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PSY4099 Master Thesis

The role of cognitive fatigue and moral identity in moral attentiveness

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## **Abstract**

Lately, moral attentiveness has received a great deal of attention as an independent variable in morality research. The aim of the present study was to investigate the role of moral identity and cognitive fatigue in variations of moral attentiveness. Therefore, a five-day long diary study with employees was adopted ( $n = 42$ ). According to the findings moral attentiveness fluctuates with a decline over the course of the observation period. Apparently, cognitive fatigue plays an important role in explaining intra-individual variability in moral attentiveness. Contrary to expectations, moral identity (here: internalization dimension) does not explain between-person differences in moral attentiveness and moral identity is unrelated to fluctuations of moral attentiveness.

*Keywords:* moral attentiveness, moral identity, cognitive fatigue, ego depletion

## Introduction

Morality, a word that is heavy with meaning and often brought up in media when again a manager, politician or banker violated the common societal perception of what is moral or what is not. A recent example that made a noise in the world is the Volkswagen emissions scandal. The so called “dieselgate” began when United States Environmental Protection Agency (EPA) revealed that Volkswagen used illegal shut-down control during emission testing, causing vehicles to emit significantly higher amounts of pollutants during usual road use, thus violating regulatory norms for air pollution control. This case makes obvious that unethical behavior can come at significant costs for others and the environment. Hence, the interest of understanding causes of unethical behavior and consequently preventing it, is of great importance for society as a whole. That the field of research dealing with ethical decision-making has grown in recent years, becomes apparent in increasing numbers of publications. From a scientific perspective it is a highly interesting question, why and under which conditions individuals choose to do “the right thing” or why they get tempted to reap their benefits at the expense of others.

Broadly speaking, the ethical decision-making process consists of four stages: moral recognition, judgement, intention and action/behavior (Schwartz, 2016). Before an individual can take the step of deciding to act ethical, there is the primary necessity to recognize the moral dimension of a given situation or concern. This step is referred to as *moral recognition* and represents the crossroad between ethical decision making or lack of awareness. Even though it seems apparent that the actors in this and numerous other scandals were aware of the moral dilemma they were facing and intentionally decided to make an unethical choice, a remaining question is what if an individual simply does not perceive given situations or concerns to be morally relevant. For instance, the phenomenon of nurses, who sometimes tend to translate ethical issues into technical problems that have a clinical solution instead of a moral analysis, was already described four decades ago (Carlton, 1978). So to speak, the nurse is morally blind in the given situation, interpreting the scenario on a technical level promoted by a dominant clinical conception. But does that imply that the person itself is always morally blind or could it be that an average moral person fails to recognize moral dilemmata under varying circumstances? The present study wants to shed more light on prerequisites that either raise or hamper an individual’s awareness for a moral dimension to a given situation, thus focusing on the primary step of the ethical decision-making process.

Scholars have identified several factors that influence the ethical decision-making process, such as the personal or organizational circumstances as well as the moral capacity of a person (Schwartz, 2016), but not much research has been conducted specifically on determinants of moral recognition. Lately, *moral attentiveness* has received a great deal of attention as an independent variable and recent research has argued, that moral attentiveness plays a crucial role in moral recognition (Reynolds & Miller, 2015). *Moral attentiveness* describes the degree to which an individual constantly perceives and acknowledges moral elements in his or her experiences and captures an immanent tendency to perceive issues as moral issues (Reynolds & Miller, 2015). Since the concept of moral attentiveness is rather novel to morality research, the proposed research aims to shed more light on possible factors that influence moral attentiveness. Several factors have been identified that influence the translation of recognized moral cues into actual moral behavior, for instance, *moral identity* and contextual factors (Aquino & Reed, 2002).

*Moral identity* is conceptualized as the degree to which being a moral person is important to a person's identity (Hardy & Carlo, 2011, p. 212). It is a promising construct to explain differences in moral attentiveness between individuals because it impacts processes that guide one's cognition and behavior. Study evidence points in the same direction by highlighting its role for moral action and behavior (Gino, Schweitzer, Mead & Ariely's, 2011; Hardy & Carlo, 2011).

Other research demonstrates that not only personality but also depleted mental resources play a central role in moral recognition (Barnes, Gunia & Wagner, 2015; Barnes, Schaubroeck, Huth & Ghumman, 2011), such that individuals that are mentally depleted, for instance due to sleep deficit or activities that require self-control, are more likely to cheat or show decreased levels of moral awareness. This is because self-control is required to resist the temptation to act immorally and if these vital resources are depleted, a person's likelihood of displaying unethical behavior will increase. *Cognitive fatigue* is recognized as a proxy for ego depletion among researches (Barnes, Schaubroeck, Huth & Ghumman, 2011) and therefore serves as an indicator of the demands that self-control tasks place on individuals (Hagger, Wood, Stiff & Chatzisarantis, 2010).

Taking the previous findings together, it is worth investigating the role of moral identity and cognitive fatigue in variations of moral attentiveness. In the present research I conducted a five-day long diary study with employees to investigate this main research question. In the following section we will take a closer look at the different concepts and their

hypothetical relations. Afterwards the method section includes detailed information about the study set up, conduction and used scales, followed by the results and ending with a discussion about limitations and implications of the findings.

## Theoretical background and hypotheses

In the following, I am going to give theoretical background information and explain the deduction of the hypotheses and depict them into a research model.

### Moral attentiveness

As I noted earlier, moral attentiveness describes the degree to which an individual constantly perceives and acknowledges moral elements in his or her experiences and captures an immanent tendency to perceive issues as moral issues (Reynolds & Miller, 2015).

“The [morally attentive] individual views incoming stimuli through a lens focused on the concepts of morality and relies on that lens to make sense of experience [...] thereby creating a person who is attentive to the moral aspects of day-to-day experiences” (Reynolds, 2008, p. 1028).

Social cognitive theory provides an explanation of individual differences in the amount of attention paid to moral issues. Attention is mainly determined by three factors: saliency, vividness, and accessibility (Fiske & Taylor, 1991). Saliency is the extent to which a stimulus simply stands out from competing stimuli and is therefore bound to contextual factors, whereas vividness is inherent in the stimulus itself and refers to how interesting or emotionally appealing it is for the recipient. Lastly, accessibility relates to the individual’s mental frameworks and their retrieval from memory as well as the individual’s capacity to identify or recognize stimuli. Thus, for people high in moral attentiveness mental frameworks associated with morality are more chronically accessible, which consequently leads to an automatic assessment of incoming information from a moral perspective (Reynolds, 2008).

