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**EFFECTS OF THE TIME COURSE OF NEGATIVE
AFFECTIVE PRIMING ON MORAL JUDGMENT:
THE SHORTEST THE SOA, THE LESSER THE
SEVERITY**

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TABLE OF CONTENTS

SUMMARY	9
1. CHAPTER 1: THEORETICAL FRAMEWORK	
1.1. THE BIOLOGICAL APPROACH TO THE STUDY OF MORALITY.....	11
1.1.1. The evolutionary approach to the study of morality	11
1.2.1. The sociobiological approach to morality.....	13
1.2. THE NEW SCIENCE OF MORAL PSYCHOLOGY	16
1.2.1. The emergence of modern moral psychology	16
1.2.2. Current state of research on moral psychology.....	19
<i>1.2.2.1. The study of morality at the level of capacity</i>	<i>20</i>
<i>1.2.2.2. Morality understood as a set of innately co-determined social concerns.....</i>	<i>22</i>
1.2.2.2.1. Moral judgment understood as an evaluation driven by innate principles.	23
1.2.2.2.2. Moral judgment understood as an automatic-affective evaluative process	25
1.2.2.2.3. Moral norms understood as psychologically constrained cultural constructions	29
1.3. THE RELATIONSHIP BETWEEN DISGUST AND MORALITY.....	34
1.3.1. Conceptualization and description of disgust.....	34
<i>1.3.1.1. Physiological component of disgust.....</i>	<i>35</i>
<i>1.3.1.2. Expressive component of disgust</i>	<i>35</i>
<i>1.3.1.3. Phenomenology of disgust.....</i>	<i>36</i>
<i>1.3.1.4. Development of disgust</i>	<i>38</i>
<i>1.3.1.5. Disgust sensitivity understood as a psychological trait</i>	<i>38</i>

1.3.2. Function of disgust	39
<i>1.3.2.1. Disgust understood as a pathogen-avoidance mechanism</i>	39
<i>1.3.2.2. The symbolic conception of disgust</i>	41
<i>1.3.2.3. Typology of disgust</i>	43
1.3.2.3.1. The Disgust Scale (DS)	43
1.3.2.3.2. The Three-Domain Disgust Scale (TDDS)	45
1.3.2.3.3. Primary and complex disgust	46
1.3.3. The moral dimension of disgust	48
<i>1.3.3.1. The role of disgust in cultural notions about purity and contamination</i>	48
<i>1.3.3.2. On the interplay between disgust and moral judgments</i>	51
1.4. THE INFLUENCE OF INCIDENTAL AFFECTIVE VARIABLES IN SOCIAL EVALUATIONS	55
1.4.1. The influence of meta-cognitive experiences in evaluations	55
1.4.2. The influence of incidental affective experiences in evaluations	57
1.4.3. The affective priming experimental paradigm as a technique of affective induction	59

2. CHAPTER II: EXPERIMENTAL STUDIES

2.1. STUDY 1	69
2.1.1. Objectives and hypotheses	71
2.1.2. Method	71
<i>2.1.2.1. Pilot study</i>	71
2.1.2.1.1. Participants	71
2.1.2.1.2. Material and stimuli	72
2.1.2.1.3. Procedure	72

2.1.2.1.4. Results	73
2.1.2.2. <i>Main study</i>	73
2.1.2.2.1. Participants	73
2.1.2.2.2. Material and stimuli	74
2.1.2.2.3. Procedure	75
2.1.3. Results	77
2.1.4. Conclusions and discussion	78
2.2. STUDY 2	80
2.2.1. Objectives and hypotheses	80
2.2.2. Method	81
2.2.2.1. <i>Participants</i>	81
2.2.2.2. <i>Material and stimuli</i>	81
2.2.2.3. <i>Procedure</i>	82
2.2.3. Results	83
2.2.4. Conclusions and discussion	86
2.3. STUDY 3	88
2.3.1. Objectives and hypotheses	89
2.3.2. Method	89
2.3.2.1. <i>Participants</i>	90
2.3.2.2. <i>Material and stimuli</i>	90
2.3.2.3. <i>Procedure</i>	91
2.3.3. Results	93
2.3.4. Conclusions and discussion	96
2.4. STUDY 4	97
2.4.1. Objectives and hypotheses	98
2.4.2. Method	99

2.4.2.1. <i>Pilot study</i>	99
2.4.2.1.1. Participants	99
2.4.2.1.2. Material and stimuli	100
2.4.2.1.3. Procedure	100
2.4.2.2. <i>Main study</i>	102
2.4.2.2.1. Participants	102
2.4.2.2.2. Material and stimuli.....	102
2.4.2.2.3. Procedure.....	104
2.4.3. Results	105
2.4.4. Conclusions and discussion	108

3. CHAPTER III: GENERAL DISCUSSION, CONCLUSIONS AND PERSPECTIVES

3.1. EXPLAINING THE EFFECT OF AFFECTIVE PRIMING ON MORAL JUDGMENT.....	110
3.1.1. The effect of affective priming on moral judgment understood as an effect of the valence and/or arousal dimensions	110
3.1.2. The effect of affective priming on moral judgment understood as an effect mediated by the withdrawal motivational function	113
3.1.3. The effect of affective priming on moral judgment understood as an effect of discrete emotions	114
3.2. IMPLICATIONS OF THESE FINDINGS FOR RESEARCH ON THE EFFECT OF AFFECTIVE PRIMACY ON MORAL JUDGMENTS.....	116
3.3. IMPLICATIONS OF THESE FINDINGS FOR RESEARCH ON THE INFLUENCE OF INCIDENTAL DISGUST IN MORAL JUDGMENT	119
3.3.1. Option A: Intensity of the affective induction	121
3.3.1.1. <i>Thematic content of the primes</i>	122
3.3.1.2. <i>Time course of affective priming</i>	123

3.3.2. Option B: Cognitive simplicity of the induced affective response	126
3.3.2.1. <i>Embodiment theories of cognition</i>	127
3.3.2.2. <i>Appraisal-tendency framework (ATF)</i>	129
3.4. LIMITATIONS AND FUTURE DIRECTIONS	133
3.4.1. To test the particular weight of the dimensions of valence and arousal in the effect of affective priming in moral judgment	134
3.4.2. To test the possible influence of the withdrawal motivational function in the effect of affective priming in moral judgment	134
3.4.3. To test whether different methods of affective induction influence moral judgment in the same manner	135
3.4.4. To test the effect of negative affects in the moral domain in clinical populations	136
3.4.5. To test the moral specificity of the obtained effect	137
3.4.6. To test the possible application of the present findings to research on persuasion	137
3.4.7. To test the temporal dynamics of the present effect	138
3.4.8. To test the fundamental mechanisms by which negative affective priming reduces the severity of moral judgment	139
3.4.9. To search for the neural correlates of the response(s) induced through affective priming	139
3.4.10. To examine possible implications of this line of research to neuro-ethics	140
REFERENCES	142
APPENDICES	163
APPENDIX I: MORAL DILEMMAS	164
APPENDIX II: NON-MORAL DILEMMAS	178
APPENDIX III: DISGUST PICTURES (IAPS) (STUDY 1 AND STUDY 2)	190
APPENDIX IV: NEUTRAL PICTURES (IAPS)	197
APPENDIX V: HORROR PICTURES (STUDY 4)	198
APPENDIX VI: INFORMED CONSENT AGREEMENT	205

RESUMEN

Desde las modernas ciencias cognitivas, la posibilidad de que la mayoría de nuestras evaluaciones estén sustentadas en procesos psicológicos automáticos parece imponerse en el panorama académico. En esta línea, el emergente campo de la psicología moral favorece la caracterización del juicio moral como una evaluación predominantemente automática, en la cual los procesos intuitivos y afectivos priman sobre los racionales. Así, diversos estudios sugieren que los juicios morales son susceptibles a la influencia de variables afectivas incidentales. La investigación en torno al componente emocional de los juicios morales ha encontrado nuevas posibilidades en el estudio de la emoción de repugnancia, aprovechando lo que parece ser una estrecha relación entre dicha emoción y el ámbito de la cognición moral. A pesar de que diferentes estudios sugieren que la repugnancia incrementa la severidad de los juicios morales (moralidad más estricta), la naturaleza de la relación causal entre repugnancia y juicio moral no ha sido aún debidamente explicada.

A modo de ejemplo, los estudios anteriores no han explicado suficientemente si:

- (a) la susodicha influencia de la repugnancia es específica de los juicios morales o afecta también a los juicios no morales
- (b) si dicho efecto resulta de la valoración (*appraisal*) específica vinculada a la emoción discreta o se trata de una influencia afectiva más básica, no mediada por la evaluación cognitiva.

Adicionalmente, la evidencia actual resulta insuficiente para corroborar la eficacia de los métodos de inducción afectiva que se utilizan habitualmente en el estudio de los efectos de la emoción sobre los juicios morales. En este contexto, la presente investigación propone una aproximación afectivo-dimensional para abordar estas cuestiones. En particular, los diversos experimentos de los que consta este trabajo se centran en contrastar como el *priming* afectivo, tanto de repugnancia como de horror, influye sobre los juicios morales, investigando asimismo como cambia dicha influencia según los parámetros temporales del *priming*. Atendiendo a este último objetivo, el presente estudio incorpora también como variable independiente el intervalo temporal entre la aparición del estímulo *prime* y la del estímulo *target* (*stimulus-onset asynchrony*, SOA). Hasta donde sabemos, nuestra propuesta constituye el primer estudio sobre el curso temporal del efecto del *priming* afectivo sobre los juicios morales.

**1. CHAPTER 1:
THEORETICAL FRAMEWORK**

1.1. THE BIOLOGICAL APPROACH TO THE STUDY OF MORALITY

1.1.1. The evolutionary approach to the study of morality

The importance of incorporating a correct characterization of human beings' unique derivate traits (apomorphies) into the study of human nature has been the focus of recent research. Thus, Cela-Conde and Ayala (2008) concluded that the phylogenetic characterization of the species is incomplete if it does not include functional apomorphies. With regard to this issue, it is assumed that the central traits that set *H. Sapiens* apart from other species include language as a means of communication and mental representation, aesthetic appreciation of beauty and a highly developed moral cognition (Nadal, Barceló-Coblijn, Olivera, Christensen, Rincón-Ruiz, & Cela-Conde, 2009). However, one of the main obstacles of this field of research is the assumption that humans' moral behavior is the result of a particular trait that emerged through human evolution. In other words, the evolution of the moral faculty is studied ignoring that it is, in fact, the outcome of multiple cognitive and affective components (Nadal et al., 2009).

Without a doubt, the study of the biological roots of morality as a distinctive human trait is anything but new. For instance, it was a central theme in Charles Darwin's research, who understood morality as a logical product of evolutionary processes (Darwin, 1871). Darwin's conception of the evolution of organisms as a biological continuum is essential to understand morality. Thus, he argues that the presence of "social instincts" in other species must be understood from a phylogenetic perspective as the requisite for the further development of the moral sense. In Darwin's words: "(...) *of all the differences between man and the lower animals, the moral sense or conscience is by far the most important*" (Darwin, 1871, Chap. III).

According to Darwin, humans' moral capacity is an emergent outcome resulting

from the combination of simple capacities (such as the social instincts) and more sophisticated cognitive capacities that are only present in our species (such as critical reasoning). Hence, moral behaviors are founded on instincts—understood as motivational potentials that underlie behavioral predispositions—that work together with rational and empirical processes (see also Cela-Conde, 1986). Consequently, the “moral sense” is not directly derived from the process of natural selection. Conversely, it is an indirect result of the development of sophisticated intellectual abilities (Cela-Conde, Burgues, Nadal, & Olivera, 2009):

Any animal whatever, endowed with well-marked social instincts, the parental and filial affections being here included, would inevitably acquire a moral sense or conscience, as soon as its intellectual powers had become as well, or nearly as well, developed as in a man (Darwin 1871, p. 472)

In this sense, it is to some extent paradoxical that, for Darwin, the moral sense is exclusively present in our species. Thus, because Darwin establishes a correspondence between cognitive and moral development, the emergence of moral capacity is argued to be a recent evolutionary product (see Cela-Conde & Ayala, 2007). With regard to this issue, despite some interpretations that suggest that *H. neanderthalensis* developed some moral behaviors (Trinkaus, 1986), it is not yet clear whether those behaviors were complex enough to deserve the distinction of being called moral. In addition, it is also incorrect to consider non-human primates as moral beings, despite the fact that some species appear to display some behaviors associated with a moral sense (De Waal, 1996; Flack & De Waal, 2000). On the basis of these findings, the term “proto-moral” has been suggested to differentiate the cognitive complexity between those social skills and human morality (Capo, Nadal, & Cela-Conde, 2006).

In the last decades, evolutionary perspectives on morality have made some contributions to the study of humans’ moral processes. From the field of philosophy, the rise of evolutionary epistemology (Campbell, 1974) allowed a novel conception of human cognitive processes, based on the premise that any organism is explained as a “system of obtained knowledge.” According to this approach, our central nervous

system has evolved to provide us with a model of reality adapted to our environment. Consequently, the conditions of human cognition can be explained *a priori* from an ontogenetic perspective, but *a posteriori* from a phylogenetic context (Popper, 1972; Wuketits, 2006).

1.2.1. The sociobiological approach to morality

The study of the biological foundations of morality experienced a new revolution in the 1960s and 1970s with the flourishing of the ethological and sociobiological approaches. Thus, ethology is a biological discipline focused on the study of animal behavior, explaining both its innate and acquired aspects with special emphasis in its adaptive value. Indeed, this framework is theoretically based on Darwin's evolutionary assumptions. For instance, the concept of instinct¹ is central to this discipline and it is frequently cited to respond to what might be the main ethological question: *why does an animal behave in a certain way?*²

Within this framework, human ethology focuses on the adaptive significance of human behavior. In particular, this line of research applies the knowledge obtained from the study of animal behavior to the subsequent formulation of hypotheses concerning human social behavior. For example, aggressive behavior is understood as an instinctive response, that is, there is an innate tendency to manifest aggressive potential. This argument relies on the observation that other species need to manifest their aggressive potential in order to regulate it (Eibl-Eibesfeldt, 1977, 1979).

Unlike ethology, which explains behavioral patterns of each species in the context of its ecological niche, sociobiological approaches adopt the gene point of view to explain social behavior. According to Wilson (1975), sociobiology must be understood as the

¹ The term *instinct* should be understood as a genetical dimension that establishes the potential for the specific behaviors of the species (Palmero, Gómez, Carpi, Guerrero & Díez 2005).

² According to Tinbergen (1951), each animal behavior can be explained as resulting from the interaction between environmental variables and internal conditions of the particular species.

systematic study of the biological basis of any social behavior exhibited by animals and humans. Thus, sociobiology is based on the comparison of social species, considering each species as an evolutionary experiment resulting from millions of years of gene-environment interaction.

From this perspective, social behavior can be understood as a means developed *by* the gene to increase its replication (Dawkins, 1976). Such a claim matches the theory of natural selection. However, as Darwin admitted, this “selfish”³ conception of genes seems to contradict the occurrence of certain social phenomena in wildlife. For Darwin, the explanation of altruistic behavior was particularly intriguing because, for this behavior to take place, an individual had to invest his or her own resources to maximize the adaptive fitness of another individual (see Cela-Conde et al., 2009).

Wynne-Edwards’ (1962) research suggests that certain aspects of animal social behavior can be explained as individual sacrifices for a greater benefit of the group. Although “group selection” models have been the object of criticism (Williams, 1966), the occurrence of altruistic behavior in humans and other social species is undeniable. Hamilton (1963) explained this phenomenon through the notion of “kin selection”, which is based on the fact that closely related individuals share copies of many genes. Thus, organisms can increase the presence of these common genes in subsequent generations by favoring the reproduction of close relatives. In short, the closer the relative, the greater the sacrifice the individual is willing to make.

However, in the dynamics of human social interactions, altruist acts also appear between unrelated individuals. Trivers (1971) proposed the notion of reciprocal altruism as an answer to this particularity. Hence, he suggested that altruistic behavior could appear between individuals who interact for long periods of time if there is a high probability for the altruistic act to be returned by the other individual on a future occasion. Therefore, if this dynamic is not interrupted, both individuals will have benefited from their altruistic interaction⁴. In addition, the occurrence of altruistic

³ Dawkins (1976)

⁴ Indeed, it seems that reciprocal altruism is quite frequent in our species, which has developed methods such as altruistic punishment (Fehr & Gächter, 2002) in order to deal with the appearance of cheaters

behaviors outside kinship has also been addressed by Alexander (1987) and his theory of indirect altruism in the context of a dynamic of reputation.

As mentioned above, sociobiological theories have contributed to our understanding of certain social phenomena, such as altruistic behavior and cooperation outside of kinship. However, it seems evident that the explanation of human altruism cannot be reduced to the point of view of a gene. Thus, the notion of altruism that is operative in sociobiological theories embraces an economic conception of these behaviors, in the sense that they imply an immediate cost (survival and reproductive resources) to their perpetrators as a means to achieve further benefits (increasing *fitness*). Such a mechanistic conception faces several problems when it tries to explain behaviors that can hardly be conceived in terms of their adaptive benefits. For example, there is no evidence of adaptive benefits derived from war veterans that justifies the possible sacrifice of their lives. In fact, as Tullber (2004) points out, it actually appears to be the opposite.⁵

The failure of sociobiological theories to capture the complexity of social cognition revealed the necessity of more detailed explanations of the psychological mechanisms mediating social behaviors. In this context, the emergence of evolutionary psychology was a step further in the study of the social mind. For instance, the distinction between ultimate causes (such as increasing fitness) and proximate causes (such as the psychological processes mediating altruistic behaviors) constitutes a fundamental conceptual improvement in order to avoid reductionist explanations. Thus, unlike “traditional” sociobiologists, evolutionary psychologists redefined the gene point of view by adopting a functionalist conceptual framework to understand the adaptive function (the “whys”) of the psychological processes that underlie human social

(Laland & Brown, 2002).

⁵ It is noteworthy that biological approaches to human social behavior generated an unprecedented debate in the academic field. As Harris (1999) points out, these approaches were built on the legacy of Darwin and Spencer, assuming as a central claim that natural selection mechanisms constitute the *modus operandis* underlying human social behaviors. Indeed, this sort of “Neo-Darwinism” was frequently associated with conservative right-wing movements and racist ideologies. Eventually, accusations of this type led to further exclusion of sociobiology and to academic ostracism.

behaviors (Barkow, Cosmide, & Toby, 1992; Pinker, 2002).

According to this discipline, Krebs and Denton (2005) embrace a pragmatic perspective of the function of morality. From their perspective, it is necessary to understand the processes of moral decisions as resulting from the interaction between social processes and cognitive-affective mechanisms that allows people to live cooperatively. Further, the mental mechanisms that are involved in moral issues (such as moral norms) evolved because they allowed our hominid ancestors to benefit from the advantages of sociality.

1.2. THE NEW SCIENCE OF MORAL PSYCHOLOGY

1.2.1. The emergence of modern moral psychology

Recent multidisciplinary approaches to the nature of morality have given rise to important findings, constituting what appears to be a “new era” in this topic. This was largely possible because *a priori* theoretical models of morality are now required to be complemented with experimental data. But, even before the current “boom” of moral research, there was an important tradition in moral psychology, with the paradox that it was not recognized as a research topic *per se*. In other words, during the last century, social psychology has made remarkable progress in the study of morality through the study of topics such as empathy, aggression, fairness, norms and obedience without considering them aspects of an integrated moral field.⁶

In this context, an important particularity of morality is that it has been traditionally studied as a part of developmental psychology. Piaget (1932/1965)

⁶ As suggested by Haidt and Kesebir (2010, p. 797), “(...) just as Moliere’s Monsieur Jourdain discovers that he had been speaking in prose his whole life, social psychology can, perhaps, claim to have been speaking about morality its whole life.”

established the most influential line of moral research of the last 50 years with his cognitive-developmental approach to morality. For Piaget, the constructive processes through which children develop respect for rules (their moral understanding) and their ability to justify their moral judgments is explained through the progressive development of psychological mechanisms for information processing. Thus, children's social knowledge is akin to their knowledge of physics: it is self-constructed through their social interactions. In other words, developmentalists believed that children were active actors who constructed much of their morality by themselves. Such an approach is largely empiricist, in the sense that it leaves little room for moral concepts that are operative before social learning.

The work of Piaget was developed (never better expressed) by Lawrence Kohlberg (1969), who built the most influential theory of moral development. Based on Piaget's assumptions, Kohlberg incorporated the new paradigms from the cognitive revolution—with its special attention to mental models and information processing—with the aim of creating a new model of moral development. Thus, Kohlberg identified “role taking” or the ability to consider a given problem from different perspectives as the central factor for improving moral reasoning, which was understood as reasoning about justice. From Kohlberg's perspective, moral reasoning was developed through a progressive and fixed sequence of stages in which children improve their reasoning abilities. Consequently, this model explains children's ability to reason philosophically about moral (justice) problems.

Turiel's (1983) work contributed to a more descriptive account of moral development. Turiel identified a methodological problem in previous developmentalists' approaches: they assumed that children's responses measure their moral development. However, children of different ages differ largely in their capacity for articulate responses, which requested a new technique for measuring moral development that does not require much verbal skill. Thus, Turiel discovered that children knew more about moral functioning than was previously assumed. For instance, he found that children as young as 5 years old recognize that rules about food, clothing and many other aspects of life are social conventions (context-dependents rules), whereas rules about justice, rights

or welfare are moral rules (which are not context-dependent).

Despite the fact that developmentalists' approaches made important contributions to the study of morality, such a rationalist view of our moral life clearly undermines the role of emotional processes in the moral domain. Wilson (1975/2000) argued that biology plays a leading part in moral life by providing our species with brain structures that allow us to experience moral emotions in the presence of certain events. However, it was not until the shift of the “affective revolution”—with its emphasis on the study of the automatic affective systems of the mind—and the rebirth of sociobiology as evolutionary psychology that the study of the psychological processes underlying our moral sense showed whether an emotional explanation of morality was indeed possible. This assumption gained more support after the neuroscientific revolution, which allowed the design of a variety of experimental paradigms aimed at locating the neural correlates of moral cognition.

In particular, the “affective revolution” implied the vindication of emotions as a key part of the process of moral judgments. This perspective was further complemented with the concept of automaticity, which characterizes much of our mental processes as a result of automatic intuitions. Indeed, since the modern cognitive sciences, the idea that many of our social behaviors can be explained as the result of automatic processes has found several theoretical and empirical supports (Bargh, 1994; Bargh, Chen & Burrows, 1996). Thus, it is argued that automatic stimulus evaluation occurs at a very early stage in information processing, and that the process is fast, unintentional, efficient and occurring outside of awareness (Öhman, 1987). For instance, Bargh (1994) argues that the psychological processes involved in human behavior must be understood as a *continuum* from those processes that are fully automatic to those processes that are fully controlled. This claim has direct evolutionary connotations: automatic processes are phylogenetically older than controlled processes, which are slower, effortful and often conscious. Moreover, the possibility that certain moral behaviors are the result of automatic processes is suggested by Bargh and Chartrand (1999):

“So it may be, especially for evaluations and judgments of novel people and objects, that what we think we are doing while consciously deliberating in actuality has no effect on the outcome of the judgment, as it has already been made through relatively immediate, automatic means” (p. 475).

This perspective was reinforced by neuroimaging research and the results obtained from inter-species comparative studies. Thus, from the field of neuroscience, Damasio (1994) showed that patients who suffer lesions in specific brain regions display social deficits. The case of Phineas Gage, who suffered a lesion in his left frontal brain lobe and reported a subsequent alteration of his personality and social behavior (in particular, in his capacity for social decision making), was a central tenet of this emergent field. For Damasio (1994), this finding supports his “somatic marker” hypothesis, which claims that emotional processes are based on physiological changes (both in the body and the brain) that depend on neural systems and present specific correlates in certain brain regions.

According to the field of primatology, inter-species comparative studies have contributed to a better understanding of the cognitive-affective structures that are involved in morality. As we will review in the next section, research by de Waal (1996) and collaborators has proved to be prolific, making it possible for Darwin’s seminal theories about the “moral sense” to finally find empirical support.

1.2.2. Current state of research on moral psychology

Over the last ten years, discoveries about intuitions, emotions and the particular ways in which automatic mechanisms interact with rational processes have led to the beginning of a new era in the study of morality. Although there is a broad agreement that morality is an exclusively human phenomenon, the absence of a standard comprehension about the innateness of the moral sense is still an object of scientific

debate. Therefore, this section is organized around a preliminary distinction between the study of morality at the level of *capacity* and the study of moral cognition at the level of *content*.

