary information. We also express our gratitude to Jeff Stone for his advice and for sharing his data with us. Finally, we address a special word to thank Paul Henderson and Anne Greaves for their proofreading.

Methodology file

Potential Moderators

Examining induced hypocrisy from both methodological and theoretical points of view revealed 14 potential moderator variables: Statement of Freedom before SNB, Statement of Freedom before Mindfulness, Public Nature of Transgression, Participant's Retribution, Normativeness of the Advocated Behavior, Order of Induction Steps, Country, Participant Gender, Participant Age, Delay of consequences, Type of Participant, Type of Study, Nature of Consequences of Transgression, and Type of Publication. However, a lack of information prevented us testing for the impact of nine of these variables. The potential moderators we were able to test were: *Nature of Consequences, Type of Publication, Type of Study, and Type of Participant*.

Identification of induced hypocrisy studies

Although our objective was to identify all published and unpublished studies dealing with induced hypocrisy, for practical reasons we restricted our search to papers written in English or in French. We searched 15 databases[1] over a period extending up to February 2017 and using just two keywords: "hypocrisy" (subject term) and "cognitive dissonance" (full text). The most recent article we found was published in June 2016 (Priolo et al., 2016). In addition, we conducted manual searches of our own files in order to find studies that did not appear in the electronic searches. Unpublished studies were identified by examining book chapters, literature reviews, and unpublished papers on induced hypocrisy (secondary sources). We also contacted five international psychology associations (International Association for People-Environment Studies, European Association of Social Psychology,

[1] Web of Science, Academic Search Premier, Business Source Complete, EconLit, Entrepreneurial Studies Source, ERIC, FRANCIS, MEDLINE, MLA International Bibliography, PsychEXTRA, PsychINFO, PsychARTICLE, Psychology and Behavioral Sciences Collection, Soc Index with Full text, SPORTDiscus with Full text.

International Association of Applied Psychology, Association pour la Diffusion de la Recherche Internationale en Psychologie Sociale, Association pour la Recherche en Psychologie Environnementale) and two research networking websites (Open Science Framework, ResearchGate). Finally, we sent emails to researchers in the induced hypocrisy field, asking them for details of any unpublished studies in their possession. In total, we identified 66 published and unpublished studies carried out between 1984 and 2016.

Inclusion and exclusion criteria

Our initial corpus of papers included all studies that:

1. Examined the induced hypocrisy procedure as defined above. Therefore, we excluded studies involving other paradigms, such as induced compliance (Heitland & Bohner, 2010), moral hypocrisy (Lammers & Stapel, 2011), and vicarious hypocrisy (Barden, Rucker, & Petty, 2005; Thompson, Kyle, Swan, Thomas, & Vrungos, 2002). In some studies we did not take into account conditions in which participants were assigned to a crossed factor, such as misattribution (Fried & Aronson, 1995) or self-affirmation (Yousaf & Gobet, 2013), in addition to an induced-hypocrisy condition.

2. Were reported in scientific journals, conference proceedings, book chapters, or doctoral theses (published or unpublished). However, we excluded three studies reported in master's theses (Biga, 2004; Dossett, 2009; Goldonowicz, 2012).

3. Included at least the classic induced hypocrisy condition as defined above (including both steps). This led us to exclude six studies (Aitken, McMahon, Wearing, & Finlayson, 1994; Desrichard & Monteil, 1994; Fernandez-Dols et al., 2010; Harmon-Jones et al., 2003; Takaku, 2001; Takaku, Weiner, & Ohbuchi, 2001).

4. Mentioned the statistical data needed for our analyses. Where necessary, we wrote directly to authors to obtain the information we needed. We excluded three theoretical studies (Freijy & Kothe, 2013; Stone & Fernandez, 2008; Stone & Foccella, 2011) and four studies that did not collect the statistical data needed for our analyses (Bator & Brian, 2007; Matz & Wood, 2005; Peterson et al., 2008; Stone & Fernandez, 2011).

Finally, because the aim of induced hypocrisy is to prompt changes in behavioral intention or behavior, we excluded four studies which measured attitude change (Martinie & Fointiat, 2010; McConnell & Brown, 2010; McGrath & Ward, 2014, McKimmie et al., 2003).

These criteria led us to reject 28 studies (see Table 1), leaving us with a final corpus 38 studies (see Table 2).