Research distinguishes two components of moral attentiveness: perceptual and reflective moral attentiveness. Perceptual moral attentiveness refers to the recognition of moral aspects in everyday experiences whereas reflective moral attentiveness describes the extent to which the individual considers moral matters on a regular basis. The former mainly concerns information coding while the latter entails introspection and action.

**Differentiation to moral awareness.** Given the novelty of moral attentiveness, it is reasonable to have a closer look at another term one often finds in morality research: moral awareness. *Moral awareness* can be conceptualized as an encoding process in which the individual allocates attentional effort to incoming information and categorizes it as an issue with a moral dimension (Butterfield, Trevino & Weaver, 2000). Thus, it describes a more

mechanistic processing of incoming information and interpreting it whereas moral attentiveness encompasses a predisposition of an individual to be more cognizant of the moral issue and its consequences. Thus speaking, the basic encoding process underlying moral awareness is commonly shared by most individuals whilst the outcome of this process differs from situation to situation triggered by issue characteristics (Butterfield, Trevino & Weaver, 2000; Jones, 1991). Therefore, given that the issue characteristics are salient, anyone could achieve the outcome of moral awareness. But morally attentive individuals are more likely to see a moral dimension in incoming information by actively screening and considering stimuli related to morality (Reynolds, 2008).

To conclude, scholars have postulated two elementary constructs that capture fine-grained nuances in the recognition and identification of moral issues on the individual level. The development of moral attentiveness as a construct partly emerged to resolve “theoretical, methodological, and practical problems” that moral awareness research faced (Reynolds, 2008, p. 1027). Thus, moral attentiveness and awareness are both conceptually and theoretically different. For instance, moral awareness is mostly measured in experimental settings including scenarios with embedded types of moral dilemma (also called “vignettes”). In contrast, measuring moral attentiveness can be decoupled from the moral event thus overcoming the domain specificity of the measurement of moral awareness (Miller, Rodgers & Bingham, 2014). To conclude, for the diary set-up of the present study with self-rating of participants, moral attentiveness is the more suitable concept to use.

**Moral attentiveness: stable or fluctuating?** In contrast to moral awareness, researchers previously considered moral attentiveness as a trait that is fairly stable over time (Reynolds, 2008). In the present paper, I want to challenge this assumption by illuminating whether moral attentiveness really is stable over time or rather fluctuates due to other factors, as it is the case with moral awareness. Barnes, Gunia and Wagner (2015) assume that individuals high in moral attentiveness may still be vulnerable to the effects of sleep deficits and resulting cognitive impairment and thus show daily fluctuations of moral attentiveness. Specifically, the present study aims to reveal short-term dynamics as personality research shows that a trait can vary around the person's mean from day to day (e.g. Wilson, Thompson & Vazire, 2017). Thus, it is reasonable to investigate whether moral attentiveness fluctuates and due to which reasons.

*Hypothesis 1: Moral attentiveness fluctuates during a working week.*

### **Ego Depletion and cognitive fatigue**

In the following, I am going to elaborate one possible explanation that could cause fluctuations of moral attentiveness. Previous research has found that cognitive fatigue or lack of sleep led to lower moral awareness and unethical behavior and that as simple as the time of the day (morning vs. evening) influences these factors (Barnes, Gunia & Wagner, 2015; Barnes, Schaubroeck, Huth & Ghumman, 2011). The theoretical model these scholars draw upon to explain this effect is the Ego Depletion Model of self-regulatory processes. The model proposes that cognitive resources, which guide attentional effort, are finite and deplete in processes that require self-control. Another study that supports the link between ethical behavior and self-control are Gino, Schweitzer, Mead & Ariely (2011). They showed in four experimental settings that individuals, who were depleted of their self-regulatory resources by a prior task requiring self-control, were more likely to cheat afterwards than their counterparts with intact self-regulatory resources. Furthermore, depletion decreased participant's moral awareness, which explains why they behaved dishonest and cheated when they faced the opportunity. In short, self-control is required to resist the temptation to act immorally and the depletion of these resources that enable self-control will increase a person's likelihood of displaying unethical behavior.

Another interesting finding is the "*morning morality effect*" described by Kouchaki and Smith (2014), which means that participants in their experimental study showed less unethical behavior on tasks performed in the morning than on the same tasks performed in the afternoon. The authors conclude that self-regulatory resources are gradually depleted throughout the day by various activities such as making choices and controlling desires and impulses. In a working day, individual face several events that require self-control. For instance, reoccurring interruptions caused by co-workers, phone calls or clients violate the flow and continuity of an individual's work. According to Freeman and Muraven (2010) stopping an ongoing task requires self-control, especially when the task is close to be finished. All acts of self-control draw from the same finite resource, which needs to be recovered by sleep or rest. Otherwise the depletion of that resource leads to detrimental effects on subsequent self-regulation and executive functioning. Hence, people are more likely to behave unethically in the afternoon when resources are depleted in contrast to the morning, when resources are restored after sleeping and resting. In the present research I want to investigate whether the same effect applies to moral attentiveness.

*Hypothesis 2: Moral attentiveness is higher in the morning than in the afternoon/evening.*

**The role of cognitive fatigue.** The depletion of resources is likely to lead to subjective fatigue, which can be characterized as a subjective assessment of one's ability to engage in mental activity. Barnes, Schaubroeck, Huth & Ghumman (2011) found cognitive fatigue to be "a reasonable proxy for ego depletion" (p. 177) as indicated by behavioral measures in their laboratory experiment. Therefore, fatigue serves as an indicator of the demands that self-control tasks place on individuals (Hagger, Wood, Stiff & Chatzisarantis, 2010). Hagger et al. (2010) further remark that "fatigue may not be a mere indicator of ego depletion but a mediator of the effects of self-regulatory resources depletion on subsequent task performance" (p. 498). A growing amount of research offers consistent evidence for the relationship between perceived cognitive fatigue for individuals' self-control capacities. The consistent finding was that individuals exposed to a highly depleting task reported higher levels of mental fatigue than did those exposed to a low depletion manipulation (Hirt, Clarkson & Jia, 2016). Additionally, another study found that exertion of self-control is followed by a period of cognitive fatigue due to expending glucose to the brain for prefrontal cortex operations (Gailliot et al., 2007). To summarize, cognitive fatigue is a useful and easily measurable proxy for depleted mental resources in the present diary study.