1.2.2.1. *The study of morality at the level of capacity*

Consequently, there are two different ways in which the innateness of morality can be accounted for. Firstly, there is the level of the cognitive and affective mechanisms that are involved in moral cognition (the *capacity* level). Secondly, there is a different level that refers to the psychological predispositions that bias the content of moral judgments and moral systems (the *content* level).

According to the first perspective, the fact that *H. sapiens* is the only living species that can be considered a moral being has been a central claim in biological approaches to morality. Certainly, this point can be tentatively explained by considering the evolutionary account of the evolution of organisms: each species—and, of course, we are no exception—is born with a specific cognitive/affective “toolkit” that drives its particular experiences and emotions (see 1.1.1). These mechanisms are the biological prerequisites or “innate hardware” that makes it possible for each species to develop a particular set of potential behaviors. In the case of morality, it seems that we have evolved some psychological mechanisms that are not fully present—that is, at least not to the same degree—in any other animal species.

This prediction has found support in findings from inter-species comparative studies (Nadat et al., 2009). Hence, modern sophisticated cognitive faculties appear to be structured on more basic mental capacities that we share with other primate species. With regard to this issue, parsimony suggests that, if some psychological mechanisms involved in moral cognition are also present in our closest biological relatives, it is feasible that these mind traits evolved before the appearance of humans.

Indeed, many non-human primates display human-like methods to deal with conflicts inherent to their social life. Specifically, behaviors such as reciprocity,

reconciliation, consolation, conflict intervention or mediation are well documented in several comparative studies, to such an extent that they have been considered the “building blocks” of morality (Flack & de Waal, 2000). Each of these blocks appears to include different cognitive and affective mechanisms that seem to be correlated with the complexity of the behavior and, interestingly, the taxonomical place of the genre. For example, some non-human primates appear to be sensitive to effort (van Wolkenten, Brosnan, & de Waal, 2007) and capable of detecting and punishing cheaters, abilities that suggest the presence of retributive emotions toward inequity (Brosnan & de Waal, 2003; de Waal & Berger, 2000; Nichols & Mallon, 2006). Likewise, behaviors such as reconciliation, consolation or conflict intervention are associated with an understanding of the distinction between self and other (de Waal, 2007), the ability to make some inferences from the physical world (Call, 2005; Tomasello, Call, & Hare, 2003a, 2003b) and even a cognitive level of empathy, which implies an appraisal of the other’s contextual/emotional situation (Preston & de Waal, 2002).

However, as noted by Darwin, humans’ and non-humans’ social behaviors differ substantially in their degree of complexity. For instance, it has been suggested that cognitive capacities, such as symbolic thought and the ability for abstraction, are fundamental in humans’ moral cognition. For example, Ulric Tse (2008) believes that the arbitrary symbol-referent association that characterizes symbolic thought implies the ability to make mental representations that transcend immediate perceptual cognition (abstract thinking). According to Tse (2008), both the capacity to symbolize and the capacity to mentally construct categorical abstractions favored a new scenario in which any event (or individual) that is symbolized could be reconceived as a categorical instance (e.g., good or evil, right or wrong, acceptable or unacceptable). Consequently, any act (e.g., steal/wrong/unacceptable) has the power to make its performer immoral (e.g., thief/wrong/unacceptable).

In addition, neuroimaging results support this account. Moll and Schulkin (2009) found that ancient limbic-neurohumoral systems of social attachment and aversion—which are involved in non-human primate behaviors such as altruism or aggression—are tightly integrated with “newer” cortical mechanisms in the making of

moral sentiments and values. This suggests that the motivational-emotional neural mechanisms that underlie prosocial behaviors in other species acquire a new dimension when they are integrated with brain regions associated with complex social knowledge (Moll, et al., 2005), supporting the hypothesis that morality is not a unified neurological phenomenon (Borg, Lieberman, & Kiehl, 2008).

Summarizing, our review of the literature has shown that part of the cognitive and neural underpinnings of morality were already in place millions of years ago in our primate ancestors. Thus, empirical evidence suggests that humans' moral capacity can be explained as resulting from the interaction of basic and complex cognitive/affective mechanisms that are neither domain-specific nor exclusively human. Therefore, the innateness of morality should be understood from a dispositional manner, that is, at the level of evolved brain structures that acquired a new function in *H. sapiens*. Further, it seems that the psychological processes implicated in morality evolved originally for other purposes, which implies that, from the perspective of its evolutionary emergence, morality can be explained as a byproduct of other cognitive innovations (for discussions on this topic, see Prinz, 2007 and Sripada, 2007).

1.2.2.2. Morality understood as a set of innately co-determined social concerns

The debate about the innateness of morality becomes more controversial when it refers to the specificity of the biological influences in the content of morality. As Sripada (2008) points out, the discussion about “content nativism”—which refers to the specific set of actions that moral norms prohibit, permit or require—does not need to be reduced to a contraposition between the human mind as a blank slate versus the mind as fully programmed by genes. Additionally, even modern ethologists have vindicated the role of cultural experiences in the formation of ethical values, denying the possibility of a fully programmed human mind (Eibl-Eibesfeldt, 1977). Although empirical evidence supports that the “ingredients” that make our moral life possible are indeed given by evolution (*1.2.2.1*), it has not yet delimited the precise extent to which biology can also constrain our moral “products.” In the present section, we review three approaches to

the innateness of the content of morality: (a) moral judgments understood as evaluations driven by innate principles; (b) moral judgments understood as automatic-affective evaluative processes; and (c) moral norms understood as psychologically constrained cultural constructions.

1.2.2.2.1. Moral judgment understood as an evaluation driven by innate principles

The first approach to the innateness of moral content argues that we are born with a moral faculty akin to the language faculty. Thus, it has been proposed that moral judgments are structured on a set of implicit principles that constitute our “Universal Moral Grammar” (Hauser, 2006; Rawls, 1971), understood as an innate device of morality acquisition (Mikhail, 2007a). In other words, the human mind is born equipped with a set of domain-specific rules, principles and concepts that can produce a wide range of mental representations. These implicit principles determine the deontological status of an infinite assortment of acts (and non-acts, see Mikhail, 2007b). As a result, moral intuitions are structured on these psychological guidelines that constitute the moral faculty.

For instance, Hauser, Cushman and Young (2007) argue that, although there are domain-general mechanisms underlying our moral faculty, we can identify cognitive mechanisms that are moral-specific. These authors believe that such mechanisms work as a universal moral grammar that combines representations of actions, intentions, causes or outcomes and “translates” these general principles into specific moral judgments. Therefore, Cushman, Young and Hauser’s (2006) studies support the existence of three particular moral principles, each one of them is understood as “a single factor that, when varied in the context of a moral dilemma, consistently produces divergent moral judgments” (Cushman, Young & Hauser, 2006, p. 1082):

Action principle: People judged harm caused by action as morally worse than harm caused by omission.

Intention principle: People judge intended harm as morally worse than foreseen harm.

Contact principle: People judge harm involving physical contact as morally worse than harm caused without contact.

Research conducted by Knobe (2010) is an interesting counterpoint to this perspective. This author has found evidence suggesting that the “moral status” of an action (that is, whether it is judged as morally right or wrong) influences the perception of the intentionality of the action judged. For instance, Knobe and his team found that the same action was judged as intentional or unintentional depending on the wrongness or rightness of the action, respectively.

Likewise, a growing body of studies from the field of neuroscience suggests that there might be some unconscious principles underlying moral judgments. For example, Greene and colleagues (2001) adopted an alternative “bottom-up” approach to the nature of moral judgments based on the “Trolley problem” (Foot, 1978; Thomson, 1986). Consider the following scenario:

A runaway trolley is going to kill five people if it continues its present course. The only way to avoid this tragedy is to hit a switch that will change the trolley course, of which the major problem is that, in its new side track, it will run over—and of course, kill—one person instead of the initial five. Is it morally acceptable to hit the switch?

Diverse studies on this topic show a large inclination to immediately consider the affirmative response morally acceptable (Greene Somerville, Nystrom, Darley, & Cohen, 2001; Greene, Nystrom, Engell, Darley, & Cohen, 2004). Interestingly, responses were quite different when participants were asked to evaluate a similar recreation of the trolley dilemma. In this second case (the “footbridge dilemma”), all the variables were controlled to be identical than in the trolley dilemma. Thus, in this second version, the only modification was that, in order to stop the train and save five people, participants have to push a “big” person instead of performing the action of

“hitting the switch.” Despite the obvious similarities—both possible consequences are the same—results show that people respond in an opposite way: they tend to immediately consider as “not permissible” to push one man off in order to save five (Greene et al., 2001).

What makes it morally acceptable to sacrifice one life in order to save five in the first case but not in the second one? For Greene and collaborators (2001), the main distinction between the two situations is that the simple thought of pushing someone to certain death with one’s hands in an “close-up and personal” manner is likely to be more emotionally salient than the “impersonal” thought of hitting a switch, even if both responses have similar consequences. Therefore, dilemmas like the footbridge dilemma, in which the action can be structured in terms of ME (agency) HURT (action that leads to bodily harm) YOU (to an identifiable victim⁷) are considered “personal” moral dilemmas. Conversely, moral dilemmas that cannot be adjusted to this pattern are classified as “impersonal” (Greene et al., 2001; Greene 2009). It is noteworthy that, despite that the explanatory validity of this distinction has been seriously questioned (McGuire, Langdon, Coltheart & Mackenzie, 2009), it appears that there is *something* about the actions in the footbridge and the switch dilemma that elicits different behaviors. Interestingly, it seems that the evaluative divergence between the two dilemmas can also be corroborated at the neuropsychological level, as we will discuss below.

1.2.2.2.2. Moral judgments understood as an automatic-affective evaluative process

The possibility that the evaluation of both types of dilemmas engage dissociable processing systems has been proposed as an explanation for this phenomenon. Neuroimaging studies have reported activity in several brain regions during the evaluation of moral events (Moll & Schulkin, 2009), which shows that the process of

⁷ This phenomenon, better known as the “identifiable victim effect,” suggests that identifiable victims elicit more potent emotional responses than do statistical victims. Small and Loewenstein (2003) have shown that, when harmful actions are not personal enough, they fail to arouse our emotional reactions despite their seriousness.

moral judgment involves several brain areas working integratedly⁸. Some of these areas are associated with emotional processes, and others areas are related to rational processing, a fact that has favored the discussion about the function of rational and emotional processes in moral judgments.

For example, Greene (2009, 2011) proposes a dual-process theory of moral judgment, according to which automatic emotional responses drive characteristically deontological judgments, and controlled cognitive processes drive utilitarian judgments. Thus, Greene claims that moral cognition functions like a picture camera: there is an “automatic” (emotions-intuitions) and a “manual” (conscious reasoning) mode. Depending on the situation being judged, one setting could be more efficient than the other. However, as a general rule, the automatic mode is more efficient in everyday situations to which we are to some extent habituated. Conversely, in novel situations that require of more flexible responses, the manual mode is more efficient. These differentiated processes can enter into conflict in the moral situations where a rational evaluation clearly favors the “right” response, but the implication of such a choice elicits a negative emotional reaction (Greene et al., 2004).

Supporting this claim, Valdesolo and DeSteno (2006) found that participants who experienced a positive feeling before the evaluation of a “personal” moral dilemma made more utilitarian judgments. They interpret these results as evidence for the link between deontological reasoning and strong negative affective responses to moral violations, which would be reduced through the experience of positive affect. Likewise, Bartels (2008) found that participants who rely more on intuitive than deliberative thinking styles have preferences that are more consistent with deontology. Additionally, a neuropsychological study by Koenigs et al. (2007) found that ventromedial prefrontal patients made about five times more utilitarian judgments than control subjects.

The dual conception of moral cognition is amply shared among moral

⁸Moral cognition is not a unitary psychological construct. There is evidence that different cognitive and affective systems are involved in different types of moral judgments. Thus, dishonest, disgusting and harmful moral transgressions activate different brain regions associated with mentalizing, affective processing and action understanding, respectively (Parkinson et al., 2011).

psychologists. Moreover, a recent body of research favors the characterization of a typical moral judgment as an automatic process. For example, Jonathan Haidt (2001) found an important battery of evidence supporting his central claim that most moral judgments are caused by moral intuitions, which are understood as:

“(...) the sudden appearance in consciousness, or at the fringe of consciousness, of an evaluative feeling (like-dislike, good-bad) about the character or actions of a person, without any conscious awareness of having gone through steps of search, weighing evidence, or inferring a conclusion” (Haidt & Bjorklund, 2007a, p. 188).

Based on this conception, Haidt (2001) proposes the Social Intuitionist Model of moral judgment (SIM), which, essentially, captures the interaction between moral intuitions, moral judgments and moral reasoning. Therefore, in daily life, affect-laden intuitions drive moral judgments, whereas moral reasoning—when it occurs follows these intuitions in an ex-post facto manner. From this perspective, moral judgment is much like aesthetic judgment: in the presence of a moral event, we experience an instant feeling of approval or disapproval (Greene & Haidt, 2002). Thus, moral reasoning also plays an important “social” role in moral cognition, being very common in conversation and moral decisions (Haidt & Bjorklund, 2007b). In particular, moral arguments should be understood as attempts to trigger the right intuitions in others. As a consequence, moral discussions are understood as processes in which two or more people are engaged in a battle to push the rival’s emotional buttons.⁹

⁹ For example, Skitka (2002) has shown how moral positions or moral mandates regarding different moral objects can be extremely difficult to change once they are assumed.

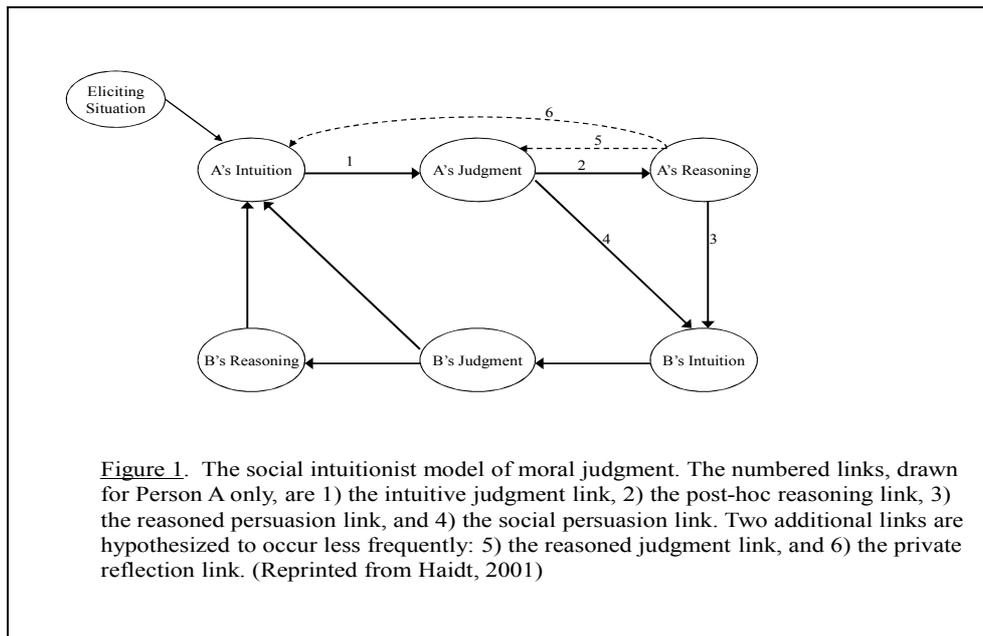


Figure 1. The Social Intuitionist Model (SIM) of moral judgment

The characterization of moral judgment as a response resulting from intuitive-affective processes has found support in two central claims. Firstly, the fact that people often have the feeling that something is wrong but find it extremely difficult to find reasons that justify their evaluation. Thus, Haidt (2001) identified the cognitive phenomenon of “Moral dumbfounding,” which consists of the fact that, in the absence of a truly comprehension of a given moral judgment, we tend to search for plausible explanations about why *anyone* in a similar situation would have proceeded in the same way¹⁰. Therefore, we can say that in those situations, we intuitively “know” whether something is right or wrong, but faced with the lack of a logical understanding of our response, we tend to rationalize a justification for our initial intuition. In other words, the reason why we are often unconscious of the cognitive processes that influence our moral judgments is because our “moral mind” acts more like a lawyer trying to build a case rather than a judge searching for the truth (Haidt, 2001):

¹⁰ According to Nisbett and Wilson (1977), in some situations when people are asked to report their cognitive processes underlying their responses to a stimulus, they just apply or generate a priori implicit causal theories about how plausible it is for a specific stimulus to be the cause a specific response.

“People have quick and automatic moral intuitions and, when called upon to justify these intuitions, they generate post-hoc justifications out of a priori moral theories. They do not realize that they are doing this. (...). Rather, people are searching for plausible theories about why they might have done what they did. Moral arguments are therefore like shadow-boxing matches: each contestant lands heavy blows to the opponent’s shadow, then wonders why he doesn’t fall down.” (Haidt, 2001, p. 12-13)

The second claim that supports the characterization of moral judgments as automatic-affective evaluative processes is the sensitivity of moral judgments to affective influences. Because this argument is enormously relevant to the present research, the influence of affective variables in moral judgments will be deeply analyzed in (1.4) and in Chapter III.

1.2.2.2.3. Moral norms understood as psychologically constrained cultural constructions

The affective-intuitive approach to morality is largely sustained by the claim that moral beliefs and motivations are ultimately derived from moral emotions. These emotions are understood as evaluations (good or bad) of persons or actions, with the particularity that the object evaluated can be the self or another. Thus, Haidt (2003) proposes that moral emotions can be divided into other-condemning emotions (like contempt, anger or guilt), self-condemning emotions (shame, embarrassment and guilt), other-praising emotions (gratitude, admiration and elevation) and self-praising emotions (pride and self-satisfaction). These emotions are typically triggered by the perception of a moral violation and normally motivate actions directed at the reestablishment of the “broken” moral value (Nichols, 2008).¹¹ For example, in order to have a moral attitude

¹¹ According to a new study, adults are much less likely than children to think someone should be punished for damaging an object, especially if the action was accidental. Moreover, the different responses correlate with the different stages of development. For Decety and colleagues (2012), negative emotions alert people to the salience of a moral situation by bringing on an unpleasant feeling that precedes moral judgment, and such an emotional response is stronger in young children. Particularly, morally salient scenarios elicited stronger empathic sadness in young participants and were associated with enhanced activity in the amygdala, insula, and temporal poles.

about stealing, it is necessary to experience a self-directed emotion (blame) at the prospect of committing a theft, and an other-condemning emotion (anger) when perceiving that someone is stealing.

A distinctive feature of moral emotions is that their subjective experience is especially sensitive to cultural factors and social dynamics. For Shweder and Haidt (2000), cultural-social standards shape the experiencing of each moral emotion and its relationship with social elicitors. Thus, the fact that *some* moral emotions are associated with *some* social situations across different cultures suggests that there may be some psychological foundations underlying the development of moral systems (Shweder, Much, Mahapatra, & Park, 1997). For instance, Haidt and Joseph (2004) argue that we are born with a “first moral draft” that is constituted of (at least) five sets of affect-laden intuitions, of which one is easily triggered by the perception of (at least) five sets of moral situations. In other words, the human mind has evolved these sorts of “social receptors” or “moral buds” (Haidt & Joseph, 2004, p. 57) that are sensitive to the recognition of social patterns (such as actions, relationships or intentions) and can “translate” the perception of these patterns into emotional states. Further, it is argued that evolutionary pressures structured the human mind to intuitively develop concerns about five moral foundations (Haidt & Joseph, 2004, 2007):

1. *Harm/care*: associated with the emotion of compassion and concerns for other-suffering, including virtues such as caring and compassion.
2. *Fairness/reciprocity*: involves concerns about unfair treatment, inequity, and abstract notions of justice. Moral violations within this domain are associated with the emotion of moral anger.
3. *In-group/loyalty*: involves concerns derived from group membership, such as loyalty, self-sacrifice and vigilance against betrayal. It is associated with emotions of group pride and rage against traitors.
4. *Authority/respect*: concerns related to social order and obligations derived from hierarchical relationships, such as obedience, respect, and proper role fulfillment. These concerns are mediated by the emotion of fear.
5. *Purity/sanctity*: involves concerns about physical and spiritual contagion,

including virtues of chastity, wholesomeness, sanctity, control of desires and is regulated by the emotion of disgust.

	Harm/Care	Fairness/Reciprocity	Ingroup/Loyalty	Authority/Respect	Purity/Sanctity
Adaptive challenge	Protect and care for young, vulnerable, or injured kin	Reap benefits of dyadic cooperation with non-kin	Reap benefits of group cooperation	Negotiate hierarchy, defer selectively	Avoid microbes and parasites
Proper domain (adaptive triggers)	Suffering, distress, or threat to one's kin	Cheating, cooperation, deception	Threat or challenge to group	Signs of dominance and submission	Waste products, diseased people
Actual domain (the set of all triggers)	Baby seals, cartoon characters	Marital fidelity, broken vending machines	Sports teams one roots for	Bosses, respected professionals	Taboo ideas (communism, racism)
Characteristic emotions	Compassion	Anger, gratitude, guilt	Group pride, belongingness; rage at traitors	Respect, fear	Disgust
Relevant virtues [and vices]	Caring, kindness, [cruelty]	Fairness, justice, honesty, trustworthiness [dishonesty]	Loyalty, patriotism, self-sacrifice [treason, cowardice]	Obedience, deference [disobedience, uppitiness]	Temperance, chastity, cleanliness [lust, intemperance]

Figure 2. The five foundations of intuitive ethics (Haidt & Bjorklund 2007a)

Moreover, an important aspect of this theory is that each moral foundation is understood as largely independent from an evolutionary perspective. That is, each set of psychological mechanisms (moral emotions and intuitions) can be explained as shaped by different selective social pressures. This hypothesis is derived from the fact that four of them (all but *Purity-sanctity*) appear to be built on psychological mechanisms that are present in non-human primates (Haidt & Joseph, 2004, 2007). For instance, in the case of the *harm/care* foundation, the existence of psychological mechanisms that elicit aversion to harmful actions that are directed at a conspecific appears to be evolutionarily ancient (Preston and de Waal, 2002). The same applies for *fairness/reciprocity*, a building block of moral life that is built on social behaviors, such as inequity aversion or sensitivity to effort, found in other primates (Brosnan and de

Waal, 2003; de Waal and Berger, 2000; van Wolkental, Brosnan and de Waal, 2007). Additionally, the behavioral foundations of both *in-group/loyalty* and *authority/respect* have been widely documented in different social species (Eibl-Eibesfeldt, 1977; de Waal, 1996).

Interestingly, the only moral foundation that does not present correlates in the animal kingdom is *purity/sanctity*, a fact that is congruent with the absence of the fully developed emotion of disgust in any animal other than humans (Rozin, Haidt, & McCauley, 2000). Consequently, because the relationship between disgust and morality is certainly complex, this will be the central theme of (1.3.3).

These findings call attention to the significant influence of emotional processes in our moral life. Thus, the appearance of emotional approaches to explain the normative level of moral systems is not surprising. For instance, it has been proposed that the moral dimension of rules is psychologically grounded on moral emotions. For Nichols (2007, 2008), emotions permit us to treat certain social transgressions distinctively. Like Greene (2009) and Haidt and Joseph (2004), the author believes that we have evolved an innate psychological predisposition to feel negative affective responses when in the presence of an action that involves another's suffering. According to his approach, this aversive mechanism constitutes the "emotional support" for the emergence and transmission of moral norms. In other words, for the "cultural fitness" of a moral norm, there must be some emotional congruence between the content of the norm and its implications. For example, Nichols (2007) argues that harm norms receive their special status because they prohibit actions that are inherently upsetting.¹²

Therefore, affective mechanisms appear to constitute an important factor mediating the moral/conventional distinction. Nichols (2002) has shown that individual ratings for disgust-sensitivity are correlated with the propensity to judge disgusting conventional transgressions as morally wrong. Further, Rozin, Markwith and Stoess

¹² That is why Nichols understands that: "Morality is conventional in the sense that the rules that we decided to elevate to special status vary across culture, but then the special status is what I think has the psychological basis" (Nichols, 2008).

(1997) proposed the concept of moralization to explain the phenomenon in which objects or activities that were originally neutral acquire a moral status. For example, they found that participants who reported avoiding meat for moral reasons (instead of for health reasons) found meat more disgusting and offered more reasons in support of their position. In the same line, Rozin and Singh (1999) found that participants' disgust measures were highly correlated with their (negative) moral judgments against smokers, suggesting that disgust toward smoking is correlated with strong beliefs that smoking is immoral.

Summarizing, the approaches reviewed above suggest that emotional processes play a motivational role at the normative level of morality. Thus, Haidt and Bjorklund (2007a) argue that the process of moral development should be understood as an externalization process: we have evolved psychological mechanisms (the five moral foundations) that function as “learning modules,” which, when working together with cultural elements, facilitated the emergence of moral knowledge.