Table 1

Excluded Studies

References
Aitken, Mcmahon, Wearing, & Finlayson (1994)
Barden, Rucker, & Petty (2005)
Bator & Bryan (2007)
Biga (2004)
Desrichard & Monteil (1994)
Dossette (2009)
Fernandez-Dols, Aguilar, Campo, Vallacher, Janowsky, Rabbia, Brussino, & Lerner (2010)
Fointiat, Priolo, Saint-Bauzel, & Milhabet (2013,study 2)
Freijy & Kothe (2013)
Goldonowicz (2012)
Harmon-Jones, Peterson, & Vaughn (2003)
Heitland & Bohner (2010)
Lammers & Stapel (2011)
Martinie & Fointiat (2010)
Matz & Wood (2005)
McConnell & Brown (2010)
McGrath & Ward (2014, study 2)
McKimmie, Terry, Hogg, Manstead, Spears, & Doosje (2003, principal study)
Pelt (2016, studies 2 & 3)
Peterson, Haynes & Olson (2008)
Stone & Fernandez (2011)

Stone & Foccella (2011)
Stone, Wiegand, Cooper, & Aronson (1997, study 2)
Takaku (2001)
Takaku, Weiner, & Ohbuchi (2001)
Thompson, Kyle, Swan, Thomas, & Vrungos (2002)
Vinski & Tyron (2009)

Note: Studies are listed by alphabetical order of author.

Table 2

Summary of All Studies Included in the Meta-Analysis

Study	Measures	Experimental group	Type of participants	Types of studies	Nature of consequence	Type of publication
Aronson, Fried, & Stone (1991)	INT	CTR, SNB, TRANS	STD	LAB	SLF	6,55
Dickerson, Thibodeau, Aronson, & Miller (1992)	BHV	CTR, SNB, TRANS	STD	FLD	OTH	2,79
Eitel & Friend (1999)	BHV INT	CTR	STD	LAB	OTH	6,14
Fointiat & Grosbras (2007, study 1)	INT	CTR, SNB	STD	LAB	OTH	2,37
Fointiat & Grosbras (2007, study 2)	INT	CTR	STD	LAB	OTH	2,37
Fointiat (2004)	INT	SNB	UN-STD	FLD	OTH	2
Fointiat (2008)	INT	CTR, SNB	STD	LAB	OTH	2
Fointiat, Morisot, & Pakuszewski (2008)	INT	CTR, SNB	STD	LAB	OTH	2,34
Fointiat, Priolo, Saint-Bauzel, & Milhabet (2013, study 1)	INT DCF	SNB	STD	LAB	OTH	2
Fointiat, Somat, & Grosbras (2011)	INT	CTR	STD	LAB	OTH	2,31
Fried & Aronson (1995)	INT	SNB	STD	LAB	OTH	4,99
Fried (1998, study 1)	INT	SNB	STD	LAB	OTH	3,16
Fried (1998, study 2)	INT	SNB	STD	LAB	OTH	3,16
Hammons (2010)	BHV DCF	CTR	STD	LAB	SLF	1
Kantola, Syme, & Campbell (1984)	BHV	CTR	UN-STD	FLD	OTH	6,79

Table 2. continued

Liégeois (2005, study 1)	INT	CTR	STD	LAB	OTH	1
Lopez, Lassare, & Rateau (2011)	INT	CTR	UN-STD	FLD	OTH	2,33
McGrath & Ward (2014, study 1)	DCF	SNB	STD	LAB	SLF	1
McKimmie, Terry, Hogg, Manstead, Spears, & Doosje (2003, pilot study)	DCF	SNB	STD	LAB	OTH	3,173
Morongiello & Mark (2008)	BHV INT	CTR	UN-STD	FLD	SLF	4,28
Pelt (2016, study 0)	BHV	CTR, SNB, TRANS	UN-STD	FLD	OTH	1
Pelt (2016, study 1)	BHV INT DCF	CTR	STD	LAB	OTH	1
Priolo (2016, pre-test study)	BHV DCF	CTR, SNB, TRANS	STD	FLD	OTH	4,4
Priolo & Liégeois (2008, study 1)	INT	CTR, SNB, TRANS	STD	FLD	SLF	2
Priolo & Liégeois (2008, study 2)	INT	CTR, SNB, TRANS	UN-STD	FLD	SLF	2
Priolo & Liégeois (2008, pretest study 2)	DCF	CTR	STD	LAB	SLF	2
Rubens (2011, study 0)	INT	TRANS	STD	LAB	OTH	1
Rubens (2011, study B1)	INT	CTR, SNB, TRANS	UN-STD	FLD	OTH	1
Rubens (2011, study B2)	INT	CTR, SNB, TRANS	UN-STD	FLD	OTH	1
Rubens (2011, study B4)	BHV	CTR, SNB, TRANS	UN-STD	FLD	OTH	1