Based on the ego depletion model and former studies linking self-control to moral recognition described above, the proposed research wants to investigate whether cognitive fatigue, as an indicator of depleted self-control resources, explains fluctuations of moral attentiveness. The assumption is that while an individual is cognitively fatigued due to prior exertion of self-control, the individual would be less morally attentive due to depleted mental resources.

*Hypothesis 3: The subjective perception of an individual's cognitive fatigue correlates negatively with moral attentiveness.*

### **Moral identity**

Given the fact that moral attentiveness is a phenomenon on the individual-level, it seems obvious that individual factors might explain differences in moral attentiveness. Since moral attentiveness is a relatively new term in the field of morality research, not much research has been conducted on identifying individual characteristics that influence moral attentiveness. The present research helps to minimize this gap and sheds light on *moral identity* as an

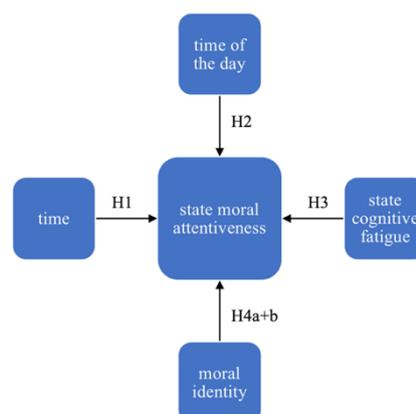
individual antecedent of moral attentiveness. *Moral identity* is the degree to which being a moral person is important to a person's identity (Hardy & Carlo, 2011, p. 212). Thus, when morality is central to a person's identity, the desire to behave in a manner that is consistent with one's self-definition can serve as a substantial moral motivation to avoid feelings of guilt or any other types of negative emotions (Blasi, 2004). Some researchers argue that moral identity could be one of the best predictors of moral actions and previous studies have consistently indicated a moderately strong relationship between moral identity and action (Hardy & Carlo, 2011). For instance, another interesting finding of Gino, Schweitzer, Mead & Ariely's (2011) study is that individuals high in *moral identity*, however, did not show elevated levels of cheating when they were depleted. Thus, it is worth to further investigate the effect of moral identity on moral attentiveness as part of moral recognition.

Recently, scholars have argued that schemas might play a key role in moral identity. Schemas are described as structures of mental knowledge that entail distinct dimensions of ourselves such as values, goals and behavioral scripts derived from our experiences (Aquino, Freeman, Reed II, Lim & Felps, 2009; Fiske, 2000). Underlying moral ideals that are of importance to a person's sense of identity and clustered into schemas, may be readily accessible for social information processing (Lapsley & Narvaez, 2004). As a consequence, moral identity should impact processes that guide one's cognition and behavior and thus, the moral self-schema should be activated more strongly and more frequently. Hence, I hypothesize that firstly, individuals who have a high moral identity tend to be more morally attentive on average and secondly, that they experience less fluctuations of moral attentiveness, due to greater availability of morality related schemas that require less depleting guiding of cognitions and attention and therefore minimizing the effect of cognitive fatigue.

*Hypothesis 4a: Individuals who have a high moral identity are on average more morally attentive.*

*Hypothesis 4b: Individuals who have a high moral identity experience less fluctuations of moral attentiveness.*

**Figure 1**  
Theoretical model



## Methods

In this section, I am going to describe the structure of the sample, the study design and procedure as well as the used scales.

### Sample

I adopted a snowball technique as a recruiting strategy, which means that I recruited friends and relatives as participants and they asked further potential candidates in their own circle of acquaintances and at their workplace. To obtain a heterogeneous mixing of the sample, I also searched for participants online in social media and on bulletin boards in supermarkets.

Inclusion criteria were at least part-time employment and legal age.

Of 55 participants who sent us a participation mail, 50 (90, 91 %) completed the baseline questionnaire. In the following, 8 of these 50 respondents were removed, when more than 4 out of 10 data points were missing. The remaining sample had a size of  $n = 42$  with mostly German participants (86,1 %) and some Dutch people (11,1 %). In total the dropout rate can be numbered 23,37 %, meaning that a bit more than a fifth of participants left the study either voluntarily or had to be excluded due to missing data.

Most participants were female (69 %) and the mean age was 44,95 years ( $SD = 14,28$ ). The vast majority (61,9 %) were full-time workers and mostly employed (83,3 %). Average organizational tenure was 15,07 years ( $SD = 12,38$ ) and participants worked in different business sectors with the majority stemming from health care and social assistance (23,8 %) and public administration (23,8 %), followed by retail trade (9,5 %), educational service (9,5 %) and other sectors (14,3 %). The educational background was diverse but with a superior number of 40,5 % academic degrees and 38,1 % vocational training (11,9 % secondary education, 9,5 % general higher education).

### Study design and procedure

The present study was part of a larger investigation related to employee morality with different foci. To test the hypotheses, we adopted a quantitative five-day long diary study design. In contrast to cross-sectional or longitudinal designs with time lags of several months or even years, the diary design is useful to capture short-term dynamics. It allows not only to account for between person comparisons but also for within subject changes.

For the study conduction, participants were grouped into batches and all questionnaires were distributed and completed online. Prior to the start of the study, participants were provided with information about the study and they have been asked to give

informed consent. At the beginning, participants were required to fill out a baseline questionnaire consisting of a measurement of their moral identity, moral attentiveness as well as demographics and chronotype as a control variable. The baseline questionnaire took participants between 15-30 minutes to complete. On a daily basis for five working days in total, participants were asked to fill out the adapted Moral Attentiveness Scale as well as the cognitive dimension of the Fatigue Impact Scale. The time frame for the morning questionnaire was in between 4 and 11 am and for the afternoon/evening questionnaire between 2.30 pm and 11 pm. Each questionnaire took approximately 5 minutes. Individual arrangements for time slots were made for shift workers whose workdays differed from a regular working week. All respondents were required to fill out the questionnaires before and after work.

**Measures.** To conduct the research, I developed questionnaires using the following scales, which are all publicly available on researchgate.net. To ensure that the scales and their adaption lead to valid results, Cronbach's Alpha were calculated and will be presented under the section "Results".