Such a claim implies that there are no rigid parameters constraining moral norms, only innate predispositions that can potentially shape the content of those norms. As Sripada (2007) points out, although there are “*high-level themes*” in the content of moral norms that are nearly ubiquitous among moral systems—such as harm, incest, helping, sharing, social justice, and group defense—, the specific rules that operate within each theme are culturally idiosyncratic and highly variable.

From this perspective, Sripada (2007) developed a theory that elegantly explains the interaction between biological and cultural factors in the emergence and transmission of moral norms. Given the complexity of such a process, she takes advantage of the “Westermarck mechanism” (Westermarck, 1891/1922) and its explanation of the incest taboo:

- Sexual union between close genetic relatives has deleterious effects.
- People who are associated in childhood *tend* to be close genetic relatives.
- Our species has evolved an innate mechanism that produces powerful aversion

to the possibility of having sex with people with whom one was intimately associated during childhood.

Although such an innate system certainly makes evolutionary sense, it seems also evident that such an innate aversion cannot totally account for the stability of a particular moral norm. Therefore, the innateness of moral systems should be understood in terms of a set of social preparedness—like a “*universal menu of moral categories*” (Prinz, 2007, p. 381) —that constrains the construction and functioning of moral systems. In this context, the cuisine analogy created by Haidt and Bjorklund (2007a) might be illustrative: although cuisines are unique cultural products, they are also built on an innate sensory system that includes five different taste receptors on the tongue. These biological structures constrain cuisines while at the same time allow them a wide range of creativity in the final products, also constraining our preferences. In short, we can say that we are endowed with “conceptual moral seeds” that are typically externalized through individual development if the right “weather” (the cultural inputs) does its part.

1.3. THE RELATIONSHIP BETWEEN DISGUST AND MORALITY

1.3.1. Conceptualization and description of disgust

According to Darwin (1872/1965) disgust “...refers to something revolting, primarily in relation to the sense of taste, as actually perceived or vividly imagined; and secondarily to anything which causes a similar feeling, through the sense of smell, touch and even of eyesight” (p. 253). This section is conceived as a more detailed description of Darwin’s seminal definition.

1.3.1.1. Physiological component of disgust

The emotion of disgust is accompanied by a number of physiological reactions that function all together to prepare the organism for the avoidance and (ultimately) the rejection of infectious substances. Thus, the experience of disgust differs from other “basic” emotions by featuring the physiological signature responses of nausea (Darwin, 1872/1965) and—in extreme cases—vomiting (Rozin & Fallon, 1987). Disgust has been positively correlated with higher activation of the autonomic nervous system, in particular, with parasympathetic activity (Levenson, Ekman, & Friesen, 1990). For example, some physiological responses associated with disgust are increased salivation (Angyal, 1941), heart rate deceleration (Levenson, Ekman, & Friesen, 1990), reduced blood pressure (Sledge, 1978), decreased skin conductance (Lang, Greenwald, Bradley, & Hamm, 1993) and reduced respiration rate (Curtis & Thyer, 1983).

At the neurological level, the experience of disgust seems to be accompanied by the activation of certain brain areas. For example, areas of the anterior insula and the anterior cingulate cortex are activated when observing facial expressions of disgust (Wicker et al., 2003). Insula and amygdala also seem to be activated when individuals are exposed to displeasing tastes and odors (Small et al., 2003). Other brain areas associated with disgust are the medial and lateral posterior orbitofrontal cortex, orbital division of the inferior frontal gyrus, and some regions of the medial superior frontal gyrus (Moll et al., 2005). The occipital cortex, hippocampus, thalamus and amygdala have also been related to the processing of both disgust and erotic stimuli (Stark et al., 2005).

1.3.1.2 Expressive component of disgust

Although there is no absolute theoretical consensus about a prototypical disgust face¹³ (Rozin, Haidt, & McCauley, 2008), it has been commonly characterized by a furrowing of the eyebrows, wrinkling of the nose, closure of the eyes and pupil

¹³ Disgust has been also reported in the absence of any facial expression (Kraut, 1982).

constriction, a curled upper lip and gaping jaw, a set of facial features that are best known as the “gape face” (Darwin, 1872/1965; de Jong, Peters, & Vanderhallen, 2002; Ekman, 1982). This gape face has been empirically described as resulting from three distinctive components: parted lips or a dropped jaw, codified as Action Unit [AU]25 or 26 in the Facial Action Coding System [FACS; Ekman & Friesen, 1978], retraction of the upper lip (AU10) and the nose wrinkle (AU9) (See also Rozin et al., 2008).

The facial expression of disgust is readily identifiable across cultures (Ekman & Friesen, 1974) and it may be present even in congenitally blind individuals (Galati, Scherer, & Ricci-Bitti, 1997). In our species, the gape face also accompanies the reaction of distaste, which is described as a motivational response to the ingestion of unpleasant tasting substances (Rozin et al., 2008). The functional link between the gape face and rejection of unpleasant tastes is supported by two main facts. First, distaste is a common reaction among different non-human animal species. Second, the orofacial response (gape) in other species presents important similarities to their human equivalent (Bovbjerg 2006; Parker, & Limebeer, 2006).

1.3.1.3 Phenomenology of disgust

Disgust is a basic negative emotion the appraisal of which involves both a sense of offensiveness and revulsion accompanied by thoughts of contamination (Angyal 1941; Haidt, McCauley, & Rozin, 1994). If an emotion is understood as a disposition towards an action (Lang, 1995), disgust is always linked with a motivation to avoid and reject any perceived offensive entity (Rozin & Fallon, 1987). Compared to other emotions, the experience of disgust seems to be relatively short in duration (Scherer & Wallbott, 1994).

One of the most distinctive features of the emotion of disgust is the heterogeneity of its elicitors, a fact that it is still the object of theoretical dispute (as will be discussed in the following section). For instance, for human adults, the sense of disgust is much broader than a sensory rejection to unpleasant tastes and particular

foods. Thus, disgust is elicited by certain animals (like rats, spiders, worms or cockroaches), bodily products (such as feces, sexual fluids, urine, saliva, nails, sweat, etc.¹⁴), death, bad hygiene, sexual elicitors, body envelope violations (such as blood, gore and mutilation), visible signs of infection (lesions, discoloration, abnormal body proportion) and even certain offensive social behaviors, beliefs, institutions and persons (see Angyal, 1941; Curtis & Biran, 2001; Douglas, 1966; Haidt et al., 1994; Marzillier & Davey, 2004; Miller, 1997; Rozin & Fallon, 1987; Rozin et al., 2008).

The content of the disgusting is at times paradoxical: it can attract as well as it can repel. Even in the second scenario, it hardly ever repels without also capturing our attention (Miller, 1997). Curiously, there is a strong relationship between disgust and humor. Disgusting stimuli are often considered amusing, at least when the stimulus is not personally threatening (Rozin et al., 2008).

A crucial feature of disgust is its association with the process of contamination. Thus, contact with certain cues that evoke disgust can turn a neutral object into something disgusting (Nemeroff & Rozin, 1994; Rozin, Millman, & Nemeroff, 1986). Contamination can also occur without any physical contact (Rachman, 2004) and seems to operate in some irrational/ideational ways. For example, disgusting substances can render perfectly good food inedible by brief contact, even if there is no physical trace of the repulsive item: the idea (history) of contact is enough (Rozin et al., 1986). Consequently, Rozin and colleagues (1986) argue that, when applied to disgust, contamination effects follow two laws of sympathetic magic first introduced by Tylor (1871/1974), Frazer (1890/1959) and Mauss (1902/1972). The first law, which is known as “contagion,” states that when an offensive object touches a previously neutral object, some invisible essence/residue is transmitted, resulting in their permanent connection (“*once in contact, always in contact*”). The second law, known as “similarity,” holds that things that are similar in some properties are felt to be fundamentally similar. As Rozin et al. (2008) points out, superficial appearance is perceived as reality (“*the image equals the object*”).

¹⁴ Disgust is associated with every body-product except for tears (Miller, 1997).

1.3.1.4 Development of disgust

The complete experience of disgust seems to be absent in either infants or nonhumans. The available evidence suggests that there are no innately disgusting odors, a fact that is congruent with the well known tendency of young children to put anything into their mouth (including feces). Additionally, rejection of decay odors (in the absence of a present referent object) typically appears between 3 and 7 years of age (Schmidt & Beauchamp, 1988). Development of disgust is thus a complex process because it requires the development of complex cognitive notions. For instance, contamination sensitivity (which is not present in children under 3-5 years of age) is a sophisticated ability that demands considerable abstraction (Rozin et al., 2008).

Then, the development of disgust seems to require enculturation, a thesis supported by Malson's (1964/1972) review of approximately 50 feral humans, none of whom evidenced any sign of disgust. According to Tomkins (1963), children may "learn" to feel disgust by observing facial displays of emotions of adults to different stimuli. In any case, it seems that a fully developed disgust response is not in place until around the age of 5 to 7 years (Rozin, Hammer, Oster, Horowitz, & Marmora, 1986; Rozin, Fallon, & Augustoni-Ziskind, 1986; Siegal, 1988). Moreover, disgust toward body odors may appear later in development, around the beginning of adolescence (Stevenson & Repacholi, 2003).

1.3.1.5 Disgust sensitivity understood as a psychological trait

Sensitivity to disgust varies across individuals, cultures and maybe across geographical regions. This means that, for some people, the experience of disgust is more easily elicited—they find a wider array of stimuli to be disgusting—and can be felt with higher intensity. A crucial tool in the study of disgust sensitivity is the Disgust Scale (DS; Haidt et al., 1994), created to assess sensitivity to disgust in seven different domains¹⁵.

¹⁵ Subtypes of disgust will be reviewed in the next section.

For example, diverse studies show that women are more sensitive to disgust than men (Tybur, Bryan, Lieberman, Hooper, & Merriman, 2011), that sensitivity declines with age (Fessler & Navarrete, 2005), and that it is positively correlated with some personality traits (such as neuroticism) and negatively correlated with traits such as openness to experience or sensation seeking (Haidt et al., 1994).

High sensitivity to disgust is also correlated with some psychiatric disorders, such as animal and blood-injury phobias, and also with contamination aspects of obsessive-compulsive disorder (Berle & Philips, 2006; Olatunji, Sawchuck, de Jong, & Lohr, 2006). Disgust sensitivity also appears to predict certain psychological syndromes, such as eating disorders (Davey, Buckland, Tantow, & Dallas, 1998) or religious obsessions (Olatunji, Tolin, Huppert, & Lohr, 2005), as well as social attitudes, such as xenophobia (Faulkner, Schaller, Park, & Duncan, 2004), ethnocentrism (Navarrete & Fessler, 2006), restricted sociosexuality (Schaller & Murray, 2008), homophobia (Inbar, Pizarro, & Bloom, 2009, 2011; Inbar, Pizarro, Knobe, & Bloom, 2009), negative bias against obese individuals (Park, Schaller, & Crandall, 2007) or people with physical disabilities (Park, Faulkner, & Schaller, 2003), or social stigma towards colostomy patients (Smith, Loewenstein, Rozin, Sherriff, & Ubel, 2007).

1.3.2. Function of disgust

1.3.2.1. Disgust understood as a pathogen-avoidance mechanism

Then, the fact that *H. sapiens* is an omnivorous species implies an interesting adaptive challenge. As a generalist species¹⁶, humans have to deal with a wide range of combinations of food in order to achieve nutritional balance. In this context, the widespread presence of toxins and pathogens in nature makes it especially difficult to

¹⁶ Animal species that eat a wide range of food are called generalist (Rozin, 1999).

figure out the edibility of many potential foods on the basis of their sensory properties. For this reason, most of the times, in the presence of a novel food, the only way to identify its edibility is by ingestion (Rozin, 1999).

As a consequence, dealing with pathogens has constituted an insidious and powerful selection pressure. Together with a physiological immune system that functions to detect and attack pathogens that intrude on our organism, disgust is understood as a biological adaptation serving to guide behavior away from substances and objects associated with pathogens and disease. Thus, from an evolutionary and functional perspective, disgust is, at its core, an information processing system that prevents contact with infectious threats; in other words, an affective signal of parasite infection (Curtis & Biran, 2001; Curtis, Aunger, & Rabie, 2004; Oaten, Stevenson, & Case, 2009, Park & Schaller, 2009).

Consequently, disgust evolved to serve two crucial adaptive functions. First, disgust plays a crucial role in the process of food selection. The fact that disgust primarily evolved to function as a food-rejection mechanism is beyond any theoretical discussion (Darwin, 1872/1965; Ekman & Friesen, 1975; Haidt et al., 1994; Rozin & Fallon, 1987; Tomkins, 1963; for an exception, see Miller, 1997). For example, Andreas Angyal (1941) defines disgust as: "*Revulsion at the prospect of (oral) incorporation of an offensive object.*"

The second adaptive function of disgust is disease avoidance. As mentioned above, the immune system is a complex set of adaptations that function to attack pathogens when they enter the body. Nevertheless, the immune system is a reactive system, which means that it cannot prevent an animal from coming into contact with the source of infection. Based on this fact, Schaller and Duncan (2007) have suggested that natural selection designed a second defensive response that relies on perceptual cues to detect the presence of potential sources of disease. In this second system, the perception of such "signals" can trigger aversive cognitive and emotional responses that lead to behavioral avoidance.

In this context, disgust is argued to play a central function. According to Park and Schaller (2009) this “behavioral immune system” uses heuristic signals, such as anomalous physical and behavioral features (e.g., skin lesions, spasms, coughing, behavioral tics), to detect the presence of disease in people. Certainly, there is a variety of evidence suggesting that there is correspondence between cues that evoke disgust and cues that signal disease (Oaten et al., 2009).

According to Park and Schaller (2009), a crucial feature of this “behavioral immune system” is specially biased toward false alarms.¹⁷ The fact that most parasites are virtually invisible and that the biological consequences of an eventual infection are highly costly (illness or death) justify the viability of a system that is supersensitive to anything that superficially resembles disease. As a consequence, prejudicial responses may be directed at persons who are perfectly healthy but just look deviant.

There is evidence supporting prejudicial reactions toward healthy people with physical disabilities or abnormalities (Clark, 1999; Harvey, Troop, Treasure, & Murphy, 2002; Park, Schaller, & Crandall, 2007), and that vulnerability to disease (whether it is real or perceived) enhances disgust sensitivity (Fessler, Eng, & Navarrete, 2005) and is correlated with higher levels of ethnocentrism and xenophobia (Navarrete, Fessler, & Eng, 2007).

1.3.2.2 The symbolic conception of disgust

Although the findings recapitulated in this section favor a very concrete characterization of disgust as a phylogenetically ancient defensive mechanism designed to save us from physical threats, there are alternative accounts of the function of disgust that propose a more symbolic conception of this emotion. Therefore, a distinctive feature of humans is that culture biases all our interactions with the world, to the extent that we have reinterpreted much of our biology through symbolic systems. In the words

¹⁷ It is suggested that the behavioral immune system operates according the “smoke-detector principle” (Nesse, 2005). A smoke detector is calibrated to be supersensitive to anything that resembles smoke in order to minimize the possibility of a house fire.

of Clifford Geertz (1973), "*man is an animal suspended in webs of significance he himself has spun, [and] I take culture to be those webs.*"

Rozin, Haidt and McCauley (1993) then suggested that the function of disgust was redefined through the processes of biological and cultural evolution. These authors based their claim on the concept of "preadaptation" (Mayr, 1960) to describe the process through which an evolutionary "novelty" emerges by re-using existing structures. For example, although the human mouth clearly evolved as an eating and breathing organ, it was later "preadapted" to play a crucial role in the development of linguistic capacity (Rozin, 1999). According to this perspective, disgust expanded its original function as a disease-avoidance mechanism and now plays a much more ideational defensive function. In short, disgust was functionally recycled from a "guardian of the mouth" to function also as a guardian of the "temple of the body" (Haidt, Rozin, McCauley, & Imada, 1997, p. 114).

In this context, Becker (1973) developed a theory that states that our own "creatureliness" (understood as our animal/material condition) is a critical source of our existential fear of death. In such a scenario, cultural systems can be understood as attempts to transcend our biology, in other words, as "antidotes" to the recognition of our "flesh-and-bone" animal nature and its symbolic implications. Because the human body constantly reminds us of our animal condition, disgust is proposed to play a role as an affective alarm against thoughts or experiences that remind us of human materiality. Thus, in this symbolic context, disgust functions as an affective assertion that says "*I am fundamentally better than that.*"

This theory has been embraced by a line of research known as the Terror Management Theory (Goldenberg, Pyszczynski, Greenberg, & Solomon, 2000). Following Becker's insights, the terror management perspective claims that some disgusting stimuli are threatening to human beings because they make salient people's vulnerability to death. For example, Goldenberg and his team found that making salient mortality concerns increases the disgust reaction towards body products and animals

(Goldenberg et al., 2001) and that relative to neutral stimuli, disgusting stimuli led to higher death-thought accessibility (Cox, Goldenberg, Pyszczynski, & Weise, 2007).

There are, however, some arguments against this approach and the symbolic conception of disgust (Tybur et al., 2009; Oaten et al., 2009)¹⁸. For instance, if disgust functions as a psychodynamic defense mechanism, it might be expected to become progressively stronger, rather than progressively weaker, with successive exposure to its elicitors (in this case, the proximity of death). However, Fessler and Navarrete (2005) found a negative correlation between age and disgust sensitivity. Likewise, Royzman and Sabini (2001) argue that people engage in very permeable types of relationships with animals¹⁹ and that many behaviors that both humans and animals engage in do not elicit disgust (such as sleeping, breathing, jumping, and walking)²⁰.

1.3.2.3. Typology of disgust

As reviewed in Section *1.3.1.3 (Phenomenology of disgust)*, one of the most outstanding features of disgust is the heterogeneity of its elicitors. This particularity has raised the question of how to best characterize the function of this emotion, leading to the formulation of diverse proposals. Therefore, this section reviews the ones that can be considered the three main taxonomies of disgust.

1.3.2.3.1. The Disgust scale (DS; Haidt et al., 1994)

The initial 32-item Disgust Scale (DS) included seven domains of disgust elicitors (food, animals, body products, sex, body envelope violations, death, and hygiene) and a domain of magical thinking, offering a total of eight subscale scores (each score is made up of four items). The original DS was later revised, and the four items measuring

¹⁸ Some disgust researches have suggested that there is no need for symbolism to explain disgust, and that a disease-eliciting taxonomy can subsume all disgust elicitors (Oaten et al., 2009; Curtis & Biran, 2001).

¹⁹ For example, religions that rely on totemic constructions assume a mystical relationship between humans and animals (Lévi-Strauss, 1966).

²⁰ Interestingly, Miller goes further and suggests that human ambivalence about meat-eating can be explained as a perceived weaker form of cannibalism (for a different position, see Fessler & Navarrete, 2003b).

reactions to sexual behaviors and the item measuring disgust towards a moral violation were removed²¹ (Olatunji, Williams, Tolin, Sawchuk, Abramowitz, Lohr, & Elwood, 2007).

Therefore, based on their revision of the elicitors, Rozin and colleagues (2000) proposed four-factor taxonomy of disgust.

- (a) Core disgust: Understood as the “guardian of the mouth,” it is a food-oriented disgust that works as a defensive mechanism against issues that can be offensive for the organism (Rozin et al., 2008; Rozin & Fallon, 1987). This rejection of food is based on its sensory properties and ideational qualities. The appraisal of core disgust involves: (1) a sense of potential oral incorporation, (2) a sense of offensiveness, and (3) the perception of contamination. Elicitors of core disgust include “bad foods,” certain animals (which are often associated with those foods), and all body products except tears.

- (b) Animal-nature disgust: this type of disgust functions as a defensive mechanism against the existential threat is generated from our animal/material (and mortal) condition. This is a much more symbolic variant than core disgust, and its scope is largely variable across cultures. Thus, this disgust guards “the temple of the human body” (Haidt et al., 1997) and is conceived as a “body and soul” emotion. Elicitors of *animal-nature disgust* include poor hygiene, inappropriate sex, gore or violations of body boundaries, and death.

- (c) Interpersonal disgust: this type of disgust is elicited by contact with undesirable people whose mere physical presence is thought to be contaminating. For example, individuals and groups that are perceived as unknown, ill, or objects of misfortune. Interpersonal disgust has been suggested to be adaptive by reducing risk of infection (Rozin et al., 2008).

²¹ In their study, they found that the four items measuring reactions to sexual behaviors did not covary with the other 7 sub-domains.

(d) Moral disgust: The expressive and subjective experience of disgust is used in many cultures and languages to condemn social transgressions that do not involve the body in any sensorially disgusting way. Moral disgust is a reaction to a subclass of egregious moral offenses, those that reveal that an individual is lacking the normal human motives (people and behaviors that are morally “sick” or “twisted”). At least for Westerners, moral disgust can be described as the guardian of the lower boundary of the category of humanity: those actions that expose people moving down, people who "de-grade" themselves, elicit disgust in others (e.g., stealing from one’s own mother, or exploiting the vulnerable). Historically, moral disgust appears to have been (and still is) a major force in the construction of religious and legal institutions. However, as will be analyzed in more detail in the next section, the expansion of disgust into the moral domain involves different issues in different cultures (Haidt et al., 1997).

1.3.2.3.2 The Three-Domain Disgust Scale (TDDS; Tybur et al., 2009)

Tybur, Lieberman, and Griskevicius (2009) have proposed an adaptationist perspective to the functional heterogeneity of disgust. According to their approach, natural selection has favored the evolution of three functionally specialized disgust domains that operate to solve three qualitatively different adaptive challenges: pathogen avoidance, mate choice, and social interaction.

(a) Pathogen disgust: This type of disgust functions as a first-line of defense against objects that are likely to transmit disease (e.g., dead bodies, rotting foods, and bodily fluids such as feces, phlegm, vomit, blood, semen, etc.) or objects that resemble the source of disease, such as the stimuli that emit the same sensorial cues that are associated with pathogen presence (even if they are not infectious in any way)

- (b) Sexual disgust: This type of disgust evolved as a response to the adaptive problem of avoiding sexual partners and behaviors that would impose net reproductive fitness costs. Sexual disgust requires a set of categorizations and decision rules to assess mate suitability (e.g., avoid unattractive features in a potential mate or avoid one's close kin as mating partners).

- (c) Moral disgust: The fact that people kill, denigrate, rape, free ride, or perform socio-moral transgressions such as cheating, lying, or stealing implies a potential danger to the stability of cooperative relationships and group cohesion. As a result, this domain of disgust functions to motivate avoidance of individuals who inflict social costs at the individual and group level.

1.3.2.3.3 Primary and complex disgust (Marziller & Davey, 2004)

Based on Izzard's (1972) perspective of emotions, these authors argue that emotions rarely appear on their own and we often experience "blends" of emotions. According to Marziller and Davey, the functional heterogeneity of disgust can be better explained in terms of the discreteness of the disgust experience. Thus, they argue that there is a main distinction between elicitors that generate exclusively disgust and elicitors that trigger a blend of disgust with other negative emotions.

- (a) Primary disgust: This emotional experience is the disgust reaction *per se*. Elicitors of primary disgust include objects of animal origin (e.g., animals, their parts and their products) that generate fear of oral incorporation. This type of disgust is suggested to function as a disease avoidance response (items that elicit primary disgust are disease vectors or can be associated with disease transmission) and because of the biological importance of its function, it is suggested to be universal.

- (b) Complex disgust: The experience of complex disgust is a multi-emotional negative experience. Elicitors of this type of disgust not only elicit disgust (although it seems to be the dominant emotion) but also high levels of other

negative emotions (e.g., fear, sadness, contempt, and anger). Complex disgust has been extended into the social domain as a means of instilling certain objects, individuals, and activities with negative affect. Thus, its immediate function appears to be informative, that is, to transmit evaluative and affective information about a social elicitor. Due to its sophisticated function, complex disgust is suggested to be highly variable and culturally dependent.

Needless to say, these taxonomies reveal parallelisms and divergences. First, the three proposals admit the validity of a type of disgust associated with pathogens and diseases. However, Tybur et al. (2009) understands that there is no need for an independent “animal nature” disgust domain because it can be better explained in terms of pathogen avoidance. They point out that both “core” and “animal nature” domains of the DS have in common a variety of disease-related elicitors. Thus, from their perspective, “core disgust” and “animal nature disgust” can be more parsimoniously explained as pathogen disgust.