Table 2. continued						
Rubens, Gosling, Bonaiuto, Brisbois, & Moch (2015)	BHV	CTR SNB	UN-STD	FLD	OTH	4,61
Sénémeaud, Mange, Fointiat, & Somat (2013)	INT	CTR	UN-STD	FLD	SLF	2,98
Son Hing, Li, & Zanna (2002)	BHV	SNB	STD	LAB	OTH	4,5
Stone, Aronson, Crain, Winslow, & Fried (1994)	BHV INT	CTR SNB, TRANS	STD	LAB	SLF	4,9
Stone, Wiegand, Cooper, & Aronson (1997, study 1)	BHV	SNB, TRANS	STD	LAB	SLF	6,73
Yousaf & Gobet (2013, study 1)	DCF	CTR	STD	LAB	SLF	3,38
Yousaf & Gobet (2013, study 2)	DCF	CTR	STD	LAB	SLF	3,38
Yousaf & Gobet (2013, study 3)	DCF	CTR	STD	LAB	SLF	3,38

Note: Studies are listed by alphabetical order of author; N: number of participants; Measure(s): behavioral (BHV), intention (INT) and discomfort (DCF); Experimental group: control (CTR), normative saliency (SNB), transgression only (TRANS); Type of participants: student (STD) vs. other (UN-STD); Type of studies: field (FLD) vs. laboratory (LAB); Nature of consequence: self-targeted (SFL) vs. others-targeted (OTH); Type of publication: 1 for unpublished studies, 2 + impact factor for published studies

Meta-analytic procedure

We carried out our meta-analysis in line with the recommendations made by Borenstein, Hedges, Higgins, and Rothstein (2009). First, because the studies in our corpus reported effect sizes in a variety of ways, including *t*-tests (e.g., Stone et al., 1994), χ^2-tests (Fointiat, 2008), and *F*-tests (e.g., Morongiello & Mark, 2008), we used Arthur, Bennett, and Huffcutt's (2001) formulae to transform all reported effect sizes into correlation coefficients, *r*. We then transformed these effect sizes so that the correlation coefficient was positive when behavioral intention or behavior was greater in the induced hypocrisy condition than in the control condition. Finally, we used a Fisher's z transformation to calculate weighted effect sizes. Second, we used a random effects model (for analyses without moderators) and a mixed effects model (for analyses including moderators) in order to take into account the wide range of studies (country, type of participant, type of behavior, and implementation procedure). This allowed us to explain systematic variance by adding multiple moderators and to generalize it to the entire corpus of studies (Viechtbauer, 2010). We used Comprehensive Meta-Analysis 3 software to estimate these models (Borenstein et al., 2009) and completed our analyses by using the Metafor package in R (Viechtbauer, 2010). For instance, we used Metafor to estimate the amount of heterogeneity, τ^2, with the restricted maximum likelihood estimator.

In addition, because our analyses had to take into account studies that used more than one measure of the same construct (i.e., Fointiat & Grosbras, 2007, multiple behavioral measures), in which case effect sizes are statistically dependent, we followed Lipsey and Wilson's (2001) recommendation and averaged the relevant effect sizes. This procedure yielded a single mean effect size for each sample. For studies that included longitudinal measures (Eitel & Friend, 1999; Hammons, 2010; Kantola et al., 1984; Pelt, 2016), we calculated effect sizes using only the data collected just after the experimental induction. In other words, we excluded the longitudinal measures.

Finally, we used the regression method described by Borenstein et al. (2009) to test the impact of potential moderators on the effect sizes. At least three studies in each condition were needed in order to run the categorical-moderator analyses.

Publication bias in the effect of hypocrisy versus control on behavioral intention. Because all methods of testing for publication bias have limitations (see Field & Gillet, 2010), we used four complementary techniques: funnel plot, trim and fill (Duval & Tweedie, 2000), *p-curve* analysis (Simonsohn, Nelson, & Simmons, 2014), and R-index (Schimmack, 2016). Detailed results of these analyses are provided in the supplementary materials.