**Moral Attentiveness.** "Fragebogen Moralische Achtsamkeit" (FMA) is the validated German version of Reynolds' Moral Attentiveness Scale (Pohling, Frömmer, Grass, Strobel & Reynolds, 2014). The original scale consists of 12 items rated on a 7-point Likert scale (1 = strongly disagree, 7 = strongly agree). It includes both reflective and perceptual sub-dimensions of moral attentiveness. Sample questions are for instance: "In a typical day, I face several ethical dilemmas." (perceptual) and "I regularly think about the ethical implications of my decisions." (reflective). I excluded three items from the scale, which according to Pohling, Frömmer, Grass, Strobel and Reynolds (2014) are recommend to eliminated due to considerable cross loadings. For the baseline questionnaire I included all remaining items and for the daily questionnaires I selected 4 items that could be rephrased to fit the question formulation for the *momentary* manifestation of the variable (e.g. "I reflect on the moral aspects of my decisions."). Another reason to minimize the number of items is to consider the length of the survey to prevent drop out.

**Cognitive fatigue.** The subjective measure of cognitive fatigue utilized in the daily questionnaire was the cognitive dimension of the validated German version of the Fatigue Impact Scale (FIS-D). The cognitive dimension consists of 10 items covering questions such as: "I have been less alert" or "I have been forgetful". Here, I adapted the items to fit the diary design and specifically ask the participants how they rate the items *for that moment* (e.g. "I

am less alert”). The scale is rated on a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree).

***Moral Identity.*** To measure moral identity in the baseline questionnaire, I utilized the Moral Identity Scale developed by Aquino and Reed (2002). There are two sub facets of moral identity: internalization and symbolization. Internalization refers to the self-importance of the moral characteristics to an individual, whereas symbolization entails the awareness that one actions can convey the moral self to others through actions. Symbolization correlates with a measure of impression management and internalization was more strongly related to implicit measures that capture the strength of the link between the moral traits and the self-concept. Most evidence indicates that symbolization is more about self-presentation than moral concerns and is commonly excluded from studies (Hardy, Bean & Olsen, 2015; Vitell et al., 2016). Consequently, I only made use of the internalization dimension, since it better represented the conceptualization of moral identity in the present study. Participants were presented with a short introductory text and a set of nine characteristics of a person (e.g. honest, fair, generous), which serve as salience induction stimuli to evoke a broader associative network of related traits and the underlying social identity of a moral person. Subsequently, participants were required to rate statements such as “It would make me feel good to be a person who has these characteristics” on a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree). The original English scale was translated into German and cross-checked by another capable person.

***Control variable.*** Furthermore, I included an abbreviated version of the Horne and Östberg Morningness – Eveningness Questionnaire (Adan & Almirall, 1991) to apply the chronotype as a control variable, since previous research indicated that Evening people behave more ethically in the evening than in the morning (Gunia, Barnes & Sah, 2014).

## Results

In this section I am going to outline the statistical analysis of the data and present the results of the diary study.

### Preparatory analysis

All statistics were computed using SPSS V.25. To carry out further inferential statistics, I made some preparatory controls to check requirements. Due to the symmetric formulation of the Likert scales, obtained data can be treated as interval scaled (Carifio & Perla, 2007), except the Horne and Östberg Morningness – Eveningness Questionnaire, which is ordinal scaled. All main variables are normally distributed, as assessed by the Shapiro-Wilk-Test ( $p > .05$ ). Please take into consideration that, as mentioned in the previous chapter, moral identity was measured solely using the *internalization dimension* of the scale, thus statements referring to “moral identity” actually concern only this dimension.

At first, means were calculated for each participant from the baseline level (Moral identity = MI) and trait moral attentiveness (trait MA). Secondly, means from the daily questionnaires were calculated both at the day level as well as for mornings and afternoons/evenings and on average across the working week (state MA & state cognitive fatigue [state CF]). Descriptive statistics, correlations and Cronbach's alphas are presented in Table 1. The weekly means of daily data were used to calculate correlations.

The total sample can be characterized as high in moral identity but mediocre in moral attentiveness. Participants reported low levels of cognitive fatigue. One value that stands out is the correlation between gender and moral identity, which correlated highly ( $r = -.515$ ,  $p < .01$ , two-tailed) with women reporting higher levels of moral identity. In general, demographic variables such as gender, age and education as well as the chronotype of a person did not relate to state or trait moral attentiveness.

**Table 1**

Descriptive statistics, correlations and Cronbach's alphas for main variables and controls

( <i>n</i> = 42)	M	SD	1	2	3	4
1. MI	4,45	0,4	(.71)			
2. Trait MA	4,07	1,12	.116	(.84)		
3. State MA	3,45	1,17	.062	.459**	(.65-.81)	
4. State CF	2,63	0,69	.221	-.021	.291†	(.94-.97)
5. Age	44,23	14,28	-.087	-.012	.007	.095
6. Gender	n/a		-.515**	-.122	.14	-.125
7. Education	n/a		-.310*	-.050	-.261	-.365*
8. Chronotype	n/a	(.72)	.132	.213	.027	-.074

Pearson's *r* for interval scaled and Spearman's Rho for ordinal data. Cronbach's alphas are represented between brackets. Gender was coded 1 = female and 2 = male. Education was coded 1 = Secondary Education to 4 = Academic degree with graduation in between.

\*\*  $p < 0.01$  level (two-tailed).

\*  $p < 0.05$  level (two-tailed).

†  $p < 0.10$  (two-tailed).

### Testing of hypotheses

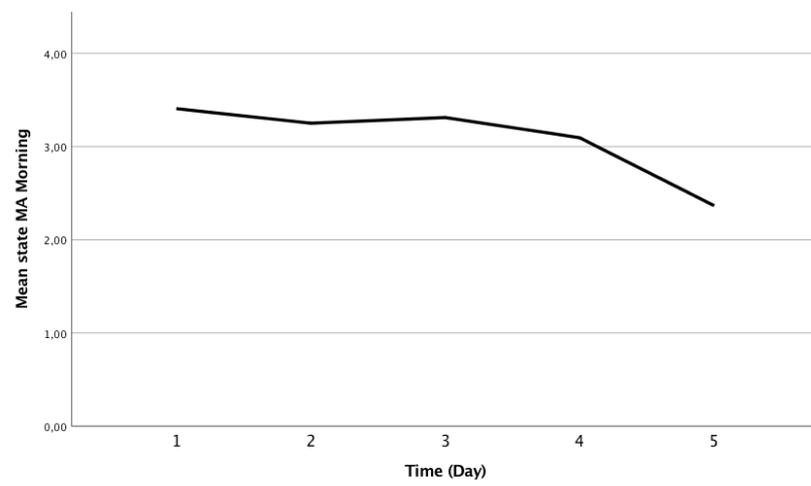
Testing of hypotheses was conducted by Multilevel Analysis in SPSS to account for nestedness of the data on different levels. Therefore, I centered all Level 1 and Level 2 variables (Person and grand mean centering). In a first step, the unconditional random coefficient model (Null model) was run, entering state moral attentiveness as a dependent variable. Secondly, the relative amount of between-person and within person variance of moral attentiveness as a dependent variable was examined by the Intraclass Correlation Coefficient (ICC). State moral attentiveness showed an ICC of .58. This indicates that 58% of variance in state moral attentiveness was between persons, while 42% referred to within-person variation.