The second major point of debate is the characterization of moral disgust. Although there is agreement that disgust (pure or “blended”) has a moral function, the qualitative nature of the emotional response and their elicitors seems less clear. Thus, Marzillier and Davey (2004) understand moral disgust as a “blended” negative emotion, which implies a theoretical distinction from the DS and the TDDS. Moreover, whereas the DS argues that moral disgust is only about behaviors that reveal cruelty or dehumanization, in the TDDS, the moral disgust domain is constituted by standard moral violations (e.g., stealing, cheating, and lying).²²

Furthermore, there is an alternative approach to the nature of moral disgust. For instance, Royzman and Sabini (2001) believe that the function of disgust in the moral domain is very much metaphorical, and that “moral” disgust elicitors are really anger

²² Chapman, Kim, Susskind, and Anderson (2009) found that moral violations activate the levator labii muscle of the face, associated with the facial expression of disgust. However, their moral items—like in Tybur et al.—are standard moral violations (e.g. stealing, cheating, and lying). However, Rozin, Lowery, Imada, and Haidt (1999) found evidence that suggests a link between violations of this type—individual rights—and the emotion of anger.

elicitors described with the vocabulary of disgust for greater rhetorical effects. Nabi (2002) also suggests that there is a difference between the theoretical and the lay meaning of disgust, and that the lay understanding of the word “disgust” is actually a combination of disgust and anger.

Likewise, Lee and Ellsworth (in press) found that moral disgust and anger are characterized by a constellation of common features—the attribution of agency, the violation of social norm, the presence of judgment, and the behavioral tendency to approach and punish. This is not the case of physical disgust, which shares attributes with fear (no value-laden judgment, a sense of weakness/submissiveness, and the behavioral tendency to avoid). In a similar vein, Moll et al. (2005) argued that the moral dimension of disgust should be understood as a moral emotion (indignation) *affiliated with* disgust (rather than a variant of disgust). Interestingly, they found that disgust and indignation activated both distinct and overlapping brain areas.

Indeed, there is evidence suggesting that disgust and anger are elicited by different cues of moral situations: whereas anger is associated with the perception of harm and intentionality, disgust is typically triggered by bodily norm violations (Russell & Giner-Sorolla, 2011a, 2011b). Likewise, Paul Bloom (2004) believes that, although disgust is involved in some moral judgments, these judgments are always related to physical things rather than more abstract topics. In addition, this perspective is shared by Oaten and colleagues (2009), who argue that some moral violations are perceived as disgusting because they activate representations of primary disgust.

1.3.3. The moral dimension of disgust

1.3.3.1. The role of disgust in cultural notions about purity and contamination

As reviewed above, a variety of evidence suggests that there is something about disgust that makes this emotion such a leading actor in everyday moral life. This extension of disgust from an “oral” to a “moral” emotion seems to be a ubiquitous

feature across cultures, and it appears to be persistent in widespread ideas of purity and pollution. For example, in ancient Greece, the condition of *miasma*—which involves a distancing from the divinity—is suggested to share important parallelisms with the concept of disgust (Parker, 1983). Whether literal or metaphorical, the association between physical and spiritual pollution is also recurrent in the Hebrew Bible. In ancient Israel, corpses were viewed as a source of ritual impurity, and priests were expected to limit their contact with them (Leviticus.21:1-4). Zoroastrians were also concerned about the impurity of corpses and developed a number of measures in the process of caring for corpses in order to minimize the spread of impurity: the pairing of corpse-bearers, special dress, and the presence of a dog (Boyce, 1975). Likewise, the Bedouin consider men and only postmenopausal women to be pure²³.

Disgust appears to function very well to define boundaries in the social world. In the words of William Ian Miller, “*Disgust (...) paints the world in a particular way.*” (Miller, 1997, p.18). For Miller, disgust is a social and moral feeling that makes social ordering possible by ranking people and objects in a sort of cosmic order. According to Miller (1997), the phenomenology of disgust makes this emotion competent to police the boundaries of the self, the sacred and the profane, the violable and the inviolable, or in-group and out-group relationships. Likewise, Douglas’ (1966) symbolic approach to the role of purity and pollution in culture suggests that things that are anomalous, ambiguous, or deviant within a given category are experienced as polluting.

In any case, the influence of disgust in different cosmovisions is still in force. For instance, many ideas and behaviors involving hygiene and food choice are regarded as personal issues in the United States, but as moral subjects among many Hindu Indians (Shweder, Mahapatra, & Miller, 1987). Even in modern western culture, Haidt, Koller and Dias (1993) found that disgusting but harmless actions were judged as moral violations by people in the lower social classes from Brazil and United States, whereas

²³ “The religious basis of the purity/impurity distinction and the intensity of feelings on this subject were vividly exposed when I unthinkingly threw an item of women’s clothing into a washtub of men’s clothing. The women gasped and rushed to remove the item, scolding me for mixing men’s and women’s clothing. They told me that women were unclean, and that their clothes and children’s clothes were washed separately from those of men and of postmenopausal women (whose clothing—other than underwear— could be washed with men’s)” (Abu-Lughod, 1986, p.131).

students from high socioeconomic status in the U.S judged these actions to be a matter of social convention or personal preference.

Thus, it has been suggested that some cultures are especially sensitive to purity concerns in their elaboration of moral systems. Shweder, Much, Mahaptra, and Park (1997) claim that there are three groups of ethics underlying moral systems. Whether the moral system resembles a particular group of ethic depends on the different conceptualizations of the person. Thus, the ethics of community is based in an interdependent conception of the individual as a member of a group and emphasizes community/hierarchy violations. The ethics of autonomy are based on an individual conception of the self and are especially sensitive to individual rights and freedom. Finally, the ethics of divinity conceives persons as divine creatures who bear a bit of God within. Further, Rozin et al. (1999) suggested that, across cultures, violations of these three ethics typically elicit three moral emotions: contempt, anger, and disgust, respectively.²⁴

In particular, the ethics of divinity—or the “purity” domain (Haidt & Joseph, 2004)—are articulated around the emotion of disgust, which appears to make people feel that some behaviors and beliefs are higher, more spiritual, and less carnal than others. In the same way that disgust guards the “temple of the body” (Haidt et al., 1997), the moral domain of purity involves values and principles directed at protecting the sanctity not only of the body, but even primarily, the sanctity of the soul. In a purity-based morality, people should strive to live in a divine, sacred way.²⁵ Thus, from a purity perspective, it is virtuous to be clean, chaste, to reject contaminating entities or hedonistic pleasure, to cleanse the soul, and to act in accordance with the “natural order” of things. It is immoral to behave in a way that is self-polluting, filthy, profane, carnal, hedonistic, unnatural, animal-like, or ungodly; in other words, every behavior that causes the degradation and spiritual defilement of an individual is immoral²⁶ (Haidt & Joseph, 2007; Rozin, Lowery et al., 1999).

²⁴ As mentioned in the review of the Moral Foundations Theory (1.2.2.2.3), Shweder’s ethics of divinity was the theoretical basis for the moral domain of purity/sanctity.

²⁵ It does not require, however, the belief in a deity (Haidt, 2006).

²⁶ “*Cleanliness is next to godliness.*”

In the industrialized world, the realm of the morally disgusting is also remarkably variable. For instance, when U.S. and Japanese participants were asked to name acts eliciting disgust, most of the mentioned acts were moral offenses (70 and 61% respectively, from Haidt et al., 1997). But the particular things that elicited moral disgust in the two groups were indeed different. Students from Chicago named acts of senseless violence or cruelty, especially toward weak or defenseless people (e.g., genocides, mass murders), and ugly or offensive beliefs and attitudes (e.g., racism). Students from Hiroshima reported feeling *ken'o* (disgust) in everyday social interactions when people—or they themselves—failed to satisfy their needs, or when other people abused or shamed them (e.g., “When I did not find my name on the board where the names of the people who passed the entrance exam are posted,” or “when punks tried to pick a quarrel with me.”).

1.3.3.2. On the interplay between disgust and moral judgments

The particular connection between disgust and morality has raised a debate about its normative implications. One theoretical position is that disgust cannot be considered a reliable source of information about the wrongness of an action. For example, Nussbaum (2004) understands that disgust cannot interfere with the legal system. From her perspective, disgust sometimes serves as the primary or sole reason for making some acts illegal, such as the consideration of some materials as obscene or in debates over gay marriage. Moreover, she points out that disgust has been used as an aggravating factor applicable to already illegal acts. Thus, judges or juries can feel disgust when gory or bloody aspects of a murder are described vividly, which eventually can bias the final verdict.

On the other hand, disgust has been proposed to serve as a supra-rational source of information, a sort of innate wisdom that can guide human behavior in some ambiguous situations. According to Kass (1997), revulsion toward the prospect of human cloning might be seriously considered at the moment of legislating cloning

issues. For Kass, disgust embodies a wise repugnance to evil, which cannot be dismissed.

Nevertheless, the validity of disgust as a trusty moral guide seems to be at least questionable. As mentioned above, disgust is an emotion of extraordinary inclusiveness; it is susceptible to be triggered by cues that are perceived as a source of disease or degradation even in the absence of any real threat. Thus, it has been suggested that, when the feeling of disgust is attributed to a social topic, it is imbued with defective moral status.²⁷ For Miller (1997), disgust as a social emotion often involves a moral judgment that operates rather like an aesthetic judgment. In his words: “*Disgust makes beauty and ugliness a matter of morals*” (p. 200), because it is the means by which we feel the bad and the ugly. Yet, when it is applied to moral issues, disgust is not experienced as simple aversion: it has the capacity to degrade its object in some moral way²⁸. For Miller (1997),

“Disgust evaluates (negatively) what it touches; proclaim the meanness and inferiority of its object. And by so doing, it presents a nervous claim of right to be free of the dangers imposed by the proximity of the inferior.”
(Miller, 1997, p. 9)

According to this perspective, the feeling of disgust can eventually confirm the moral wrongness of its object. Thus, disgust appears to provide reasons for withdrawing. For example, Miller (1997) claims that disgust motivates the construction of justifications in order to make stigmatized people blamable.²⁹ Further, he concludes that sickness is often perceived as a punishable offense: both mundane illnesses and AIDS are blamable as failures to take care of oneself appropriately.

²⁷ For Miller (1997), disgust and contempt “assert a superior rank against their objects”.

²⁸ For example, “When we respond to a homeless person with disgust, we avoid considering the person’s mind,” says Fiske. “We treat the person as equivalent to a pile of garbage” (Jones, 2007).

²⁹ In his historical analysis of high Middle Age Europe, he found that physical disgust toward lepers led to a belief in their moral loathsomeness. On the reverse side of the coin, Jews’ assumed moral loathsomeness led to a belief that their bodies must be as disfigured as their souls, so they were associated with excrement and menstrual blood.

Interestingly, various studies suggest that there is an interdependent causal nexus between disgust and moral judgments. For instance, there is evidence supporting that people use their feelings of disgust as embodied information about social events. Thus, some studies suggest that incidental disgust can lead to more negative attitudes toward an entire social group. It has been shown that disgust induced by pictures and autobiographical writing increased implicit bias against homosexuals, but anger did not; whereas anger exclusively increased bias against Arabs (Dasgupta, DeSteno, Williams, & Hunsinger, 2009). Similarly, Inbar, Pizarro, and Bloom (2011) found that participants who were exposed to a noxious ambient odor reported more negative evaluations of gay men.³⁰

In particular, the more prevalent claim in research on disgust and morality is that disgust increases the severity of moral judgments. Thus, Wheatley and Haidt (2005) hypnotized participants to feel a flash of disgust whenever they saw an arbitrary word in the context of a moral story. They found that when participants encountered the arbitrary word in the story, they reported higher disgust and greater condemnation of the moral violation. In the same line, Schnall, Haidt, Clore, and Jordan (2008) found that the feeling of disgust, even when it is extraneous to the action being judged, can shape moral judgments by making them more severe in people with high sensitivity to their own visceral reactions.³¹

Horberg, Keltner, Oveis, and Cohen (2009) found that disgust, but not other negative emotions (e.g., anger and sadness), predicted stronger moral condemnation of behavior violating the purity domain, but not the moral domains of harm/care or justice. Likewise, Eskine, Kacirik, and Prinz (2011) found that gustatory disgust influenced moral judgments by making them more severe. In their study, participants evaluated a variety of moral transgressions after consuming a sweet beverage, a bitter beverage, or water. Thus, participants in the “bitter” condition (who reported feeling disgust) made harsher moral judgments. In a different experimental paradigm, Moretti and di

³⁰ Unlike Dasgupta et al. (2009), they found no effect of incidental disgust on participants’ implicit evaluations of gay men.

³¹ This effect is not limited to “disgusting” moral dilemmas. Nor is it broad enough to influence non-moral judgments.

Pellegrino (2010) found that, relative to sadness, induced disgust increased rejection rates of unfair offers³².

It seems that the reverse of this pattern also mediates moral cognition. Thus, a growing body of research suggests that we think about morality in terms of cleanliness; in particular, moral violations are experienced as dirty and elicit the desire to cleanse. For instance, Zhong and Liljenquist (2006) found that, when people think about a past immoral action they displayed a greater desire for cleansing products, and increased mental accessibility of cleansing-related concepts, and a greater likelihood of using antiseptic wipes. Likewise, they found evidence suggesting that physical cleansing reduced the upsetting consequences of immoral behavior.

Similarly, Ritter and Preston (2011) found that disgust towards rejected religious beliefs was eliminated when participants were allowed to wash their hands. Furthermore, this embodied relationship may be indeed specific. Lee and Schwarz (2010) found that participants who had to lie orally (“dirty mouth” condition) preferred mouthwash over hand-sanitizer, whereas those who typed the same lie with their hands preferred the hand-sanitizer. Finally, Linkenquist, Zhong, and Galinsky (2011) found that clean scents (induced by a spray of citrus-scented Windex) promote reciprocity and charity. Interestingly, in their study, perceived cleanliness did not differ by condition nor did it correlate with the effect, which suggests that its influence was unconscious.

In addition, Schnall, Benton, and Harvey (2008) found evidence supporting that the cognitive concept of cleanliness and the sensation of physical cleanliness can make moral judgments less severe. However, it seems that when the cleanliness prime implicates the self, feeling clean enhances moral self-perception and can, in turn, license harsher moral judgments (Zhong, Strejcek, & Sivanathan, 2010).

These studies suggest that there is an implicit psychological link between physical dirt and immorality. Nevertheless, David and Olatunji (2011) found evidence that questions the reliability of disgust as an amplifier of moral judgments. In their

³² For a contradictory finding, see Bonini, Hadjichristidis, Mazzocco, Demettè, Zampini, Magon and Sbarbati (2011).

study, participants were asked to rate some moral transgressions that either contained a disgust-conditioned word or a neutral word. They found that transgressions containing the conditioned disgust elicitor were perceived as more disgusting, but not more morally wrong than transgressions containing the neutral word. Likewise, Olatunji, David, and Ciesielski (2012) found that disgust experienced specifically toward the self predicts less disgust and lower punishment ratings of severe offenses, a finding that reinforces the researchers' suspicion that the influence of disgust in moral judgments is more complex than previously assumed.

1.4 THE INFLUENCE OF INCIDENTAL AFFECTIVE VARIABLES IN SOCIAL EVALUATIONS

1.4.1 The influence of meta-cognitive experiences in evaluations

Several cognitive psychologists have argued that we use information from our own affective and cognitive phenomenology to learn about what we prefer, like, or behave. For Wilson (2004), our conscious mind is only the tip of the iceberg in deciding how we deal with complex cognitive problems, to the point that we are, in many ways, "strangers to ourselves." In fact, an enormous amount of research shows that people's evaluations of stimuli are influenced by elementary perceptual and affective mechanisms.

For example, we might perceive letter "A" as being closer to letter "B" than to letter "Z." If so, it is also possible that we perceive that "A" somehow shares a deeper connection with "B" than with "Z." Gestalt psychology explains this perceptual trick through the principle of contiguity: The stimuli that are perceived in spatial or temporal proximity are experienced as connected. Furthermore, the closer together these stimuli are perceived, the stronger the link between them (Heider, 1958). This principle appears

to remain operative at more sophisticated cognitive levels, like in situations when we attribute our cognitive responses as being *about* stimuli perceived in temporal contiguity. Higgins' (1998) research accounts for this phenomenon, proposing that there is an "*aboutness*" principle mediating our implicit cognition: People do not interpret their cognitive responses as being accidental; in contrast, their responses are understood as being "*about*" something, and this "something" is inferred to be *the cause* of the cognitive response.

Consequently, cognitive responses are commonly perceived as informative in their own right. For instance, if a person experiences fear, the cognitive evaluation (appraisal) of this emotion will be attributed as being *about* "something" and that "something" will be understood to be the cause of the fearful response (Higgins, 1998). Likewise, when people experience unexplained arousal, they will seek the best available explanation, and salient aspects in the current situation can be used to explain the bodily response. Thus, Schachter and Singer (1962) found that participants may interpret any ambiguous arousal (e.g., from an injection of epinephrine) as happiness or anger depending on the available contextual cues.

Nisbett and Wilson (1977) suggest that introspective access to our own sophisticated cognitive processes is virtually impossible because we are not prepared to cope with all the stimuli that influence our cognitive responses. Indeed, people are frequently unaware of the real variables influencing their evaluations. With regard to this issue, one line of studies examines how preferences reflect the ease with which information comes to mind. Based on the aesthetics theory, researchers noted that people can like stimuli not only because of their content but also because they are "easy on the eyes" as a result of their particular features (Tatarkiewicz, 1970).

In this context, people's evaluations appear to be especially susceptible to the influence of meta-cognitive factors. Thus, human reasoning is accompanied by meta-cognitive experiences that function as subjective information, influencing people's "objective" evaluations. There is evidence showing that the subjective ease or difficulty

with which information is processed (processing fluency) can be informative in its own right.

For example, a certain argument is more persuasive when it is perceived as easy to remember (Wänke & Bless, 2000). The ease with which an argument is remembered is proportional to the trust in its content (Haddock, Rothman, & Schwarz, 1996). Likewise, Reber and Schwarz (1999) found that the same statements were endorsed as more true when presented in highly visible colors, suggesting that perceptual fluency increases judgments of truth. McGlone and Tofiqbakhsh (2000) found that rhyme affords statements an enhancement in processing fluency, which can be misattributed to heightened conviction about their truthfulness. Interestingly, there is also evidence showing that discrepancies in processing fluency influence the perceived wrongness of moral violations. Specifically, Laham, Alter, and Goodwin (2009) found that participants rated moral violations that were processed with discrepant fluency as less morally wrong than processes with discrepant disfluency.

1.4.2. The influence of incidental affective experiences in evaluations

The current state of research suggests that there is a positive correlation between the ease of information processing and preference for its content. For instance, the perceptual fluency-preference link was complemented by research into the “mere-exposure effect” (Zajonc, 1968), which is the observation that repeated exposure to an initially neutral stimulus facilitates its processing and also enhances liking for that stimulus. Thus, the fact that an increase in processing fluency results in more positive evaluations—instead of increasing the extremity of judgments in both directions—suggests that some meta-cognitive experiences may be hedonically marked. In other words, the ease of processing elicits a positive affective response that influences subsequent evaluations (Reber, Winkielman, & Schwarz, 1998; Winkielman, Schwarz, Fazendeiro, & Reber, 2003).

In experimental psychology, this particularity has been accounted for as a part of the phenomenon of cognitive misattribution, in which people mistake an effect of one source for the effect of another. Typically, people misattribute their responses to a stimulus perceived above the awareness threshold instead of to a stimulus perceived below the awareness threshold. Following Higgins' (1998) approach, it might be argued that the affective response elicited by the meta-cognitive experience (such as the ease of processing) is perceived as being *about* the target-object. In such situations, people might use their affective responses to form their evaluations and judgments, even when these affective responses are incidental, that is, are not elicited by properties of the target-object.

Schwarz and Clore (1983) developed the “affect-as-information” approach to explain this cognitive phenomenon. According to this perspective, affective feelings can influence cognition by providing evaluative information about the momentary status of objects and situations. Thus, people use their affective responses as “embodied information” about a certain event. Given that feelings tend to take as their object whatever is on one's mind at the time they are experienced, people often rely on their feelings at the moment of forming a judgment because, in those situations, feelings are perceived as just another available criterion relevant to the judgment. In short, people rely on their feelings as if they were asking themselves: *How do I feel about it?* (Schwarz & Clore, 2007).

According to this perspective, feelings are a source of information in their own right. For instance, the fact that sometimes people find it difficult to distinguish *integral* feelings—elicited by the perceived target—from *incidental* feelings—which happen to be present at the time—is an important feature of this phenomenon. Thus, mood-congruent judgments arise because people misread incidental moods (such as “I feel happy”) as a part of their perceived affective reaction to the target (“then, it must be good”). In other words, people misread incidental moods as integral moods.

It is important to acknowledge that the influence of incidental affective responses on evaluations depends on diverse variables. Schwarz and Clore (1983) think

that the influence is only operative when the affective response is perceived as relevant for the evaluative task. Thus, if the influence is perceived as irrelevant, it will not exert any influence on subsequent evaluations (Higgins, 1998; Nisbett & Wilson, 1977). Following this line of reasoning, some authors argue that people use their incidental affective reactions when they lack both the ability and the motivation to “think” about the task requirements (Clore, Schwarz, & Conway, 1994; Petty, Schumann, Richman, & Strathman, 1993). Other authors sustain a different position in which incidental affects influence evaluations in those situations when people exert moderate amounts of thought, because in such situations, they identify their affective reactions as potential criteria but fail to discount them as irrelevant (Albarracín & Kumkale, 2003).

Moreover, there is a variety of evidence suggesting that the influence of incidental affective responses on evaluations is not restricted to mood-based effects. For instance, in Section 1.3.3.2, we reviewed diverse studies on the influence of feelings of disgust and cleanliness on the severity of moral judgments. Because this theme is central for the present research, we will address this issue in more detail in the General Discussions.

1.4.3 The affective priming experimental paradigm as a technique of affective induction

In the previous section, we pointed out the fact that people are not prepared to cope with all the stimuli influencing their cognitive responses (Nisbett & Wilson, 1977). This finding especially matches research on the automaticity of social cognition. In Section (1.2.2), it was mentioned that the idea of automatic stimulus evaluation is one of the fundamental tenets of several modern cognitive theories. Thus, it is argued that automatic stimulus evaluation occurs at a very early stage in information processing and that the process is fast, unintentional, efficient, and occurring outside of awareness (Öhman, 1987). Interestingly, the concept of automaticity has certainly proved to be relevant in research on emotions and evaluations. Different studies show that emotional

information processing is initiated and can proceed without conscious awareness (Morris, Öhman, & Dolan, 1998). Relative to non-emotional stimuli, there is an attentional bias for processing emotional stimuli (Frischen, Eastwood, & Smilek, 2008). Furthermore, negative stimuli appear more salient and can evoke stronger responses and brain activation than neutral stimuli when presented outside of awareness (Le Doux, 1996; Liddell, Williams, Rathjen, Shevrin, & Gordon, 2004).

The fact that the influence of incidental affects on evaluations appears to be largely automatic and that we are often not aware of the underlying processes mediating our evaluations has favored affective priming as a popular research topic and a major experimental tool in modern cognitive psychology. Indeed, affective priming appears to be based on a relatively unconditional process, which can be understood as automatic, in the sense that it is relatively efficient and might occur independently of evaluative intention and of awareness of the affective stimulus (Hermans, Houwer, & Eelen, 2001). Thus, priming can be described as the impact of activated knowledge structures on subsequent reactions (Fiedler, 2003). In this experimental paradigm, participants are requested to evaluate very quickly an object (target), which is typically preceded by an affective stimulus (prime). For instance, in the typical affective prime task, it is expected that processing of an evaluative polarized target (e.g., the word “love”) is processed faster and more accurately when it is preceded by an evaluatively consistent prime (“sunshine”) (Fazio, Sanbonmatsu, Powell, & Kardes, 1986; Klauer & Mush, 2003).

The priming paradigm has been adapted to evaluative judgment research in several experiments³³. For example, mood priming was shown to influence evaluative judgments (Forgas, 1991). Priming of positive and negative words consistently influenced the evaluation of ambiguous targets (Ferguson, Bargh, & Nayak, 2005). Words related to social cooperation enhanced cooperation in dilemma games (Neuberg, 1988). Subliminal exposure to primes of threatening images increased avoidance (Wyer & Calvini, 2011). Priming the African American stereotype was shown to increase participants' hostility to a request of the experimenter (Barg, Chen, & Burrows, 1996).

³³ For a review on priming on evaluative judgment research, see Fiedler (2003).

Priming with adjectives related to morality made individuals behave more cooperatively in a dilemma game³⁴ (Hertel & Fiedler, 1994).