**Research question 1.** To examine Hypothesis 1, which postulates that state moral attentiveness fluctuates during a working week, time was entered as a predictor with unstructured covariance type (Table 2). The time effect was examined separately for morning and evening values of state moral attentiveness. Improvements in model fit were in comparison to the null model. Time was a significant predictor of morning state moral attentiveness (Model 1,  $\gamma = -.0995$ ,  $SD = .041$ ,  $t = -2.44$ ,  $p = .02$ ) as well as afternoon/evening

state moral attentiveness (Model 2,  $\gamma = -.118$ ,  $SD = .041$ ,  $t = -2.88$ ,  $p = .007$ ). The differences in  $-2 *LL$  were highly significant ( $p = .001$ ,  $\chi^2 (1) = 10.828$ ). Hypothesis 1 could thus be confirmed, meaning that moral attentiveness fluctuated during the observation period. Figure 2 illustrates the distribution of group means of state moral attentiveness on mornings during the working week and Figure 3 the distribution for afternoon/evening values. It is observable that state moral attentiveness fluctuates during a working week with a tendency to decline towards the end of the working week.

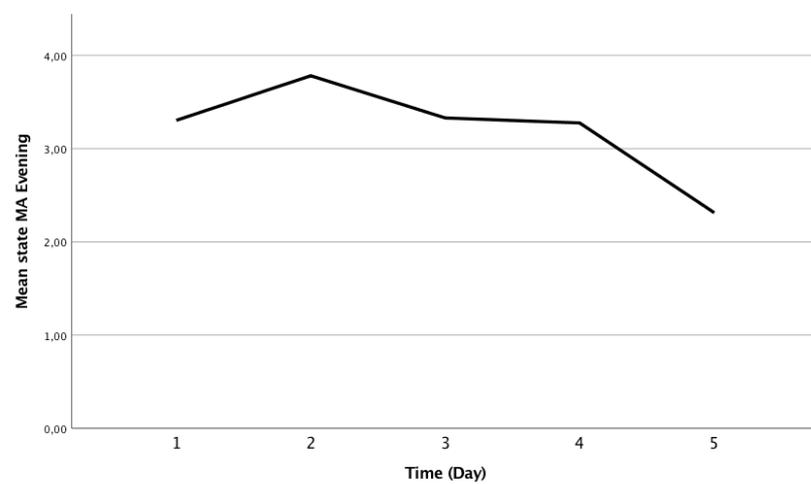
**Figure 2**

Distribution of group means of morning state moral attentiveness during the working week



**Figure 3**

Distribution of group means of afternoon/evening state moral attentiveness during the working week



**Research question 2.** To investigate if moral attentiveness is higher in the morning than in the afternoon/evening, a second time variable (Time2: coded morning = 1 and evening = 2) was entered as a predictor (Model 3). This approach helps to determine the influence of time of the day on moral attentiveness. Significance for time of the day as a predictor for moral attentiveness was only yielded with  $p < .1$  ( $p = .53$ ). The same applied for improvement in model fit, which was also only significant on the 10 percent level. ( $p = .05$ ,  $\chi^2(1) = 3.841$ ,  $\Delta-2**LL = 3.75$ ). However, the fixed effect estimate reveals that in the present sample, state moral attentiveness values tended to be higher in the afternoon/evening than in the morning, but it was only marginally significant ( $p < .1$ ). To conclude, H2 must be rejected.

**Table 2**  
Growth curve analysis for state moral attentiveness

DV	Null model			Model 1			Model 2			Model 3		
	Estimate ( $\gamma$ )	SE	t									
Fixed effects												
Intercept	3.43**	.18	19.14	3.65**	.25	14.45	3.97**	.31	12.85	3.13**	.24	13.27
Time				-.1*	.04	-2.44	-.12*	.04	-2.88			
Time2										.2†	.1	1.95
Random effects												
Residual	.91**			.83**			1.38**			.9**		
Intercept	1.23**			1.72*			2.21*			1.23**		
UN (2,1)				-.15†			-.18†			.004		
UN (2,2)				.04**			.03†			.0		
-2 *LL	1070.991			614.495			692.205			1067.241		
$\Delta$ df				1			1			1		
$\Delta-2**LL$				456.496**			378.786**			3.75†		

Dependent variables: state MA morning (Model 1), state MA evening (Model 2), state MA (Model 3).

\*\*  $p < 0.01$  level

\*  $p < 0.05$  level

†  $p < 0.10$  level

**Baseline model.** The multilevel analysis for the remaining hypotheses can be found in Table 3. In a first step, the baseline model was set. To identify possible predictors for state moral attentiveness, obtained correlations from Table 1 were accounted for. Only trait moral attentiveness was found to be a significant level 2 predictor of state moral attentiveness ( $p = .002$ ) and improved model fit compared to the null model ( $p = .01$ ,  $\chi^2(1) = 6.635$ ,  $\Delta-2^{**}LL = 9.943$ ). Trait moral attentiveness explained substantial level 2 (between person) variance in state moral attentiveness.

**Research question 3.** For the third hypothesis I wanted to investigate whether the subjective perception of an individual's cognitive fatigue correlates with state moral attentiveness. Therefore, state cognitive fatigue was entered as a level 1 predictor (Model 1). Model 1 displayed a significantly smaller likelihood ratio compared to the baseline model ( $p = .001$ ,  $\chi^2(2) = 13.816$ ,  $\Delta-2^{**}LL = 24.173$ ). Additionally, state cognitive fatigue related significantly to state moral attentiveness ( $\gamma = .24$ ,  $SE = .09$ ,  $t = 2.59$ ,  $p = .014$ ), but instead of the postulated negative relationship the relation is positive. Thus, Hypothesis 3 was partially confirmed, meaning that cognitive fatigue was found to be a significant level 1 (within-person) predictor for state moral attentiveness, but with a positive instead of a negative relationship. Implications of these findings are discussed in the final part of the paper.