Finally, studies on consumer psychology showed that goal priming succeeded in eliciting behaviors related to those goals (Bargh, 1992; Strahan, Spencer, & Zanna, 2002). For instance, subliminally priming a behavioral concept and linking it to positive affect motivated need-related consumer behaviors (Velkamp, Custer, & Aarts, 2011) and positively influenced the assessment of a persuasive message (Légal, Chappé, Coiffard, & Villard-Forest, 2012). Likewise, it seems that brand exposure elicits automatic behavioral responses, as does exposure to social primes. Fitzsimons, Chartrand, and Fitzsimons (2008) found that participants primed with Apple and Disney logos behave more creatively and honestly than participants primed with IBM and E! logos, respectively.

It is noteworthy that various studies on affective priming have revealed the complexity of this process. For instance, Murphy and Zajonc (1993) compared the effects of “cognitive” and “affective” primes on neutral targets and found that using a suboptimal exposure time (4ms), only the affective prime influenced evaluations. Interestingly, when the exposure time was longer (1000ms) and optimally perceived, only the cognitive primes influenced participants’ evaluations. In particular, they found that participants preferred and judged as more positive the targets (Chinese ideograms) that were preceded by a positive suboptimal prime; conversely, a negative suboptimal prime decreased the ratings of the targets. This pattern of evaluation is known in priming literature as the assimilation effect, which can be described as making positive judgments after positive priming and vice versa. Conversely, contrast effects appear when negative judgments are preceded by positive priming and vice versa. That is, contrast effects results when there is affective incongruence between the valence of the prime and the direction of the judgment (Fiedler, 2003).

In the context of evaluative judgment, these vicissitudes imply that the particular

³⁴ Interestingly, it seems that priming by words related to morality reduces cooperative behavior among certain individuals oriented toward maximizing individual outcomes (Smeesters, Warlop, Van Avermaet, Corneille & Yzerbyt, 2003).

effect of affective priming on social judgments depends on subtle manipulations. For instance, Murphy and Zajonc's (1993) results have been explained in terms of the degree of consciousness with which participants perceived the extraneous influence (prime)³⁵. Thus, Petty and Wegener (1998) and Schwarz and Clore (1996) argue that the stimuli that are perceived visibly or consciously do not influence judgments because they are discounted as irrelevant for the target task. This response would not take place in the case of subliminal affective stimuli because participants would not be able to discount them as irrelevant and interpret them as information relevant to the judgment of the target³⁶.

Additionally, in large part due to the conceptual complexity surrounding these issues, Stapel, Koomen and Ruys (2002) propose an alternative explanation to the pattern observed in Murphy and Zajonc's (1993) findings. According to their perspective, the effects of (affect-laden) information may be diametrically opposite (assimilative vs. contrastive), depending on how many milliseconds have ticked by. Thus, the effect of a certain affect-laden stimulus on the evaluative judgments of neutral target stimuli may be contrastive as well as assimilative. Supporting their hypothesis, they found that when affective primes were perceived during extremely short exposure times (30ms), they generated assimilation effects on judgments of the target. Conversely, when prime exposure was longer (100ms), these authors found evidence of a contrast effect.

For Stapel et al. (2002), this pattern of results can be explained in terms of a difference in the perceived distinctiveness of the prime. According to the theory of affective primacy (Zajonc, 1980, 2000), the affective qualities of stimuli are processed more readily than are their non-affective attributes, which means that evaluative

³⁵ The terminology of suboptimal and optimal, instead of subliminal and supraliminal, was adopted by Murphy and Zajonc (1993) because the absence of an effect on a task measuring awareness is not sufficient to categorically determine whether there are differences in the perceptibility of the primes (Rotteveel et al., 2001). Thus, when determining whether a stimulus has been subliminally processed, the conclusion may specifically depend on which test of perceptual sensitivity is employed (Maxwell & Davidson, 2004).

³⁶ Winkielman, Zajonc, and Schwarz (1997) found that subliminal affective priming resists attributional interventions. They found shifts in judgments of neutral targets as a result of affective primes even when participants were aware that their feelings might not be diagnostic for the judgment at hand. Because participants' judgments did not show the predicted pattern of discounting and augmentation, these results do not support the form of affective influence that is explained by the affect-as-information approach.

information is picked up prior to non-evaluative information. Moreover, a crucial difference between early and late reactions to affective stimuli is that early affective reactions are diffuse and unspecified because they are not cognitively appraised. For instance, Paulmann and Pell (2009) found that affective information is only accessible to neocortical processes within 200ms after stimulus onset. Further, they also found that the full semantic value of the affective stimulus (facial expression) is detected in approximately 400ms.

Thus, Stapel and colleagues (2002) argue that when prime exposure is super-quick, it results in assimilation, because diffuse information (e.g., an abstract construct such as positive/negative) is more likely to be used as an interpretation frame when encoding a stimulus. On the other hand, when primes are flashed for somewhat longer (rapid exposure time), distinct information is activated and, because this type of information has clear object boundaries (e.g., a sad, dark-haired woman), it is more likely to be used as a specific comparison standard in the construction of judgments.

Further, for the occurrence of contrast effect, in addition to the distinctiveness criterion, some degree of categorical overlap between prime and target might be also necessary. This “similarity” criterion is based on the assumption that stimuli that belong to the same category more readily invite comparison processes than do stimuli that belong to dissimilar categories. Likewise, Stapel, Koomen, and van der Pligt (1997) found that primed friendly or hostile animals (e.g., puppy vs. shark) do not result in contrastive effects when people judged an ambiguous human target (friendly/hostile). Interestingly, priming friendly or hostile persons (e.g., Gandhi vs. Hitler) did result in contrastive comparison effects when participants judged the same target. Regarding this issue, Herr, Sherman, and Fazio (1983) found that the emergence of contrast effects occurred after extreme exemplars were primed and ambiguous targets judged and, in addition, when—irrespective of the extremity of the prime—unambiguous targets were judged.

In addition, there is evidence suggesting that priming of a social category (e.g., professor) led to an assimilation effect, whereas priming of a specific exemplar from the

category (e.g., Einstein) produced contrast (Stapel, Koomen, & van der Pligt, 1997). According to the authors, this finding is explained because priming of the category *professor* led participants to judge their own intellectual ability higher, resulting in the assimilation effect. Conversely, priming of a specific exemplar such as *Einstein* led participants to judge their own intelligence lower, resulting in the contrast effect.

Moreover, the degree to which a prime can be perceived as “extreme” is another important factor influencing the direction of its effect on judgments. For example, using *Hitler* (extremely hostile) as the affective prime typically results in a contrast effect, whereas using *Joe Frazier* (moderately hostile) as the prime results in an assimilative response (Herr, 1986). Further, there is evidence suggesting that participants’ mindset is a variable mediating the effect of the priming. Thus, accessible knowledge is more likely to produce assimilative interpretation effects when this knowledge serves as an interpretation frame, whereas contrastive comparison occurs when the knowledge serves as a comparison standard (Stapel & Koomen, 2001)³⁷.

Alternatively, Fiedler (2003) suggests that one should not understand assimilation and contrast effects as alternative outcomes of a unitary priming influence on judgments. They argue that the prime will presumably activate several categories simultaneously. For instance, when judging the intelligence of a target person, priming *Einstein* may be associated both with the target category and the comparison standard category. Thus, there is always assimilation (when the prime is used to construe the target category) and contrast (when the prime is used to construe the comparison standard) at the same time. From this perspective, whether the final judgment seems assimilative or contrastive depends on the relative strength of the two associative effects.

³⁷ As Maringer and Stapel (2009) point out, divergent explanations have been offered for contrast effects that occur as a result of prime awareness. From their perspective, the fact that incidental information could be consciously perceived should not be confused with the conscious perception of its “contaminant” influence on evaluations. Thus, whereas awareness of the prime leads to comparison contrast (which occurs mainly in comparison-relevant dimensions of the target), awareness of the influence of the prime typically results in correction contrast (which influences several dimensions on which the target is judged).

Several studies that used the affective priming in evaluative judgments paradigm have confirmed the inductive potential of emotional facial expressions (Maxwell & Davidson, 2004). Facial expression of a certain emotion possesses the quality of an emotional elicitor and activates an emotional response that is similar to other stimuli of the same emotion (Dimberg, Thumberg, & Elmehed, 2000).³⁸ Facial expressions appear to follow a similar time course involving two or three distinct stages. First, facial expressions activate global, valence-based, affective responses that are lately complemented with semantic information about the communicative message of the expression (Paulmann & Pell, 2009; Ruys & Stapel, 2008a). Zajonc (1980) has suggested that the sequence of this process is critical from an adaptationist perspective, because quickly detecting the affective valence of an emotional expression of an opponent might be crucial for survival in a tribal context.

Consequently, facial expressions have proven to function as reliable affective primes in evaluative judgment research. For instance, Rotteveel, de Groot, Geutkens and Phaf (2001) replicated Murphy and Zajonc's (1993) results and found stronger suboptimal than optimal affective priming (primes were happy and angry faces) influencing affective ratings of ideographs. Yang, Xu, Du, Shi, and Fang (2011) found that priming facial expressions of fear influenced immediate judgments of emotion (the target was a neutral face) only when participants were unaware of their presentation. Winkielman, Berridge, and Wilbarger (2005) found that subliminally induced smiles caused thirsty participants to pour and consume more beverages and also increased their willingness to pay more for them. Interestingly, they also found that subliminal frowns had the opposite effect on participants, suggesting that affective reactions to emotional

³⁸ It is noteworthy that there is also evidence suggesting that subliminal presentation of emotional faces can fail to elicit the emotional response. Andrews, Lipp, Mallan, and Konig (2011) requested participants to evaluate pleasant and unpleasant target words that were preceded by masked or unmasked emotional facial expressions (schematic or photographic and happy or angry). Their results fail to provide evidence of affective congruence between the valence of the prime and the evaluation of the target. Phillips et al. (2004) designed an fMRI experiment and found that unconsciously perceived facial expressions of fearful faces (30ms) did not activate the amygdala, the brain structure thought to be integral in the processing of fearful responses. The same pattern was found for suboptimally perceived facial expressions of disgusted faces and the no-activation of the insula (a brain area that is normally activated during the experience of disgust). On the other hand, for the overt condition (170ms), they found evidence of amygdala activation to fearful faces, and insula activation to disgusted faces. Similarly, Pessoa, Japee, Sturman, and Ungerleider (2006), found that subliminal presentation of emotional faces does not activate the amygdala, results that suggest distinct neural correlates of conscious and unconscious emotion perception.

facial expressions may be unconscious and influence the assessment of value and behavior toward certain objects.

In another study, Yang and Tong (2010) exposed participants to either angry or sad faces and found evidence for subliminal emotion-specific cognitive effects. In particular, participants who were in the anger condition were more likely to appraise negative events as caused by other people, whereas those who were in the sadness condition were more likely to appraise the same event as resulting from situational factors. In a recent study, Lee, Kang, Lee, Namkoong, and An (2011) found a stronger subliminal priming effect for fear compared to disgust, suggesting that there are important differences in priming effects within the emotions that have negative valence.

In addition to facial expressions, emotion research commonly utilizes an alternative visual stimulus format: complex evocative pictures. The International Affective Picture System (IAPS; Lang, Ohman, & Vaiti, 1988) was developed to provide ratings of affect for a large set of emotionally-evocative photographs that include contents across a wide range of semantic categories (Lang, Bradley, & Cuthbert, 2008). In particular, the standardized set of IAPS pictures has been rated in terms of its average ability to induce subjective valence (unpleasant/pleasant) and arousal (calm/excited) changes. IAPS ratings have also been correlated with physiological measures, such as heart rate and skin conductance changes, complementing the subjective ratings with more objective measures.

Relative to facial expressions, IAPS pictures are known to have some particularities. For instance, although IAPS pictures and facial expressions both activate some similar brain structures (such as the amygdala, posterior hippocampus, ventromedial prefrontal cortex and visual cortex), there are some subjective differences in the processing of both types of stimuli. Thus, there is evidence suggesting that subjective ratings of IAPS images are higher in arousal and valence when compared to ratings of facial expressions. For Britton, Taylor, Sudheimer, and Liberzon (2006), IAPS pictures may be more intense and potent than facial expressions as affective primes, even though facial expressions appear to be more easily identified on discrete emotion

labels. Moreover, with respect to novelty, facial expressions can be viewed as relatively unchanging stimuli, whereas IAPS pictures are perceived as more complex and novel, which seems to reduce habituation effects compared to facial expressions. Finally, exposure to IAPS pictures is typically accompanied by higher reaction times than exposure to expressive faces, which suggests that evocative pictures might be processed more slowly than facial expressions.

**2. CHAPTER II:
EXPERIMENTAL STUDIES**

2.1 STUDY 1

In sections (1.4.2) and (1.4.3), we reviewed various studies on the automaticity of social judgments. Coherently, in the emergent science of moral psychology, a strong case is made that most moral judgments are the result of automatic processes. In particular, moral judgments appear to be quite flexible, being sensitive to influences from a set of situational (Greene, 2001), perceptual (Laham et al., 2009), and personal (Bartels, 2008; Inbar et al., 2009) variables which might be evaluated through some evolved psychological intuitions (Haidt, 2001; Haidt & Joseph, 2004) and/or maybe even unconscious principles (Hauser, 2006, Mikhail, 2007). Therefore, recent studies suggest that moral judgments can be influenced by incidental factors. As reviewed in (1.3.3.2), research on the incidental influence on moral judgments have found new possibilities through the study of disgust, taking advantage of what appears to be a special relationship between this emotion and the moral domain (Chapman et al., 2009; Haidt et al., 1997; Rozin et al., 2000).

In sum, current evidence suggests that affective responses triggered by incidental variables can shape moral judgments. In particular, studies on this topic showed that disgust exerts a special influence on moral judgments by making them more severe (Schnall, Haidt et al., 2008; Wheatley & Haidt, 2005). However, the nature of the causal relationship between disgust and moral judgment remains unclear. For instance, in Wheatley and Haidt (2005), a striking finding was that induced disgust increased the perceived wrongness of a non-moral story. Then, it cannot be concluded from this study that disgust influences *only* moral judgments; instead, it is much more accurate to conclude that disgust has a “moralizing” effect (it helps to turn a neutral behavior into a moral issue). In addition, even though Schnall, Haidt et al.’s (2008) finding (“disgust makes *moral* judgments *more* severe) was restricted to moral situations, their effect was also restricted to participants who were highly sensitive to

their internal physical reactions, which leaves open the possibility that their effect is mediated by participants' oversensitivity.

Hence, the possibility that certain induction paradigms are more likely to influence perceived immorality has been suggested by David and Olatunji (2011). They found that the level of disgust induced via evaluative conditioning increased the disgust ratings of transgressions, but did not influence the perceived wrongness of the same actions. Thus, whether disgust exerts a domain-specific influence on moral judgments is still an empirical question. In addition, whether different types of disgust inductions will influence moral judgments in the same direction is an open question. The present studies are designed primarily to answer these two questions. We hypothesize that incidental disgust will influence only moral judgments and that the direction of this influence will be in the same line as the one observed in previous research (disgust increases the severity of moral judgments).

The present research introduces two methodological innovations. First, none of the previous studies has examined the influence of disgust on moral judgments through the experimental paradigm of affective priming. Although affective priming has been successfully applied to an enormous amount of studies (Fiedler, 2003) this technique has never been applied to moral experiments³⁹. Second, in order to evaluate whether moral and non-moral dilemmas differ in their affective dimensions, we introduced the Self-Assessment Manikin (SAM; Lang, 1980; Hodes, Cook, & Lang, 1985) to measure participants' subjective ratings. This datum was crucial to complement the explanation of priming effects because the affective neutrality of the target plays a role in the final effect of the primes (see **1.4.3**). To our knowledge, this is the first attempt to look for intrinsically dimensional differences between the two types of dilemmas.

³⁹ As mentioned in (1.4.3), in the affective priming paradigm, it is typically expected that the affective nature of the prime (e.g., a happy face) will alter the subject's evaluation of the target stimulus (e.g., a moral dilemma). Primes are normally presented for very short times, thus their influence is understood to be largely automatic.

2.1.1. Objectives and hypotheses

To address these considerations, a first experiment was designed to meet the following specific objectives:

- a) To test whether incidental disgust induced through affective priming influences participants' moral judgments. It was predicted that the effects of incidental disgust are specific to moral judgments and, therefore, would not influence non-moral dilemmas.
- b) To test whether affective priming by disgust influences moral judgments by making them more severe. Based on previous studies on this topic, it was predicted that incidental disgust would shift moral judgments toward the negative pole.
- c) To test whether affective priming by disgust influences the moral judgments that a particular participant makes about a particular situation. Because there were no references to affective influences on moral judgments at an intra-subject level in the literature, we made no specific prediction on this test.

2.1.2. Method

2.1.2.1. Pilot Study

2.1.2.1.1 Participants

First, a pilot study was designed to determine which pairs of dilemmas present a higher correlation in their scoring. For this purpose, we designed a paradigm in which 56 participants (13 males) were asked to evaluate a set of dilemmas. A majority of participants (45) were Psychology students who were invited to join the experiment as a part of their practice credits.

2.1.2.1.2. Material and stimuli

The complete set of dilemmas comprised 30 pairs of moral dilemmas (in total, 60) and 30 pairs of non-moral dilemmas (in total, 60). Although most of these dilemmas were the author's creations, some moral dilemmas were modified on the basis of previously formulated dilemmas.⁴⁰ A version of Direct RTv2006 was used to register participants' scores. We used twenty computers with Windows XP Professional V2000, with an Intel processor (R) Pentium (R) Dual CPU E 2160 @ 1.80 GHz 1.79 GHz 0.99 GB RAM.

2.1.2.1.3 Procedure

During five different sessions that took place in the computer room of the Guillem Cifre Building (Faculty of Psychology, Universitat de Les Illes Balears, UIB), 32 participants rated 30 pairs of moral dilemmas and 24 participants rated 30 pairs of non-moral dilemmas.

Before the battery of dilemmas, we introduced four vignettes with instructions, followed by four vignettes with dilemmas (three of them "moral" and one of them "non-moral") in order to familiarize participants with the dynamic of the experiment. The ratings of these four dilemmas were not considered in the subsequent analysis. Both moral and non-moral dilemmas were presented in experimental vignettes that were accompanied with a 7-point Likert scale ranging from 7 (*perfectly OK*) to 1 (*completely wrong*)⁴¹. Thus, higher ratings corresponded to more permissibility (less severity) in the evaluations of the vignettes. This paradigm was a self-paced task, designed so that the next dilemma was not presented until the subject had responded to the previous one, so reaction time was not measured here.

⁴⁰ For experimental purposes, a moral dilemma is usually a short story about a situation involving a moral conflict (Christensen & Gomila, 2012). The complete set of dilemmas tested in this study is added at the end of this section (Appendices).

⁴¹ The original 7-point Likert scale ranged from 7 (*muy apropiado*) to 1 (*muy inapropiado*).

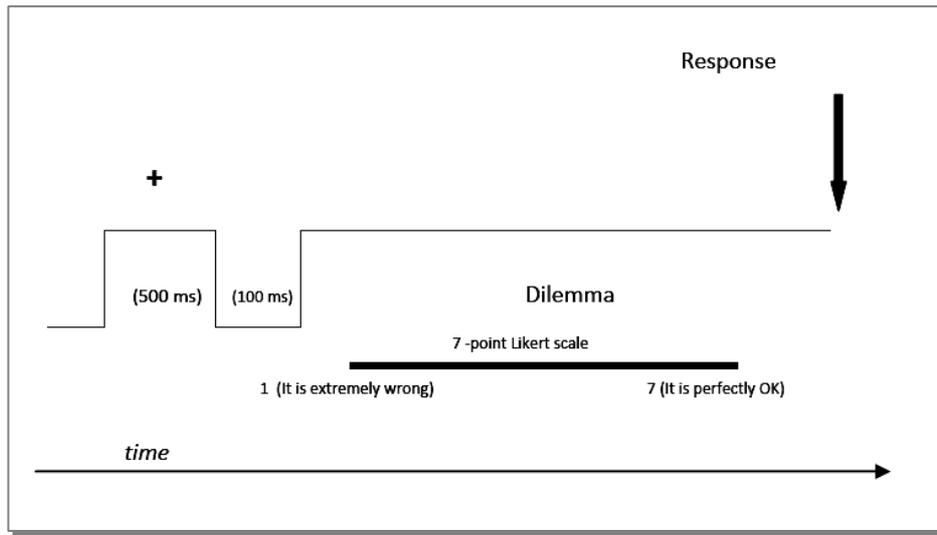


Figure 3. Experimental paradigm for the pilot study

2.1.2.1.4. Results

After the pilot experiment, we selected the pairs of dilemmas with higher rating correlations. As a result, 27 pairs of dilemmas (a total of 54 dilemmas) made up of 15 pairs of moral dilemmas (from $r = 0.65$ to $r = 0.89$) and 12 pairs of non-moral dilemmas (from $r = .45$ to $r = .81$) were selected as targets for Study 1. The numerical difference between the pairs of both types of dilemmas was based on the finding that only 12 of the non-moral pairs of dilemmas were significantly correlated.

2.1.2.2. Main study

2.1.2.2.1. Participants

In the present study, we tested our hypothesis using a paradigm in which 40 participants (15 males) rated 27 pairs of vignettes. The results of 1 participant were excluded from further analysis because his punctuations significantly deviated from the mean of the group for several factors. As in the pilot study, most of the participants were Psychology students (28) who were invited to join the experiment as a part of their

practice credits and who received a snack in the cafeteria of the Psychology building.

2.1.2.2.2 Material and stimuli

We considered as target the pairs of dilemmas that presented higher rating correlations. Thus, 27 pairs of dilemmas were finally selected after the pilot study (15 pairs of moral dilemmas and 12 pairs of non-moral dilemmas; a total number of 54 trials), following the premise that they differed in “irrelevant” characteristics⁴². A version of Direct RTv2006 was used to register participants’ scores. We used twenty computers Windows XP Professional V2000 with an Intel processor (R) Pentium (R) Dual CPU E 2160 @ 1.80 GHz 1.79 GHz 0.99 GB RAM. Disgusting pictures from IAPS⁴³ were used as affective primes (SOA 500ms). All disgust pictures were selected following the thematic pattern of mutilations, blood, and human flesh, a sub-class of disgust that has been referred to in the literature about disgust and morality under the category of “envelope violations/animal nature” disgust (Rozin et al., 2000, 2008). We chose a gray square to serve as neutral prime (see below).



Figure 4. Neutral prime

⁴²This material was selected taking account the results previously obtained from the pilot study.

⁴³Lang, Ohman, & Vaiti, (1988), adapted to Spanish population by Moltó, Montañés, Poy, Segarra, Pastor, Tormo, Ramírez, Hernández, Sánchez, Fernández, & Vila (1999) and Vila, Sánchez, Ramírez, Fernández, Cobos, Rodríguez, Muñoz, Tormo, Herrero, Segarra, Pastor, Montañés, Poy, & Moltó (2001).

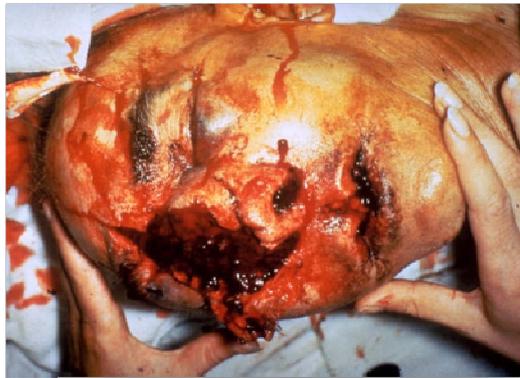


Figure 5. Affective primes by disgust (IAPS pictures)

2.1.2.2.3 Procedure

Study 1 was conducted in five different sessions that took place in the computer room of the Guillem Cifre Building (Faculty of Psychology, UIB). As in the pilot study,

before the battery of dilemmas, we introduced four vignettes with instructions followed by four vignettes with dilemmas (three of them “moral” and one of them “non-moral”) in order to familiarize the participants with the dynamic of the experiment. The ratings of these four dilemmas were not considered in the subsequent analysis.

Additionally, in order to explore the moral-specificity of the results, non-moral situations were introduced and tested in the same conditions. As in the pilot study, moral and non-moral dilemmas were both presented in experimental vignettes that were accompanied with a 7-point Likert scale ranging from 7 (*perfectly OK*) to 1 (*completely wrong*). Thus, higher ratings corresponded to more permissibility (less severity) in the evaluations of the vignettes. Variations of the same dilemma were presented pseudo-randomly. This paradigm was self-paced task, designed so that the next dilemma was not presented until the subject had responded to the previous one. Each participant rated the two versions of each dilemma; one rating for the version after disgust prime and one for the version after neutral prime. Thus, responses to each dilemma were tested in two conditions: disgust prime condition and neutral condition.

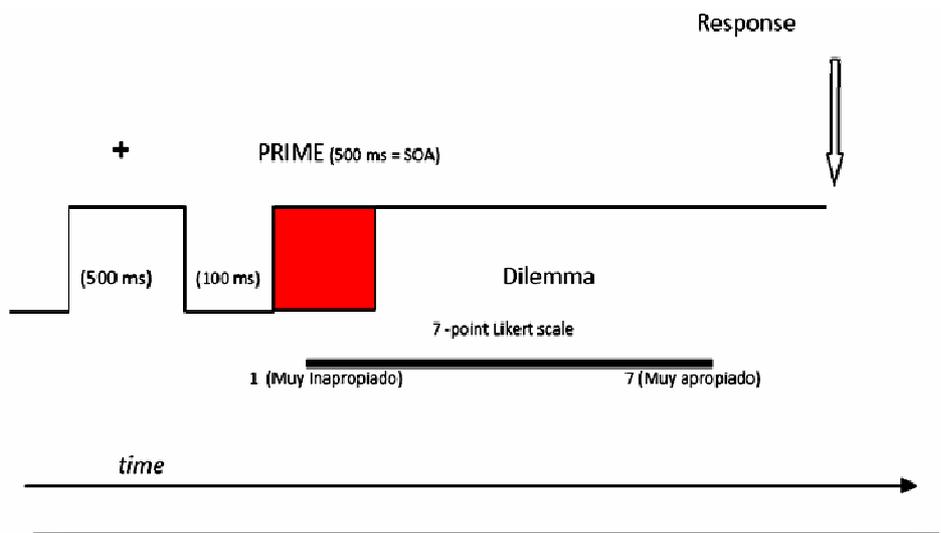


Figure 6. Experimental paradigm for Study 1

2.1.3. Results

Comparison of affective priming condition and neutral condition in the ratings of morals and non-moral dilemmas: Moral dilemmas were rated higher in appropriateness after affective priming than after neutral priming ($T = 11$, $N = 36$, $z = -2.078$, $p = .038$). Interestingly, this was not the case for non-moral dilemmas ($T = 13$, $N = 32$, $z = -.234$, $p = .815$)⁴⁴ (see Figure 7).

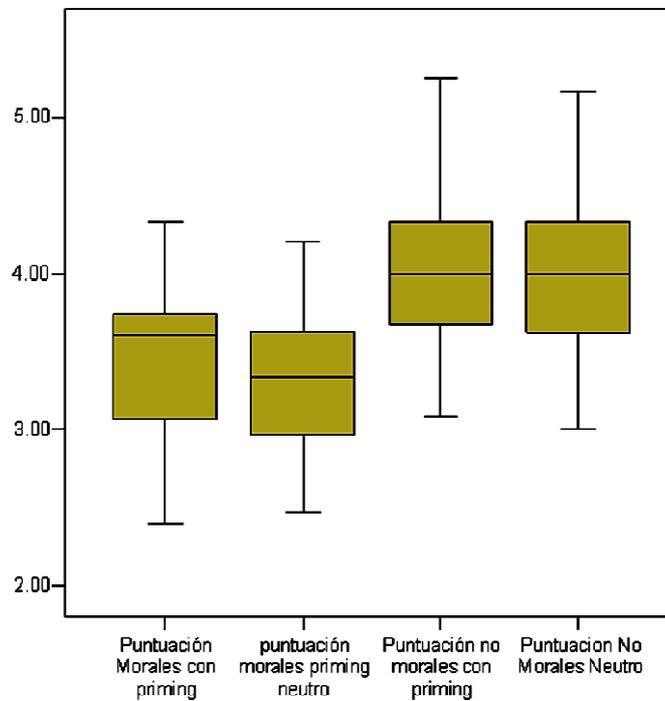


Figure 7. Comparison of affective priming condition and neutral condition in the ratings of moral and non-moral dilemmas

With regard to the specific analysis of the differences in the ratings of the pairs of dilemmas⁴⁵, we found that the pairs of moral dilemmas M_4a/M_4b, M_21a/M_21b, and M_27a/M_27b were rated higher in appropriateness after the affective priming than in the neutral priming condition ($T = 3$, $N = 20$, $z = -3.245$, $p = .001$, $T = 2$, $N = 24$, $z = -$

⁴⁴ Wilcoxon's signed ranks test.

⁴⁵ In this investigation, moral dilemmas are named as (M) and non-moral dilemmas are named as (NoM). Variations of the same dilemma are differentiated by the later "a" or "b".

3.731, $p < .001$; and $T = 7$, $N = 20$, $z = -2.331$, $p = .024$, respectively). This was not the case for the pair of moral dilemmas M_26a/M_26b ($T = 4$, $N = 20$, $z = -2.588$, $p = .01$), which was rated lower in appropriateness after the affective priming than after the neutral priming. Non-moral dilemma NoM_6a was rated higher in neutral condition than NoM_6b after affective priming ($T = 9$, $N = 32$, $z = -3.022$, $p = .003$). Non-moral dilemma NoM_18b was rated higher in affective condition than NoM_18a after neutral priming ($T = 4$, $N = 16$, $z = -2.331$, $p = .02$).

2.1.4. Conclusions and discussion

We have shown that affective priming by disgust (SOA 500ms) slightly reduced the severity of moral judgments ($p = .038$). Importantly, this effect occurs only in the case of participants' appropriateness ratings of moral dilemmas. Additionally, we found that affective priming by disgust influenced a particular participant's moral judgment depending on the pair of the moral dilemmas, i.e. depending on the particular situation. This result was observed in 4 pairs of moral dilemmas, and 3 of them revealed a reduction of moral severity.

Therefore, we found support for our first hypothesis: incidental disgust influences participants' ratings only when they judged moral dilemmas. We also found support for our third hypothesis: affective priming by disgust can influence the moral judgments that a particular participant makes about a particular situation.

Unexpectedly, the analysis of the influence of affective priming by disgust in moral judgments revealed that the particular direction of the effect was contrary to our predictions. It was hypothesized that the induction of incidental disgust through affective priming exerts a special influence on moral judgments by making them *more* severe. However, we found the opposite effect: incidental disgust influenced moral judgments by making them *less* severe. As mentioned above, studies on the influence of disgust on moral judgments favored that the experience of disgust increases the severity

of moral judgments (Schnall, Haidt et al., 2008; Wheatley & Haidt, 2005; but see David & Olatunji, 2011, for a contradictory finding).

At this point, there were different possibilities to explain this conflicting finding. After a discussion of these results, we delimited the range of possible variables to two main options: (a) the content of the primes (associated with a gore-“animal nature” disgust or the affective dimensions underlying this emotional construct), and (b) the SOA of the primes.

- *Affective priming:*

We used IAPS’ pictures of human mutilations as affective primes. In section (3.1), we mentioned that the emotion of disgust is a heterogeneous emotion, with different sub-classes that appear to serve different adaptive functions (Haidt et al., 1994; Rozin et al., 2000; Tybur et al., 2009). In particular, the pictures used as primes in Study I can be considered examples of the “envelope violations/animal nature” type of disgust. These pictures present low ratings in negative valence, which can be understood as a reliable measure of their unpleasant content. As mentioned in (1.4.3), there is evidence that, when the content of the prime is especially distinctive and it is perceived as belonging to the same category as the target, the result is that the primes are used as a comparison standard and produce a contrast effect (Maringer & Stapel, 2009; Stapel et al., 2002).

- *Stimulus onset asynchrony (SOA):*

We selected a 500-ms SOA for affective priming, which is a relatively long onset. There is evidence that the exposure time of the prime influences its final effect on the target. For example, in section (1.4.3), we mentioned that affective priming results in assimilation when the prime is flashed “*super-quick*” (30ms) and that contrast occurs when the same prime is flashed for somewhat longer (100ms). Specifically, it has been proposed that, at very short exposure times, an affect-laden stimulus elicits only diffuse

information, which leads to assimilation. However, when the exposure time is longer, the same stimulus elicits distinctive information and contrastive comparison is a more likely outcome (Stapel, Koomen & Ruys, 2002).

We decided to explore the second possibility because it represented a potential problem for the interpretation of the current results. It might be erroneous to attribute the effect found in Study 1 to a particular emotional response elicited by the content of the prime. In other words, participants' responses could be explained in terms of a general contrast effect due to the "distinctiveness" of the primes.

Therefore, if there is, in fact, a contrast effect mediating these results, the finding that participants judged moral dilemmas as more positive (less severe) after disgusting primes cannot be attributed to the influence of a specific emotional response. Instead, we should look into methodological considerations and explain this effect in terms of a general reaction to standard negative stimuli.

2.2. STUDY 2

2.2.1. Objectives and hypotheses

To address these considerations, a second experiment was designed to meet the following specific objectives:

d) To test whether the main result obtained in Study 1 (affective priming by disgust reduces the severity of moral judgments) can be explained as a contrast effect. It was predicted that this effect cannot be understood in terms of a contrast effect.

e) To test whether the influence of disgust in moral judgments remains stable through the time course of affective priming. Because there were no references to the influence of time course of affective priming on moral judgments in the literature, we made no specific prediction on this test.

2.2.2. Method

In Study 2, we tested the influence of *super-quick* exposure time (SOA 20ms) and *quick* exposure time (SOA 250ms) on the direction of the effect of affective priming by disgust on moral judgments.

2.2.2.1 Participants

In the present study, we tested our hypothesis using a paradigm in which 81 participants (14 males) rated 27 pairs of vignettes. Forty participants (10 males) were randomly assigned to the *super-quick* condition (SOA 20ms) and 41 participants (4 males) were assigned to the *quick* condition (SOA 250ms). As in Study 1, most of the participants were Psychology students (in total, 69) who were invited to join the experiment as a part of their practice credits.

2.2.2.2 Material and stimuli

We considered as target the same 27 pairs of dilemmas used in Study 1 (15 pairs of moral dilemmas and 12 pairs of non-moral dilemmas; a total number of 54 trials), following the premise that they differ in “irrelevant” characteristics⁴⁶. A version of Direct RTv2006 was used to register participant’s ratings. We used twenty computers Windows XP Professional V2000 with a processor Intel (R) Pentium (R) Dual CPU E 2160 @ 1.80 GHz 1.79 GHz 0.99 GB RAM.

Primes were the same used in Study 1: disgusting pictures from IAPS were used as affective primes, and a grey square was chosen to serve as neutral prime.

46 This material was selected taking into account the results previously obtained from the pilot study.

2.2.2.3. Procedure

Study 2 followed the same procedure as used for Study 1, except that, this time, we ran the sessions in the “Cognitive Laboratory” that is located in the Guillem Cifre Building (Faculty of Psychology, UIB). Importantly, in this study, we manipulated SOA as a second independent variable (20-ms SOA and 250-ms SOA). Thus, each participant rated the two versions of each dilemma; one rating for the version after the disgust prime and one for the version after the neutral prime.

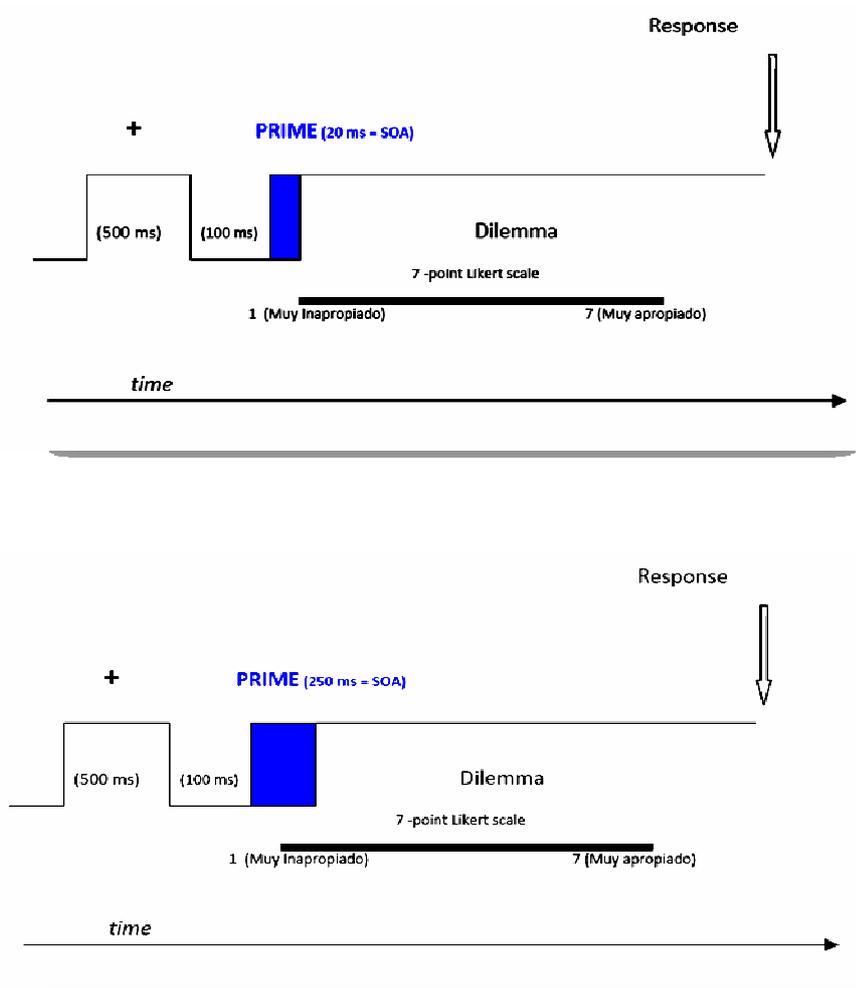


Figure 8. Experimental paradigm for Study 2: 20-ms SOA and 250-ms SOA

2.2.3. Results

Comparison of affective priming condition and neutral condition in the ratings of moral and non-moral dilemmas with 20-ms SOA. Moral dilemmas were rated higher in appropriateness after affective priming ($M = 3.54$) than after neutral priming ($M = 3.35$) ($T = 9$, $N = 37$, $z = -3.657$, $p < .001$). Interestingly, this was not the case for non-moral dilemmas ($M = 4.15$ and $M = 4.13$ for non-moral dilemmas after affective and neutral priming, respectively, $T = 14$, $N = 34$, $z = -.798$, $p = .425$).

Comparison of affective priming condition and neutral condition in the ratings of moral and non-moral dilemmas with 250-ms SOA. Moral dilemmas were rated higher in appropriateness after affective priming ($M = 3.61$) than after neutral priming ($M = 3.46$) ($T = 12$, $N = 39$, $z = -2.026$, $p = .043$)⁴⁷. This was not the case for non-moral dilemmas ($M = 4.15$ and $M = 4.26$ for non-moral dilemmas after affective and neutral priming, respectively, $T = 14$, $N = 38$, $z = -1.395$, $p = .163$).

Comparison of affective priming condition and neutral condition in the ratings of moral and non-moral dilemmas⁴⁸. Moral dilemmas were rated higher in appropriateness after affective priming ($M = 3.57$) than after neutral priming ($M = 3.40$, $T = 21$, $N = 76$, $z = -3.832$, $p < .001$). In the same line, this was not the case for non-moral dilemmas ($T = 34$, $N = 72$, $z = -.562$, $p = .574$).

⁴⁷ Strictly speaking, it cannot be said that there is statistic significance in this comparison. Because we made multiple comparisons, we should apply the adjusted alpha. However, there is an evident tendency towards the direction found in our T -test ($p = .018$)

⁴⁸ This analysis did not take SOA distinctions into account.

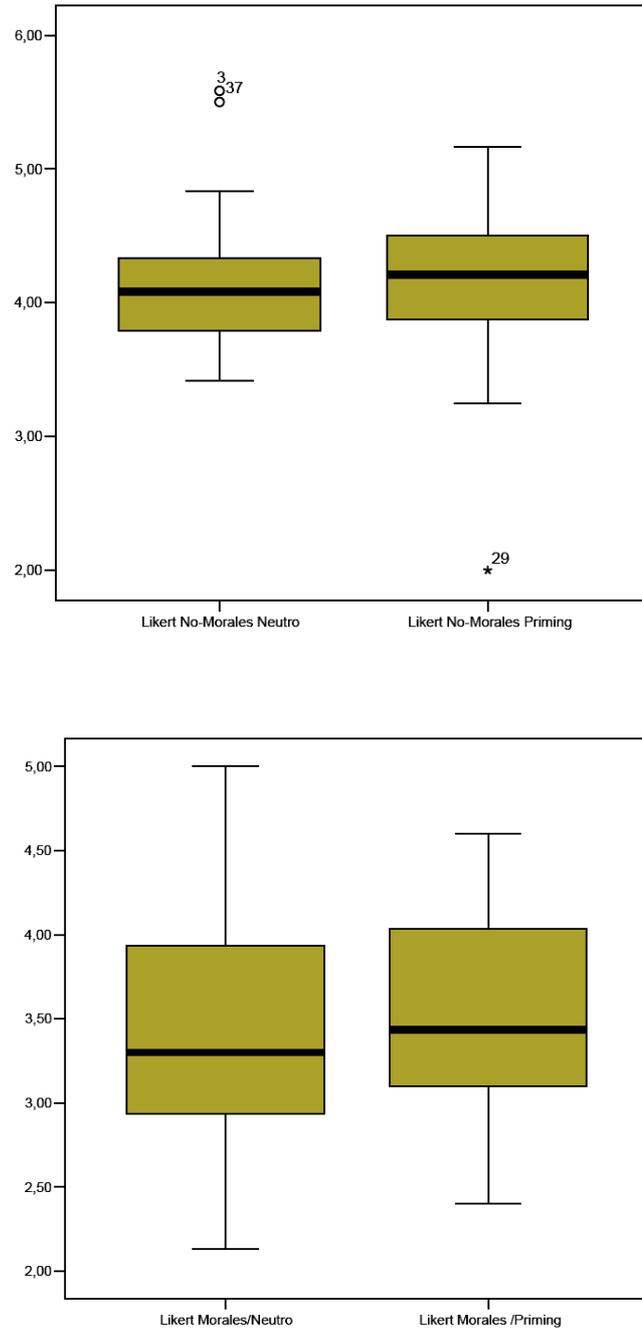


Figure 9. Comparison of affective priming condition and neutral condition in the ratings of moral and non-moral dilemmas with 20-ms SOA

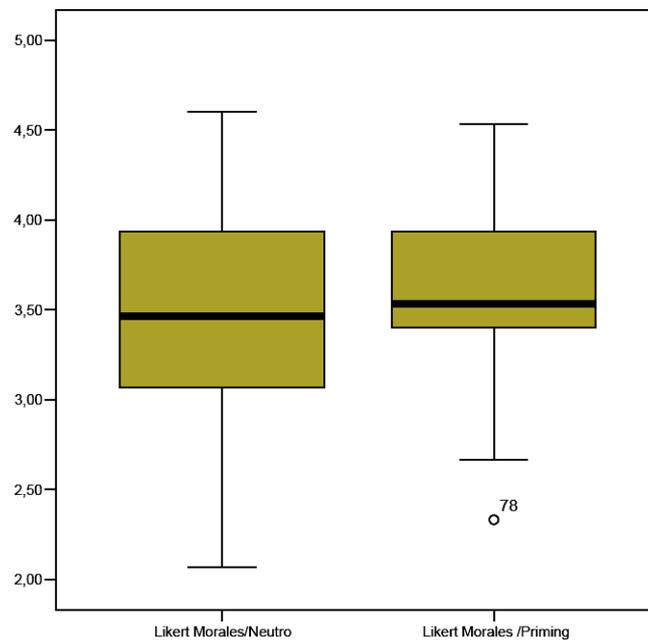
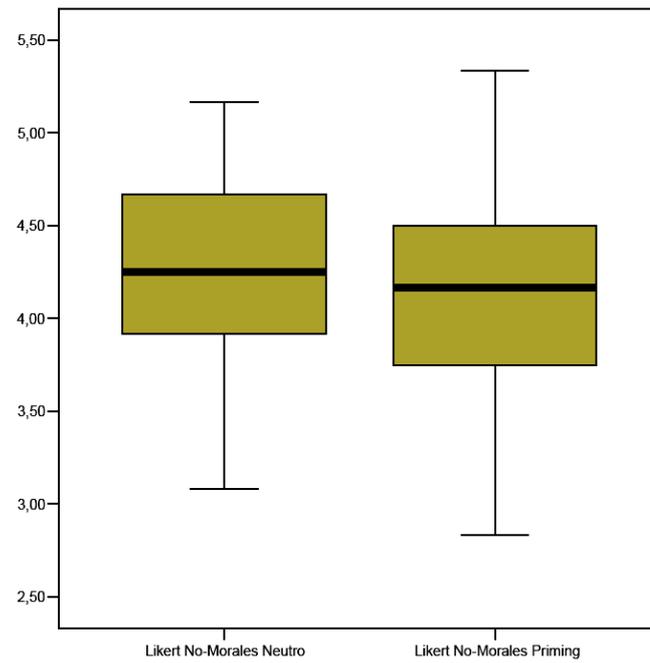


Figure 10. Comparison of affective priming condition and neutral condition in the ratings of moral and non-moral dilemmas with 250-ms SOA

2.2.4. Conclusions and discussion

The results of Study 2 support the previous finding: Affective priming by disgust (pictures of human mutilations) reduced the severity of moral judgments. Thus, SOAs of different characteristics (20ms, 250ms, and 500ms) resulted in the same effect. Altogether, these results strongly suggest that the effect exists, either when the prime is perceived as more “diffuse” (20-s SOA) or when it is perceived as more “distinctive” (250-ms and 500-ms SOAs).

Interestingly, the analysis of the influence of affective priming by disgust in moral judgment revealed that the strength of the effect was susceptible to SOA manipulations. In short, when the SOA was *super-quick*, the effect of the prime was stronger than when the SOA was *quick*. This finding suggests that the more diffuse/unspecific the prime is perceived, the greater is the effect on the target. As mentioned in (4.3), it seems unlikely that a discrete emotion can be elicited at such extremely short exposure times (20ms), which suggests that the particular effect of the affective prime in moral judgments cannot be attributed to a sophisticated cognitive response (such as a discrete emotion). Instead, results from Study 2 suggest that the main effect is caused by a more basic affective response (quicker and probably unappraised).

In sum, there are two main conclusions to this state of the research. Thus, results from Study 1 and Study 2 have shown that: (i) the observed effect of affective priming is restricted to moral judgments; and that (ii) this effect cannot be explained as a contrastive effect.

First, results from Study 1 and Study 2 are consistent with a central claim of moral psychology: typical moral judgments are the result of automatic affective-laden responses (Haidt, 2001). The fact that affective priming only influenced moral judgments can be interpreted as new evidence supporting this theoretical position.

Second, these results support the characterization of moral judgments as flexible evaluations. In the last few years, diverse studies have shown that moral judgments are susceptible to different types of influence. For example, it seems that moral judgments can be influenced by metacognitive variables (such as processing fluency, see Laham, et al., 2009), dispositional variables (thinking style or disgust sensitivity, see Bartels, 2008, and Inbar et al., 2009, respectively) or incidental/contextual variables (see also Section 1.4).

Additionally, these results are in the same line with a central claim of cognitive and social psychology: people often rely in their affective reactions to function as guides when they are about to make a judgment (see 1.4.2).

However, the findings from Study 1 and Study 2 are more conflicting if we focus on the specific direction of the main effect of affective priming on moral judgments (reduction of their severity). As mentioned above, previous studies on the causal relationship between disgust and moral judgments favored the opposite effect: disgust increases the severity of moral judgments. This effect can be described as basically “assimilative” (in the sense that the judgment is moving in the same direction as the valence of the prime).

For instance, in Wheatley and Haidt’s (2005) study, disgust induced by hypnosis had an effect on moral judgments. However, as mentioned in the overview of Study 1, their disgust induction also increased the severity with which participants judged a non-moral story⁴⁹. Consequently, this study did not show a domain-specific influence of disgust on moral judgments (as suggested by the authors); instead, it appears to show that disgust has a “moralizing” effect or that this emotion influenced affective judgments.

⁴⁹ “Dan is a student council representative at his school. This semester, he is in charge of scheduling discussions about academic issues. He [tries to take/often picks] topics that appeal both to professors and students in order to stimulate discussion” (Wheatley & Haidt, 2005, p. 782). Furthermore, there is an interesting alternative explanation of this finding: it is possible that by introducing a name (Dan) in their story, authors might have affectively “charged” this particular situation.