**Research question 4.** The fourth and last hypotheses concern the idea that individuals high in moral identity are on average more morally attentive and that they experience less fluctuations of moral attentiveness during a working week.

**Hypothesis 4a.** At first, I ascertained the correlation (Pearson's  $r$ ) between moral identity and state moral attentiveness, which was not significant ( $r = .062$ ,  $p > .1$ , two-tailed). Secondly, I calculated the correlation between moral identity and trait moral attentiveness, which was also not significant ( $r = .116$ ,  $p > .1$ , two-tailed). Thus, there is apparently no relationship between the moral identity of a person and their state moral attentiveness as well as their trait moral attentiveness.

Afterwards, moral identity was introduced as a level 2 predictor, which did not improve the model fit and additionally, MI was not a significant predictor for state moral attentiveness ( $p = .88$ ) and is therefore not included in Table 3. Subsequently, I examined a possible cross level interaction between moral identity and state cognitive fatigue for predicting state moral attentiveness (Model 2). The interaction was marginally significant ( $p = .058$ ), as well as the improvement in model fit ( $p = .05$ ,  $\chi^2(1) = 3.841$ ,  $\Delta-2^{**}LL = 3.662$ ). Hence, Hypothesis 4a must be rejected, even though the findings give a hint for a potential

moderation of moral identity on the relationship between cognitive fatigue and state moral attentiveness.

**Table 3**  
Multilevel analysis of state moral attentiveness

DV Parameters	Baseline model			Model 1			Model 2		
	F			F			F		
	Estimate ( $\gamma$ )	SE	t	Estimate ( $\gamma$ )	SE	t	Estimate ( $\gamma$ )	SE	t
Fixed effects									
Intercept	3.42**	.16	22.11	3.43**	.16	21.47	3.43**	.16	21.47
MAgm	.45*	.14	3.11	.46*	.14	3.22	.46*	1.4	3.19
CFpm				.24*	.09	2.6	.25*	.09	2.83
MIgm							.07	.41	.17
CFpm*MI							.42†	.22	1.97
Random effects									
Residual	.91**			.78**			.78**		
Intercept	.71**			.97**			.97**		
UN(2,1)	.34*			.1			.08		
UN(2,2)	.28			.15*			.12†		
-2 *LL	1061.048			1036.875			1033.213		
$\Delta$ df	1			2			1		
$\Delta$ -2**LL				24.173**			3.662†		

Dependent variable: state moral attentiveness.

\*\* p < 0.01 level

\* p < 0.05 level

† p < 0.10 level

**Hypothesis 4b.** To test whether moral identity influences *fluctuations* of moral attentiveness during a working week, I correlated each participant's standard deviation of state moral attentiveness (average across the working week) with their moral identity. The correlation was not significant ( $r = .162$ ,  $p > .1$ , two-tailed). When correlating *daily* fluctuations of moral attentiveness with moral identity, the result was even more drastic, with

a null correlation. Thus, moral identity does not influence fluctuations of moral attentiveness during a working week. Thus, Hypothesis 4b must be rejected.

### Summary of results

To sum up, the present study revealed that moral attentiveness indeed fluctuates during a working week with a tendency to decline towards the end of the working week. On the contrary, there were no significant differences in morning and afternoon/evening values. Apparently, cognitive fatigue plays an important role in explaining intra-individual variability in moral attentiveness. Contrary to expectations, moral identity does not explain between-person differences in moral attentiveness and moral identity is unrelated to fluctuations of moral attentiveness. Implications of these findings are discussed in the following chapter. A summary of results can be found in Table 4.

**Table 4**

Summary of results

Hypotheses	
<i>H1: Moral attentiveness fluctuates during a working week.</i>	✓
<i>H2: Moral attentiveness is higher in the morning than in the afternoon/evening.</i>	✗
<i>H3: The subjective perception of an individual's cognitive fatigue correlates negatively with moral attentiveness.</i>	(✓)
<i>H4a: Individuals who have a high moral identity are on average more morally attentive.</i>	✗
<i>H4b: Individuals who have a high moral identity experience less fluctuations of moral attentiveness.</i>	✗

## Discussion

The findings of the study confirm that there is intra-individual variability in moral attentiveness during a working week with a decline towards the end of the working week and cognitive fatigue serves as an explaining within-person factor. On the contrary, the influence of moral identity (here: internalization dimension) on moral attentiveness was not verified.

At first, I am going to report on each of the findings and debate why or why not they did turn out the way I expected them to, secondly, I point out what these results mean for future research and thirdly, provide some practical implications. Lastly, I discuss limitations inherent in the present investigation.

### Contributions and reasoning of the findings

As expected, moral attentiveness turned out to fluctuate during a working week. So far, existing literature recognizes moral attentiveness as a trait that is rather stable over time (Reynolds, 2008). The present study challenges this assumption by illustrating that moral attentiveness is subject to short-term dynamics during a working week. To my knowledge, there is no comparable study to date, which examined moral attentiveness in a diary study. The finding has important implications for prospective studies dealing with moral attentiveness. By acknowledging fluctuations of moral attentiveness, new vistas on differing outcomes in moral behavior open up as discussed under the heading “Future research”.

Significant differences between morning and afternoon/evening values in moral attentiveness were not found, even though higher values were observable later in the day, but without significance. This is contradictory to previous findings, which described a *morning morality effect* of moral awareness (Kouchaki & Smith, 2014). But as mentioned earlier, moral awareness and moral attentiveness are conceptually different and thus, the present findings indicate that assumptions that may apply for moral awareness are not equally transferable to moral attentiveness, which provides further evidence for the discriminability of moral attentiveness towards other constructs. To conclude, the present findings give reason to believe that biological factors such as gender and time of the day might not loom large for moral attentiveness as it is the case for other moral recognition related constructs. It rather raises questions about the impact of depleted mental resources on moral attentiveness in general, especially when taking into account the findings regarding cognitive fatigue, which are discussed hereafter. But generally, further research is needed to confirm the present results.