The second study on the influence of disgust on moral judgments by Schnall, Haidt et al. (2008) consists of four different experiments. As admitted by the authors, in all conditions, they sought disgust inductions that were “*low-level*”. Coherently, their main effect (“disgust makes *moral* judgments *more* severe”) was restricted to participants who were highly sensitive to their internal physical reactions.⁵⁰

In opposition, our disgust induction was not restricted to participants who were highly sensitive to their own bodily reactions. Further, the facts that we selected pictures of human mutilations⁵¹ as affective primes and that participants perceived these primes at short exposure times, suggest that our disgust induction might be more intense than those of Schnall and colleagues’ studies. Nevertheless, whether or not the “intensity” of the negative affect moderates the direction of the effect on moral judgments is still an empirical question that we will address later in the General Discussion.

As mentioned above, the possibility that certain experimental paradigms are more likely to influence perceived immorality than others has also been suggested by other authors (David & Olatunji, 2011; Inbar, Pizarro, & Bloom, 2011). We believe that their findings support our previous speculation about the importance of methodological particularities in the final effects of incidental emotions on moral judgments. As a consequence, we considered that it was necessary to design a new experiment aimed at addressing this question.

2.3. STUDY 3

A second analysis of the results suggested a new possibility. It might be that the target was not affectively neutral. Although it seems like an obvious claim—after all, moral judgments are understood to be largely based on affective processes—, it is

⁵⁰ These participants scored higher in the *Private Body Consciousness (PBC)* scale.

⁵¹ According to IAPS ratings, prime affective ratings are $M = 1.73$ for the dimension of valence and $M = 6.91$, for the dimension of activation.

surprising that this fact has not been controlled in previous studies on the influence of disgust on moral judgments. Therefore, we considered that we needed to test whether some affective properties of the target were interfering with the effect of the affective priming. If, as we had so far assumed, our target was affectively neutral, then we can uphold the claim that the observed effect is generated *by* the affective induction. Conversely, if our target is not affectively neutral, this finding would raise a new range of possible explanations.

2.3.1. Objectives and hypotheses

(a) To test whether the target (moral and non-moral dilemmas) was affectively neutral. It was predicted that only moral dilemmas would not be affectively neutral.

(b) To test whether the target presents intrinsic differences in the affective dimensions of valence and activation. It was predicted that moral and non-moral dilemmas differ in both dimensions. Specifically, it was predicted that moral dilemmas would be experienced as more unpleasant in the dimension of valence and more activating in the dimension of activation.

2.3.2. Method

Based on the above-mentioned objectives, we conducted a study in which participants evaluate moral and non-moral dilemmas in the affective dimensions of valence and activation. For this purpose, we introduced in this research the Self-Assessment Manikin (SAM; created by Lang, 1980; and Hodes, Cook, & Lang, 1985). This instrument was designed on the basis that all emotional phenomena can be described in terms of a tridimensional space, which consists of three independent and

bipolar dimensions: pleasure-displeasure, degree of arousal, and dominance-submissiveness.

For instance, Mehrabian and Russell (1977) found that these dimensions are autonomous, in the sense that differing values along any of these particular dimensions can occur at the same time, without necessarily affecting each other. Thus, the SAM can be understood as a visual representation of the pleasure, arousal, and dominance model (PAD). Because it does not require verbal expressions, the SAM is considered an intuitive instrument that can measure subjective experiences of people from different cultures and ages. Although all the SAM dimensions are psychometrically consistent, it is important to note that the dimension of dominance is the least consistent and, certainly, the least used in emotional research.

2.3.2.1. Participants

In the present study, we tested our hypothesis using a paradigm in which 35 participants (7 males) rated 27 pairs of vignettes. Fifteen participants were randomly assigned to a version of the paradigm in which they were asked to rate all the dilemmas in the activation dimension first, and then in valence. The next 20 participants were assigned to a different version of the paradigm in which they were asked to rate all the dilemmas in the opposite order (first in the dimension of valence and later in activation). As in Study 1 and Study 2, most of the participants were Psychology students who were invited to join the experiment as a part of their practice credits.

2.3.2.2. Material and stimuli

We considered as target the same 27 pairs of dilemmas used in Study 1 and Study 2 (15 pairs of moral dilemmas and 12 pairs of non-moral dilemmas; a total number of 54 trials). In order to measure participants' subjective responses, we introduced the SAM. In particular, we selected the scales of Valence and Activation.

Direct RTv2006 was used to register participant's scores. We used twenty computers Windows XP Professional V2000 with a processor Intel (R) Pentium (R) Dual CPU E 2160 @ 1.80 GHz 1.79 GHz 0.99 GB RAM.

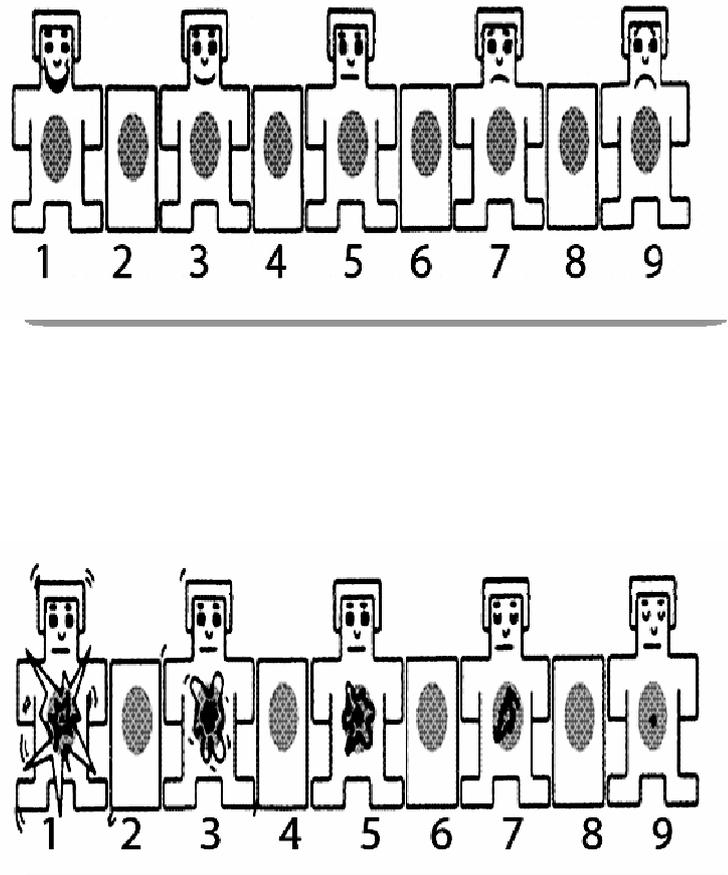


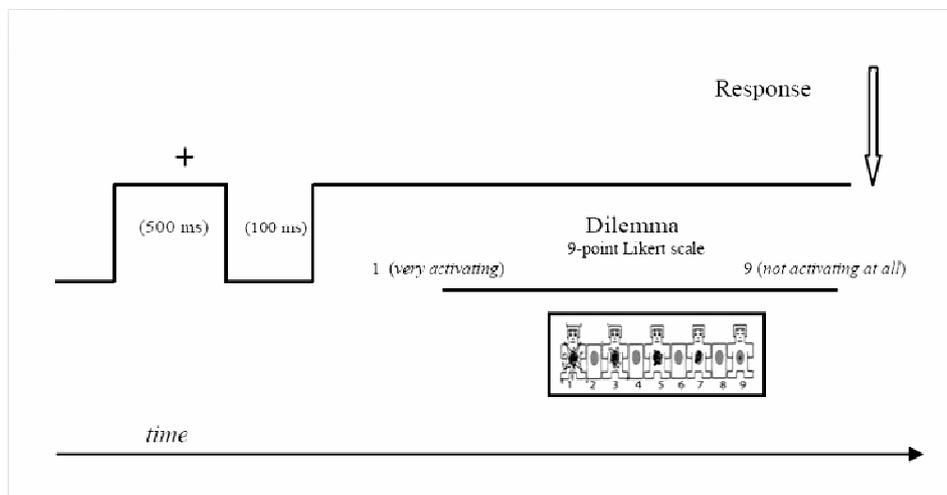
Figure 11. SAM scales of valence and activation

2.3.2.3. Procedure

During six different sessions that took place in the computer room of the Guillem Cifre Building (Faculty of Psychology, UIB), 35 participants rated 54 dilemmas. Participants were asked to express their sensations after reading each dilemma. We were very clear in our instructions that we were not asking them for their judgments. Before they started each session, we gave them a brief explanation of what valence or

activation means.⁵² Before the battery of dilemmas, we introduced four vignettes with instructions, followed by four vignettes with short texts. The ratings of these four texts were not considered in the subsequent analysis.

As in previous studies, variations of the same dilemma were presented pseudo-randomly. Both moral and non-moral dilemmas were presented in experimental vignettes. This paradigm was a self-paced task, designed so that next dilemma was not presented until the subject had responded to the previous one. Thus, after the subject had read each dilemma, he/she pressed the space key, and the SAM appeared accompanied by a 9-point Likert scale (for the valence dimension, the response scale ranged from 1 (*very pleasant*) to 9 (*very unpleasant*); for the activation dimension, it ranged from 1 (*very activating*) to 9 (*not at all activating*)⁵³. In this study, reaction time (RT) was measured as a second dependent variable. Each participant rated the two versions of each dilemma in valence and activation.



⁵² This explanation varied depending on their version of the paradigm. For example, in the Activation/Valence version, we started by explaining the meaning of activation. Later, when the entire group had finished their activation ratings, we proceeded with the explanation of the concept of valence.

⁵³ The original 9-point Likert scales, in the case of valence, ranged from 1 (*muy agradable*) to 9 (*muy desagradable*). Activation was measured ranging from 1 (*muy activante*) to 9 (*nada activante*). Importantly, the scale did not incorporate any text, so these equivalences were provided to participants as a part of the instructions.

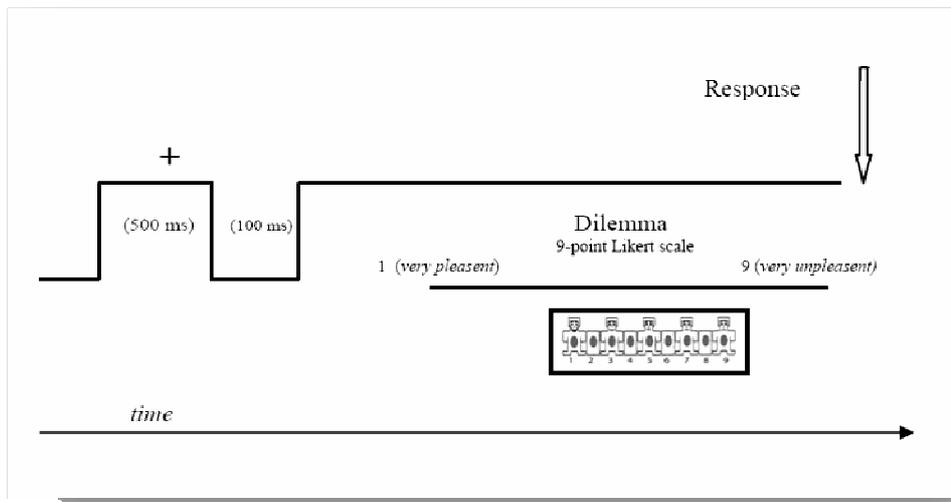


Figure 12. Experimental paradigm for Study 3 (Activation and Valence)

2.3.3. Results

Comparison of ratings of moral and non-moral dilemmas in the dimension of valence. Moral dilemmas were rated higher in valence than non-moral dilemmas ($M = 6.76$ and $M = 5.03$, respectively, for moral and non-moral dilemmas, $T = 1$, $N = 35$, $z = -5.143$, $p < .001$). Higher scores in this scale mean that participants experienced more unpleasant sensations after reading the moral vignettes.⁵⁴

Comparison of ratings of moral and non-moral dilemmas in the dimension of activation. Moral dilemmas were rated lower in activation than non-moral dilemmas ($M = 4.52$ and $M = 7.02$, respectively, for moral and non-moral dilemmas, $T = 0$, $N = 35$, $z = -5.160$, $p < .001$). Lower scores in this scale mean that participants experienced more activating sensations after reading moral vignettes.

⁵⁴ Surprisingly, our analysis of this comparison showed an effect of the order of the dimensions in the evaluations. In particular, those participants who rated first their activation and later their valence gave also higher scores in valence than participants that were asked to respond in the opposite order. However, the fact that U Mann-Whitney value is 120 suggests that this difference might be due to random variables.

Comparison of RT of moral and non-moral dilemmas in the dimension of valence. Participants took longer to rate moral dilemmas than non-moral dilemmas in the dimension of valence ($M = 1537$ ms and $M = 1307$ ms, respectively, for moral and non-moral dilemmas, $T = 6$, $N = 35$, $z = -2,883$, $p = .004$).

Comparison of RT of moral and non-moral dilemmas in the dimension of activation. Participants took longer to rate moral dilemmas than non-moral dilemmas in the dimension of activation ($M = 1562$ ms and $M = 1389$ ms, respectively, for moral and non-moral dilemmas, $T = 13$, $N = 35$, $z = -1,834$, $p = .067$)⁵⁵.

Comparison of RT of moral and non-moral dilemmas⁵⁶. Participants took longer to rate moral dilemmas than non-moral dilemmas ($M = 1549$ ms and $M = 1348$ ms, respectively, for moral and non-moral dilemmas, $T = 7$, $N = 35$, $z = -3,014$, $p = .003$).

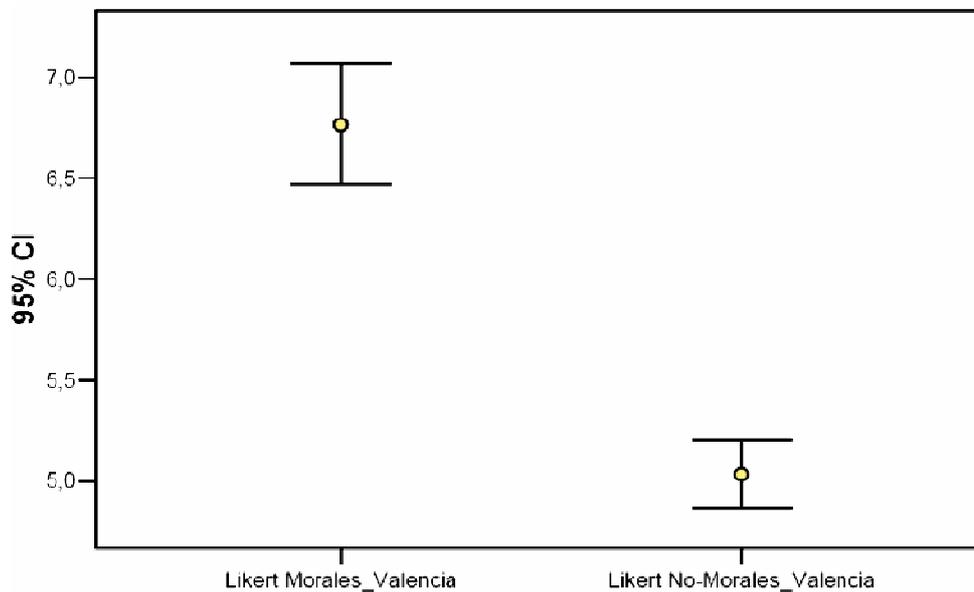


Figure 13. Comparison of ratings of moral and non-moral dilemmas in the dimension of valence

⁵⁵ Without outliers ($p = .031$)

⁵⁶ This analysis did not take dimensional distinctions into account.

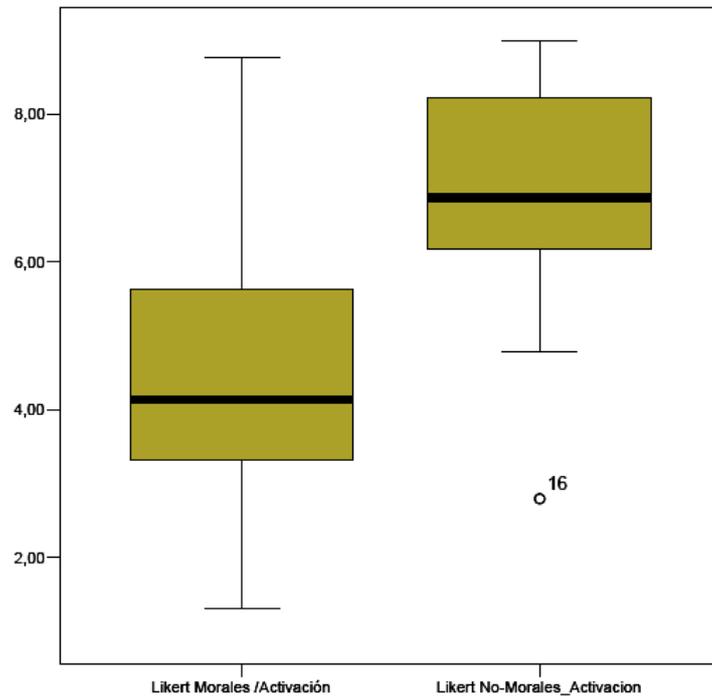


Figure 14. Comparison of ratings of moral and non-moral dilemmas in the dimension of activation

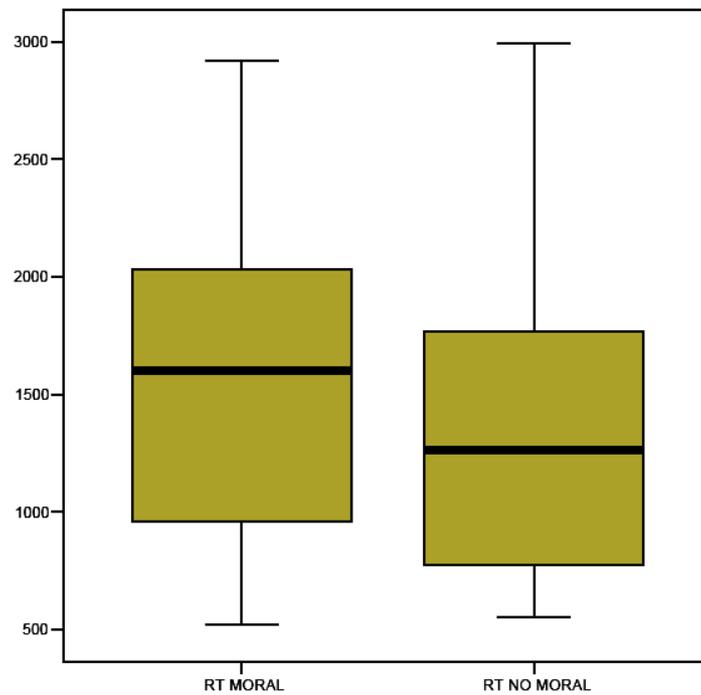


Figure 15. Analysis of the reaction times (RT)

2.3.4. Conclusions and Discussion

Results from Study 3 show that moral dilemmas are experienced as more affectively negative (unpleasant) and more activating than non-moral dilemmas. To the best of our knowledge, these results constitute the first evidence of intrinsic dimensional differences between the two types of dilemmas. As mentioned above, although research on moral psychology has assumed that moral dilemmas recruit affective processes, there was no evidence about dimensional ratings of moral and non-moral dilemmas. We believe this finding redefines the nature of the influence of affective priming on moral judgments. Specifically, the results of Study 3 suggest that the influence of affective primes on the target cannot be understood as unidirectional. Instead, the documented effect must be understood as a result of the interaction between affective features of the primes and dimensional-affective features of the target.

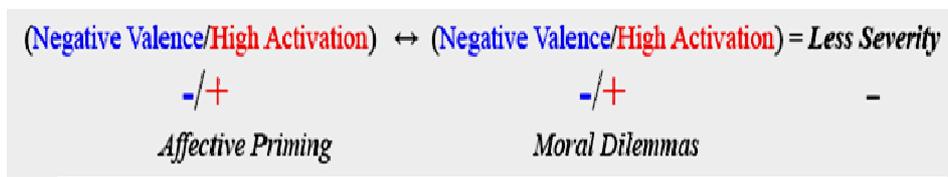


Figure 16. Dimensional interaction between affective prime and the target (moral dilemmas)

Additionally, these results suggest a possible explanation of the fact that affective priming only influenced participants' moral judgments. Therefore, it seems that moral dilemmas are *intrinsically* affective, which constitutes a main distinction between this type of dilemmas and dilemmas that do not imply moral considerations. This prediction is supported by the analysis of the RT differences in the two types of dilemmas. Participants took longer to rate their subjective experiences—both in valence and activation—after reading moral dilemmas than after non-moral dilemmas.

One possible explanation for this pattern of results can be found in the Emotional Stroop Effect (ESE)⁵⁷, an experimental paradigm that predicts a general increase in RT for responses to affective stimulus. Despite that the ESE has been primarily demonstrated with participants with clinical disorders (Becker, Rinck, Margraf, & Roth, 2001), there is evidence that the ESE is also operative with non-pathological subjects. For example, McKenna and Sharma (1995) presented participants with affective words with frightening connotations (e.g., death, failure) and neutral words. They found that RT was longer for naming the color of frightening words when compared with neutral words. Likewise, the fact that participants in Study 3 took longer to express their feelings after reading moral dilemmas strongly suggests that the “affective negativity” of moral dilemmas is a critical factor mediating participants’ responses.

2.4. STUDY 4

Results from Study 2 suggested that the influence of affective priming by disgust on moral judgments (“disgust” makes *only* moral judgment *less* severe) required further examination. Thus, the fact that this effect was obtained at extremely short prime exposure time (*super-quick* condition, 20-ms SOA) implies that the influence of the prime on moral judgments can hardly be attributed to a discrete emotion like disgust (see 4.3). Instead, this finding suggests that the observed effect is caused by a more basic affective computation (quicker, implicit, and probably un-appraised) that is involved in the complete experience of disgust.

Following this premise, Study 4 started out from an affective-dimensional point of view that could contribute to clarify this intriguing question. In this study, we selected

⁵⁷ The “emotional Stroop paradigm” works by examining participants’ RT to emotional or neutral words. A typical finding is that naming the color of words with emotional connotation is performed slower than that of neutral words, a difference that is called the “Emotional Stroop Effect.” This paradigm is a variation of the original Stroop test, which creates a conflict between an incongruent color and word (for a review, see MacLeod, 1991).

affective primes that resemble the previously used ones in their dimensional values (both in valence and activation) but that, at the same time, differ in their thematic content. Because we were seeking differences in priming effects between primes that are similar in their dimensional values but are known to elicit different emotions, we selected stimuli that cannot be included within any taxonomy of disgust elicitors (see *Section 1.3.2.3*).

From this conceptual approach, we tested the way different affective primes (disgust and fear/horror pictures), previously matched in valence and arousal, modify participants' moral judgments. Fearsome pictures were selected as a contrast to the disgust stimuli because both emotions have very similar profiles in the dimensional model (negative valence, high ability to arouse, and the withdrawal motivational function), but nonetheless distinct qualities.⁵⁸ In particular, it is well documented that the experience of fear can elicit extremely negative affective responses and a higher ability to arouse than other negative emotions (Russell, 1980). As a result, if the present study replicates the main effect obtained in Study 1 and Study 2, it would be necessary to redefine the specificity of the link between disgust and moral judgments and attribute the influence of this emotion to the affective dimensions of valence and/or activation.

2.4.1. Objectives and hypotheses

(a) To test the dimensional explanation of affective priming effect on moral judgments by using stimuli that elicit a different discrete emotion (fear-horror) than disgust but that, at the same time, share similar dimensional values in valence and activation. It was predicted that affective priming by fear-horror would replicate the same effect previously observed by priming by disgust.

⁵⁸ For instance, there is evidence suggesting that processing fear-related stimuli produces greater inhibitory responses on distractors relative to processing disgust-related stimuli (Vermeulen, Godefroid, & Mermillod, 2009). In addition, there is neurophysiological evidence showing that fear and disgust are associated with partially distinct neural substrates (Calder, Lawrence, & Young, 2001).

(b) To test whether variations of prime exposures influences participants' moral judgments. It was predicted that both SOAs (20ms and 250ms) would influence participants' moral judgments in the same direction previously documented.

(c) To compare whether a *super-quick* prime exposure (SOA 20ms) and a *quick* prime exposure (SOA 250ms) influence the strength of the effect on moral judgments. It was predicted that the influence of affective priming would be stronger in the *super-quick* condition.

(d) To test whether affective priming by fear-horror influences participants' RT. It was predicted that affective priming by fear-horror would influence participants' RT only when they evaluate moral dilemmas.

2.4.2. Method

The central purpose of Study 4 was to test the way different affective primes (disgust and fear-horror pictures), previously matched in valence and arousal, modify participants' moral judgments. However, in our attempt to find fear pictures that can serve as affective primes, we found that there were no IAPS fearful pictures with dimensional values that can match the values of the mutilation pictures. Consequently, it was crucial to create our own set of fear-relevant images.