**Why are cognitively fatigued individuals more morally attentive?** The subjective perception of an individual's cognitive fatigue significantly explained within-person variations in moral attentiveness. Opposed to expectations, the correlation was positive, meaning that a more cognitively fatigued person reported higher levels of moral attentiveness. Since neither the time of the day (morning vs. evening) nor the chronotype of a person were significant predictors in explaining differences in values, it is plausible that solely the reported levels of cognitive fatigue played a crucial role. But the central question remains: why are cognitively fatigued individuals more morally attentive? Eventually, it might be the case that cognitive fatigue was not an appropriate indicator of mental depletion in the present study or that ego depletion probably does not play an important role in moral attentiveness *at all*, as I already raised doubts being confronted with the non-existence of the morning morality effect for moral attentiveness. Assuming that there *actually* is a relation, there are several possible explanations.

One possible explanation lies in the “chicken or the egg causality dilemma”. In the present study, both the dependent (moral attentiveness) and independent variable (cognitive fatigue) were measured at the same time. The question we shall ask now is the following: what was first: a) cognitive fatigue leading to heightened moral attentiveness (the egg) or b) elevated levels of moral attentiveness leading to increased cognitive fatigue (the chicken)? From the present study set-up, causality cannot be inferred and therefore it is not possible to rule out that “b) the chicken” might be true. On the contrary, from the theoretical background I deployed, the possibility “a) the egg” makes little sense. Study evidence consistently shows that fatigue compromises subsequent executive control (Linden, Frese & Meijman, 2003) and should thus at least *not improve* moral attentiveness, because the reflective aspect of moral attentiveness entails intentional guiding of mental resources towards reflecting and examining from a moral viewpoint (Reynolds, 2008). Besides, it is worth mentioning that the present study is not the first to find paradoxical effects of ego depletion on moral behavior. Yam, Chen & Reynolds (2014) found that effects of ego depletion on unethical behavior depends on social consensus (variations in agreement about ethicality in behaviors). If social consensus was low, ego depletion was associated with increased unethical behavior whereas if social consensus was high, ego depletion was associated with decreased unethical behavior. Results further suggest that participants are less likely to engage in unethical behavior of high social consensus as a result of increased subjective fatigue, because fatigue impairs controlled and

deliberate thinking which is deemed necessary for acting unethical in situations with high social consensus. This study further supports the unlikelihood of possibility “a) the egg”.

Another plausible assumption could be that “b) the chicken” is true. Since moral attentiveness was only measured in the morning and then later that day, it remains unclear for how long participants already experienced elevated levels of moral attentiveness. It might be possible that moral attentiveness already increased prior to cognitive fatigue. Therefore, a study set up with either more or split measurement points during a day might be an option to closely track developments of cognitive fatigue and moral attentiveness. One might wonder now, why elevated levels of moral attentiveness still persisted despite the condition of cognitive fatigue. In the ego depletion literature, mental strength and its exhaustion is metaphorically described with a muscle analogy (Hirt, Clarkson & Jia, 2016). In short, our muscles get tired after sustained use and need to be restored before being in working order again. Interestingly, our mental strength appears to have similar limitations, so that after the expenditure of self-control the “mental muscle” is fatigued, which results in compromised performance on subsequent processes requiring self-control. Now, however, the effects of being mentally fatigued show up long before the “mental muscle” is too exhausted for any further responses, thus it might be possible that cognitive fatigue and elevated levels of moral attentiveness occur simultaneously. Deeper assessment of possible causality relations and moderators can be found under “Future research”.

**Moral identity and moral attentiveness.** The present study brought to light that the internalization dimension of moral identity does not correlate with moral attentiveness, neither with the average state moral attentiveness across the working week nor with the baseline trait moral attentiveness. Furthermore, it was not a significant level 2 (between-person) factor to explain differences in state moral attentiveness in the multilevel analysis. Even though scientific work highlights moral identity as an important antecedent for moral behavior and action (Gino, Schweitzer, Mead & Ariely’s, 2011; Hardy & Carlo, 2011) this does not seem to be true for moral attentiveness.

The current findings are in line with the ones of Reynolds (2008), who found that moral attentiveness was significantly positively correlated only with the symbolization dimension of moral identity whereas it was not the case for the internalization dimension of moral identity. Thus, concerning internalization, the present study confirms his findings. As I decided at the beginning of the study to solely use the internalization dimension instead of both combined, I see it is a shortcoming reflected upon retrospectively.

Theoretically, both moral identity and moral attentiveness draw from social cognitive theory, precisely from the accessibility element (chronic accessibility of morality related cognitive frameworks). This raises questions whether moral identity and moral attentiveness draw from different cognitive frameworks. Reynolds (2008) argued in a way that having an identity organized around a certain concept does not require being attentive to it. Contrasting this statement with Blasi's (2004) assumption that one strives for behavior consistent with one's self-definition, Reynolds argumentation seems rather divergent, because without being attentive to one's identity, one probably will not act accordingly and consistently. Generally, the theoretical reasoning of the findings on the relation of moral identity and moral attentiveness seems weak and is sparse in the current literature.

### **Future research**

General recommendations arise from the fact that the conducted research is quite new to the field and that there are no comparable studies to date. Future research could generally focalize on replicating the findings to further verify or falsify postulated relations. For instance, future research could conduct further diary studies on moral attentiveness to replicate findings about intra-individual variability as well as the decline of values towards the end of the week. They could also inspect long-term dynamics in longitudinal designs, to grasp a more fine-grained picture of moral attentiveness and its dynamics. Additionally, it would be promising to further investigate any differences in morning and afternoon/evening values in moral attentiveness and to further search for variables that could explain such differences as well as embedding these findings into the existing theories. To date, too little is known about the process underlying fluctuations of an individual's behavior as they go about their daily lives. What might become evident in the aforementioned is a clash of two different approaches in understanding personality. The "great trait debate" is currently defined by two approaches to personality psychology (Fleeson & Jayawickreme, 2015). Both approaches take two different stands on the degree of cross-situational consistency in behavior. The trait approach takes cross-situational consistency for granted and thus, stable traits are the best way to understand personality. The Social-cognitive approach instead perceives cross-situational consistency to be relatively low and highlights social-cognitive mechanisms to interpret the situation as key to understanding personality. Resolving this debate might be beyond the scope of the current paper, but the present findings confirm assumptions about variability in personality, which was predominantly regarded as rather fixed. Fleeson & Jayawickreme (2015) proposed the Whole Trait Theory to combine strengths and to straighten out weaknesses of both

approaches, by including mechanisms of differential reaction to situations. This more recent conception towards personality seems to be a sensible foundation for future studies on moral attentiveness and personality in general.

Moreover, as I noted earlier in the “chicken or the egg causality dilemma”, it remains veiled how moral attentiveness, cognitive fatigue and mental depletion are related. Future research could focus on establishing causality by investigating different possibilities: 1. they are unrelated, 2. Moral attentiveness influences mental depletion/cognitive fatigue, 3. Mental depletion/cognitive fatigue affects moral attentiveness or 4. Mental depletion/cognitive fatigue operate via a moderating mechanism. For possibility 3 researchers should make use of repeated measures experimental design, for instance by including preceding tasks requiring different levels of self-control and subsequent measurement of moral attentiveness. In a repeated measures design effects are often stronger, because it allows for comparisons for the same person between the condition with manipulation to that without manipulation. Additionally, experimental designs are the “gold standard” to truly establish causality. With this approach, a potential relation of depleted mental resources, cognitive fatigue and moral attentiveness could be tested and effect sizes could be established. Furthermore, it might be worthwhile to check whether there are differences between perceptual and reflective aspects of moral attentiveness, because the former is a more automatized and the latter a deliberate act. For possibility 4 a potential moderator that might further dissolve the paradox of the relationship between cognitive fatigue and moral attentiveness might be trait self-control. Trait self-control can be conceptualized “as the capacity to alter or override dominant response tendencies and to regulate behavior, thoughts, and emotions (de Ridder, Lensvelt-Mulders, Finkenauer, Stok & Baumeister, 2012, p. 77). By implication, there are dispositional properties of self-control which are assumed to be relatively stable across situations and over time. Individuals with the capability of exerting high self-control are better than others at controlling their impulses. A meta-analytic study points out evidence concerning the positive impact dispositional self-control has on a wider array of behavior (de Ridder, Lensvelt-Mulders, Finkenauer, Stok & Baumeister, 2012). Hence, it might be possible that in the present study people with higher dispositional self-control were able to overcome cognitive fatigue and therefore showing elevated levels of moral attentiveness, but further research is needed to verify this assumption.

### **Implications of the findings**

Below are listed some practical conclusions that can be drawn from the findings of the present study.

Since a decline of moral attentiveness was observable with increasing number of working days, individuals working extensive shifts might show decreased levels of moral attentiveness. For example, nurses might miss moral content in their working environment or interpret situations rather from a different viewpoint instead of a moral one, with serious consequences for patients. Thus, it is of importance to regularly provide days off from work and to avoid extensive shifts if moral attentiveness is regarded as relevant for a particular work setting.

Beyond that, the study revealed that a moral identity does not connote that an individual is more attentive and reflective towards moral content. Reynolds and Ceranic (2007) already pointed out that organizations should not just assume that a moral identity will necessarily translate into moral behaviors. Apparently, the nature of moral identity might be more motivational than moral and is in need of proper guidance, otherwise a moral identity can also lead individuals towards socially undesirable behaviors. Hence, selecting individuals for organizations with an emphasis on their moral identity, might not yield the desired outcomes such as moral attentiveness or consistent moral behavior.

### **Limitations**

One of the limitations of the present study stems from the sample itself, since most participants were females and socialized in western countries. This limits the transferability of the findings to other cultural settings as well as the generalizability for males. Thus, the present findings should be interpreted and understood against this background. Furthermore, participants were recruited among relatives and acquaintances adopting a snowball technique, which might lead to similarity in characteristics that are not representative for the population in general. Another aspect is the relatively small sample size of  $n = 42$ . Even though it exceeds the critical value of  $n = 30$ , which according to Scherbaum and Ferreter (2009) may lead to biased results, it is still considerably lower than sample sizes of diary studies featured in high-ranking journals that have sampled at least 100 participants.

Another issue one should keep in mind is that the collection of diary data over longer periods of time may change the experiences of respondents (Burt, 1994). For example, participants being repeatedly exposed to questions concerning moral perceptions might as a

consequence show elevated levels of moral attentiveness due to raised awareness. From the made observation that moral attentiveness values declined over the working week, it is reasonable to assume that there was no interference.

Moreover, a critical point is the use of adapted and abbreviated measures that are originally designed to assess between-person phenomena. Typically, validation studies of psychological measures involve between-subject designs, and consequently, there is no guarantee that reliability and validity is given for assessing within-person variability (Boorsbom, Mellenbergh & Van Heerden, 2002). Uncertainty remains whether the adapted scales used in the present diary setting are on a par with the original measures. Nevertheless, the original scale used in the baseline questionnaire correlated significantly with the adapted and abbreviated scale used for the daily questionnaires ( $r = .459$ ,  $p < 0.01$  level, two-tailed). Moreover, the internal consistencies of the abbreviated scales were overall adequate (see Table 1), but two out of ten measurements points of moral attentiveness yielded an Alpha below .70 (.65 and .69). Overall, it seems like the adjusted scale worked quite well. But one suggestion would be that future research could take into account the recent recommendation from Nezlek (2007) that reliability of adapted and abbreviated scales should be assessed by conducting a multilevel analysis with a three-level structure, in which construct items are nested within days, and in turn days are nested within persons. With this approach, methodology of future diary studies focusing on within-person effects of moral attentiveness could be improved.

In addition, as mentioned previously, solely using the internalization dimension of moral identity instead of both combined is another shortcoming of the study. Boegershausen, Aquino & Reed II (2015) emphasize that both dimensions are equally important in their interaction with situational cues for outcomes requiring moral self-regulation. My recommendation for future research is to include both dimensions of moral identity.

## **Conclusion**

Even though moral attentiveness is an ascending construct in the field of morality research, not much is known about determinants of moral attentiveness. The present research adds to this by showing that the internalization dimension of moral identity does neither influence moral attentiveness in general nor fluctuations of it. As expected, cognitive fatigue explains within-person variance in moral attentiveness but indicating a positive relationship and thus questioning the role of mental depletion on moral attentiveness. Furthermore, the findings suggest that moral attentiveness fluctuates from day to day and thus the assumption of it being

a stable trait is shaken. This holds far-reaching consequences for theories of personality psychology in general. What these findings mean for actual moral behavior needs to be investigated further.

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