2.4.2.1 Pilot Study

2.4.2.1.1 Participants

First, a pilot study was designed to determine which pictures present higher ratings in negative valence and activation. For this purpose, we designed a paradigm in which 53 participants (10 males) were asked to rate a set of pictures. Twenty-seven participants (3 males) were randomly assigned to a version of the paradigm in which

they were asked to first rate all the pictures in the dimension of activation and then in valence. The next 26 participants (7 males) were assigned to a different version of the paradigm in which they were asked to rate all the pictures in the opposite order (first in the dimension of valence and later in activation). As in the previous studies, most of the participants were Psychology students who were invited to join the experiment as a part of their practice credits.

2.4.2.1.2 Material and stimuli

The complete set of pictures comprised 68 fearful pictures and 126 neutral pictures (in total, 194). All fearful pictures were first obtained from the Internet and later edited, in order to make them less recognizable and also to increase their potential impact. Neutral pictures were selected from the IAPS following the criterion that they presented middle values in both valence and activation. A version of Direct RTv2006 was used to register participants' scores. We used six computers Windows XP Professional V2000 with a processor Intel (R) Pentium (R) Dual CPU E 2160 @ 1.80 GHz 1.79 GHz 0.99 GB RAM.

2.4.2.1.3 Procedure

The procedure was similar to the one used in Study 3. In order to measure participants' responses, we introduced the SAM (Lang, 1980; and Hodes, Cook, & Lang, 1985). Participants were asked to rate their sensations after briefly watching each picture (both fearful and neutral). Before they started each session, we gave them a brief explanation of what valence or activation means.⁵⁹ We were very clear in the experimental instructions that we were asking them for their first reactions and that it was important to respond quickly. Before the battery of dilemmas, we introduced four vignettes with instructions, followed by four neutral pictures. The ratings of these four

⁵⁹ This explanation varied depending on their version of the paradigm. For example, in the Activation/Valence version, we started by explaining the meaning of activation. Later, when the entire group had finished their activation ratings, we proceeded to explain the concept of valence.

pictures were not considered in the subsequent analysis. Both fearful and neutral pictures were presented pseudo-randomly, which means that all pictures were randomly presented first for one dimension, and then randomly presented for the other dimension.

As in the previous experiments, this paradigm was a self-paced task, designed so that next picture was not presented until the subject had responded to the previous one. Thus, once the subject had looked at each picture he/she pressed the space key and the SAM appeared, accompanied by a 9-point Likert scale (in the valence dimension, responses ranged from 1 (*very pleasant*) to 9 (*very unpleasant*); in the activation dimension, responses ranged from 1 (*very activating*) to 9 (*not at all activating*)⁶⁰. Each participant rated the complete set of pictures both in valence and activation. After the pilot study, we selected the 27 fearful pictures that did not differ significantly from the IAPS mutilations pictures in their values of negative valence ($t = -.785, p = .440$) and high activation ($t = -1.017, p = .319$) (see figures 17 and 18).

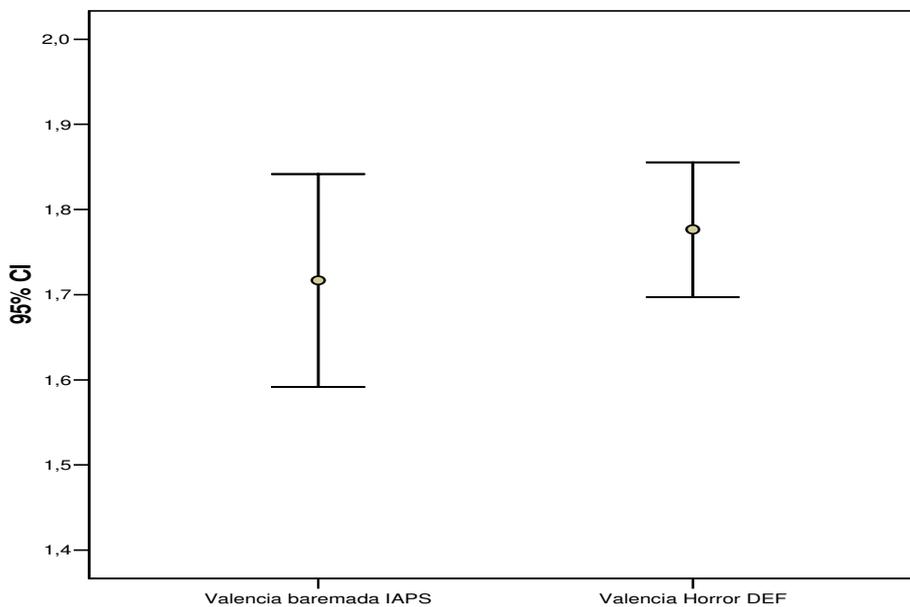


Figure 17. Comparison of ratings of IAPS and horror pictures in the dimension of valence

⁶⁰ The original 9-point Likert scales, in the case of valence, ranged from 1 (*muy agradable*) to 9 (*muy desagradable*). Activation responses ranged from 1 (*muy activante*) to 9 (*nada activante*). Importantly, the scale did not incorporate any text, so these equivalences were given to participants as a part of the instructions.

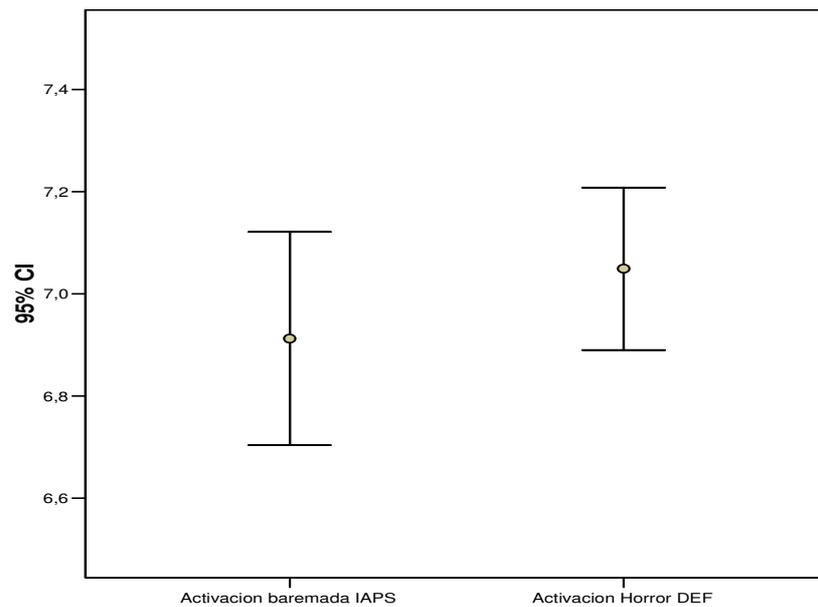


Figure 18. Comparison of ratings of IAPS and horror pictures in the dimension of activation

2.4.2.2 Main Study

2.4.2.2.1 Participants

In the present study, we tested our hypothesis using a paradigm in which 78 participants (14 males) rated 27 pairs of vignettes. Thirty-eight participants (11 males) were randomly assigned to the *super-quick* condition (20-ms SOA) and 40 participants (18 males) were assigned to the *quick* condition (250-ms SOA). Results of 3 participants (2 of them originally assigned to the *quick* condition) were excluded from further analysis because their ratings significantly deviated from the mean of the group. As in previous studies, most of the participants were Psychology students invited to join the experiment as a part of their practice credits.

2.4.2.2.2 Material and stimuli

We considered as targets the same 27 pairs of dilemmas used in previous studies (15 pairs of moral dilemmas and 12 pairs of non-moral dilemmas; a total number of 54

trials), following the premise that they differ in “irrelevant” characteristics⁶¹. A version of Direct RTv2006 was used to register participants’ scores. We used twenty computers Windows XP Professional V2000 with a processor Intel (R) Pentium (R) Dual CPU E 2160 @ 1.80 GHz 1.79 GHz 0.99 GB RAM. Twenty-seven fear-horror pictures, selected after the pilot study, were used as affective primes, and a grey square was used to serve as neutral prime.



Figure 19. Neutral prime



⁶¹ This material was selected taking into account the results previously obtained from the pilot study.



Figure 20. Affective primes by fear-horror

2.4.4.4.3. Procedure

Study 4 followed the same basic procedure used for Study 1 and Study 2. As in Study 2, in this study, we manipulated SOAs as a second independent variable (20-ms SOA and 250-ms SOA). Thus, each participant rated the two versions of each dilemma; one rating for the version after the fear prime and one for the version after neutral prime. In addition, in Study 4, RT was considered and measured as a second dependent variable.

2.4.3. Results

Comparison of affective priming condition and neutral condition in the ratings of moral and non-moral dilemmas with 20-ms SOA. Moral dilemmas were rated higher in appropriateness after affective priming than after neutral priming ($M = 3.67$ and $M = 3.39$, respectively, for affective and neutral priming, $T = 8$, $N = 35$, $z = -3.373$, $p = .001$). Interestingly, this was not the case for non-moral dilemmas ($M = 4.17$ and $M = 4.16$, respectively, for non-moral dilemmas after affective priming and after neutral priming, $T = 15$, $N = 35$, $z = -.534$, $p = .594$).

Comparison of affective priming condition and neutral condition in the ratings of moral and non-moral dilemmas with 250-ms SOA. Moral dilemmas were rated higher in appropriateness after affective priming than after neutral priming ($M = 3.69$ and $M = 3.49$, respectively, for affective priming and neutral priming, $T = 13$, $N = 36$, $z = -2.655$, $p = .008$). Interestingly, this was not the case for non-moral dilemmas ($M = 4.19$ and $M = 4.05$, respectively, for non-moral dilemmas after affective priming and after neutral priming, $T = 15$, $N = 33$, $z = -.976$, $p = .329$).

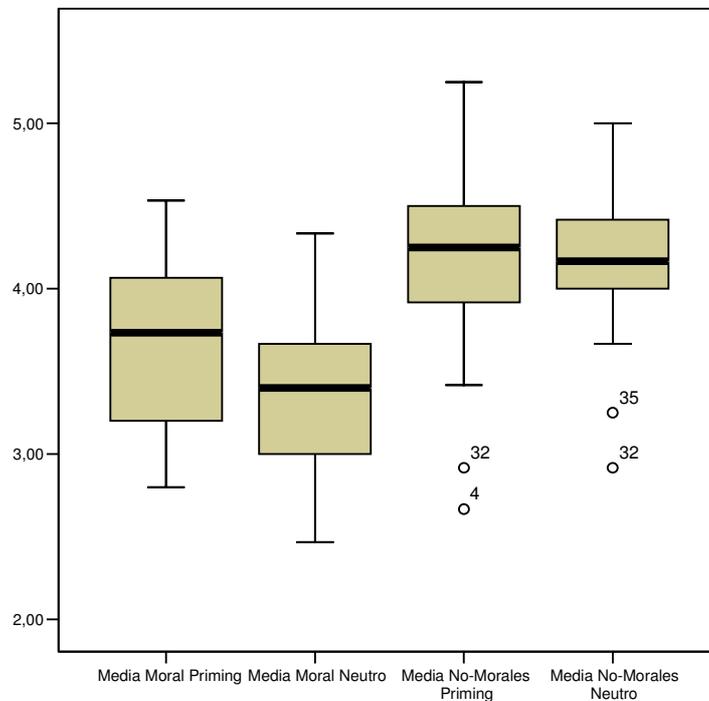


Figure 21. Comparison of affective priming condition and neutral condition in the ratings of moral and non-moral dilemmas with 20-ms SOA.

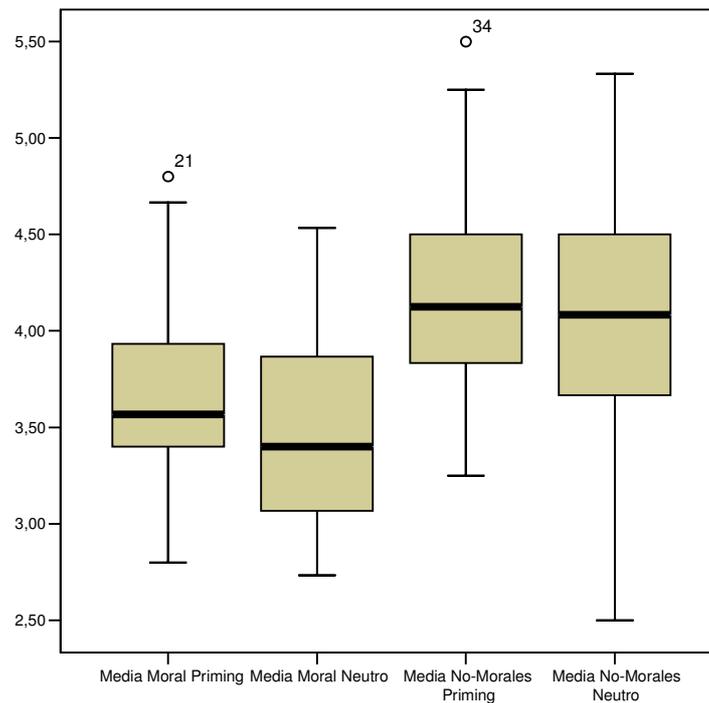


Figure 22. Comparison of affective priming condition and neutral condition in the ratings of morals and non-moral dilemmas with 250-ms SOA.

Comparison of affective priming condition and neutral condition in the RT⁶² of moral and non-moral dilemmas with 20-ms SOA. Participants took longer to rate moral dilemmas after affective priming than after neutral priming, $t(36)=2,795$, $p = .008$. Interestingly, this was not the case for non-moral dilemmas, $t(36)= -0.510$, $p = 0,613$.

Comparison of affective priming condition and neutral condition in the RT of moral and non-moral dilemmas with 250-ms SOA. Participants took longer to rate moral dilemmas after affective priming than after neutral priming, $t(37)=2,51$, $p = .017$. This was not the case for non-moral dilemmas, $t(37)= -0.206$, $p = 0,838$.

⁶² In the analysis of RT, outliers were eliminated for both SOA's (3 participants in the 20-ms SOA condition and 2 participants in the 250-ms SOA condition). For the analysis of the data, the conventional logarithmic transformation of the reaction time scores was made after the scores had been properly coded to avoid negative logarithms. When Rts are transformed, a fitted general linear model provides coefficients and fitted latencies in another scale than the millisecond time scale. This way, in many cases it may be necessary or convenient to visualize partial effects on the original millisecond scale (see figures 23 and 24).

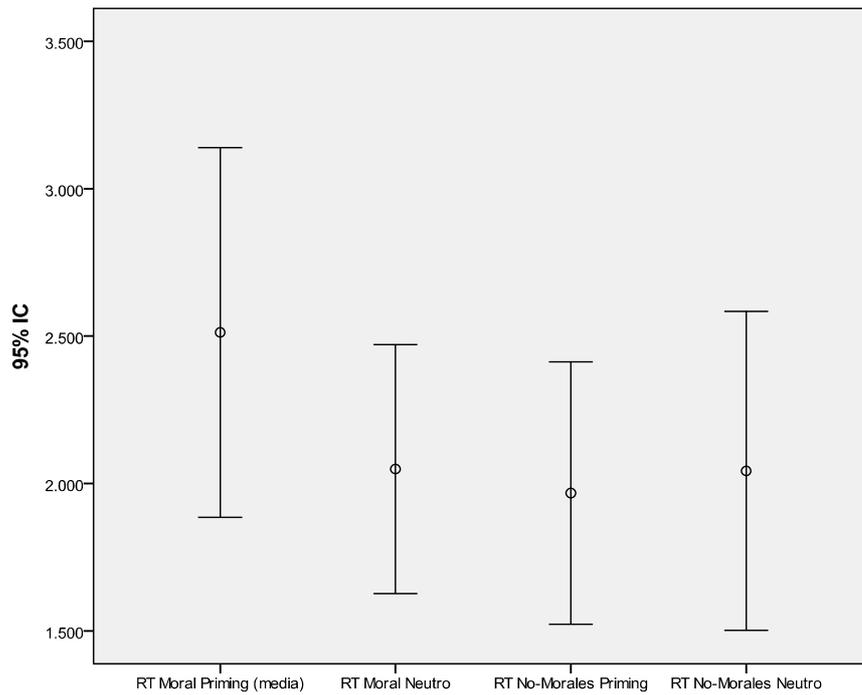


Figure 23. Comparison of affective priming condition and neutral condition in the RT of moral and non-moral dilemmas with 20-ms SOA

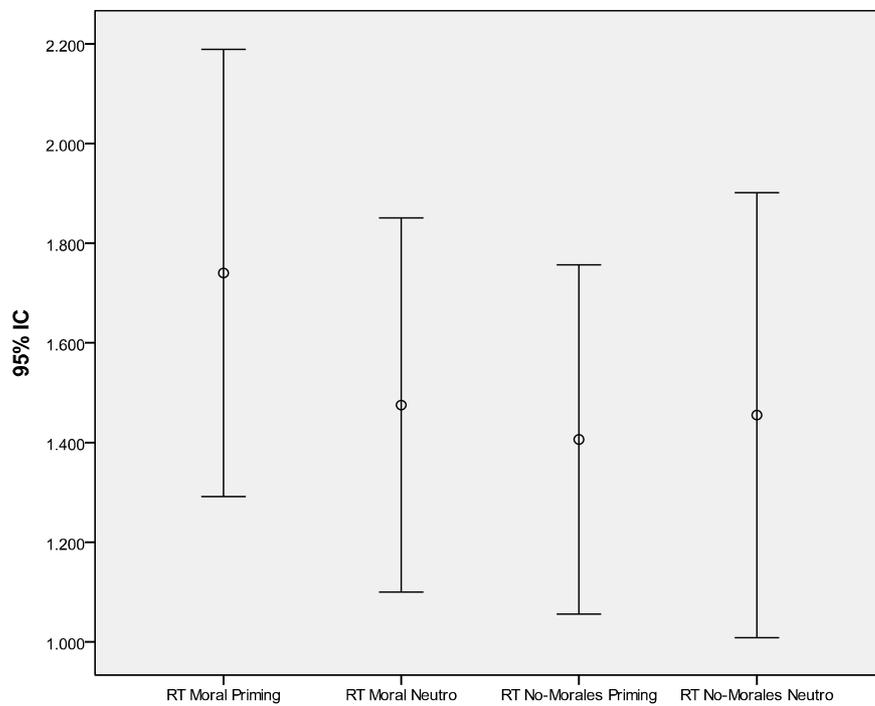


Figure 24. Comparison of affective priming condition and neutral condition in the RT of moral and non-moral dilemmas with 250-ms SOA

2.4.4. Conclusions and Discussion

Results from Study 4 replicated the main finding of this research: affective priming reduces the severity of moral judgments. As in Study 2, we found that SOAs of different characteristics (20ms and 250ms) resulted in the same effect on moral judgments. The analysis of the interaction between SOA duration and priming effects on moral judgments showed that the strength of the effect was again susceptible to the SOA manipulations. As in Study 2, when the SOA was *super-quick*, the effect of the prime on the target was stronger.

Therefore, the effect of affective priming by fear-horror pictures on moral judgments was surprisingly similar to the effect previously found by primes of disgusting pictures. This evidence is crucial for the argument concerning the specificity of the affective response that is causing this effect. For instance, the fact that a fearful prime replicated the previous effect, casts serious doubts on the emotional-specificity of the effect. Certainly, it is difficult to assume that both disgust and fear exert a domain-specific influence on moral judgments that is, at the same time, consistent between both emotions.

With regard to this issue, it is noteworthy that the pilot study was designed in order to obtain fear primes that matched the disgust primes in the affective dimensional values (both in valence and activation). Therefore, because both affective primes are characterized by the extreme subjective ratings of valence (*very unpleasant*) and activation (*very activating*), it is possible that these two particular dimensions are mediating the effect obtained.

Finally, the analysis of the RT confirmed our initial prediction: affective priming by fear-horror influenced participants' RT only when they evaluated moral dilemmas. In particular, affective priming by fear-horror increased RT when the SOA was *super-quick*, whereas the *quick* SOA also increases RT, but without reaching statistical significance. Consequently, results from Study 4 and Study 3 show a consistent tendency in the RT to affective stimuli.

3. CHAPTER III:

GENERAL DISCUSSION, CONCLUSIONS, AND PERSPECTIVES

3.1 EXPLAINING THE EFFECT OF AFFECTIVE PRIMING ON MORAL JUDGMENTS

The aim of the present research was to examine whether disgust (as a discrete emotion) exerts a domain-specific influence on moral judgments. Results showed that affective priming by disgusting and fearful images induced at SOAs of different characteristics (20ms, 250ms, and 500ms) produced the same effect: affective primes made moral judgments less severe. Altogether, these results strongly suggest that the effect exists either when the prime is perceived as unspecific or “diffuse” (20-ms SOA) or when it is perceived as more “distinctive” (250-ms SOA and 500-ms SOA). Interestingly, the analysis of the influence of affective priming in moral judgments revealed that the strength of the effect was indeed susceptible to SOA manipulations. In short, when the SOA was *super-quick*, the effect of the prime on the target was stronger. This suggests that the more diffuse/unspecific the prime is perceived, the greater is the effect on the target.

Certainly, it seems unlikely that a discrete emotion can be generated at such extremely short exposure times (20ms), which suggests that the particular effect of the prime in moral judgments lies in a more basic affective response (quicker and probably un-appraised) and, therefore, cannot be attributed to a sophisticated cognitive response (such as a discrete emotion). The implications of this argument in the context of research on the influence of incidental emotions in evaluative judgments—with special emphasis on moral judgments—are discussed below.

3. 1.1. The effect of affective priming on moral judgments understood as an effect of the valence and/or the arousal dimensions

As mentioned above, the effect of affective inductions on moral judgment was found at extremely short exposure times (*super-quick* condition, 20-ms SOA). Moreover, it was found that the strength of the effect was susceptible to SOA

manipulations. Thus, when the SOA was extremely short (*super-quick* condition), the effect of the prime on moral judgments was stronger than when the SOA was moderately short (*quick* condition). This indicates that the shorter the SOA, the lesser the severity with which participants judged moral dilemmas. Previous studies on the effects of extremely short exposure times in affective priming shows that early affective reactions are generated at these type of SOAs, whereas more complex and cognitive-demanding responses are known to involve more time in their elicitation (Paulmann & Pell, 2009; Stapel et al., 2002). Moreover, early affective reactions are understood as being “diffuse” and unspecific basic computations because they are unappraised (Murphy & Zajonc, 1993). In the particular case of this research, this suggests that the more diffuse/nonspecific the affective prime is perceived, the greater is the effect on participants’ evaluations of moral dilemmas.

This finding is relevant to the possible attribution of the observed effect to the experience of a discrete emotion. Thus, an intriguing question that arises from this work concerns the specific nature of the psychological response that is mediating this effect. As mentioned in the Discussion of Study 4, the effect of affective primes of fearful images on moral judgments was surprisingly similar to the effect previously found with disgusting images. This evidence is especially crucial for the present argument, concerning the specificity of the affective response causing this effect. Accordingly, because a fearful prime replicated the previous effect by making participants’ moral judgments less severe, this latter finding implies that the influence of the affective primes on moral judgments cannot be attributed to discrete emotions like disgust or fear. Instead, results from the influence of the time course of affective priming on the strength of the effect (Study 2 and 4) and from the content of the affective prime (Study 4) suggest that the documented effect of affective primes on moral judgments is caused by a more basic affective computation (quicker, implicit, and probably unappraised) that is involved in the dynamic of the experience of disgust and fear.

One explanation for the consistency of the effect of affective primes on moral judgments, across the different experimental paradigms, is that the effect is obtained as a result of some dimensional properties that are common to disgust and fear. According

to IAPS ratings, our disgusting primes (together with other mutilation images that did not form part of our set) are rated as very unpleasant in the valence dimension, and very activating in the activation dimension. Certainly, as mentioned in the overview of Study 4, the extremity of these ratings was a potential problem when searching for new stimuli that could match the disgusting ones in their dimensional properties. Therefore, because both affective primes are characterized by the extremity of their values on the dimensional ratings both of valence and arousal, it could be that these two particular dimensions are mediating the effect obtained.

However, despite that our results support the dimensional explanation of the effect obtained, the results of this research cannot delimit the specific weight of the influence of each dimension on moral judgments. Further empirical research is needed in order to test the proportion in which a negative valence and/or a highly aroused feeling is biasing this response. Therefore, in principle, it might be that *any* unappraised, negative affective response influences moral judgments by making them less severe. Likewise, it is equally possible that affective priming of *any* unappraised, affective stimuli that is highly activating (regardless of the valence) will influence moral judgments in the same way. It is intriguing that, although the influence of incidental emotions on moral judgments has been the focus of recent empirical attention (see *Section 1.3.3.2*), there is no evidence in the literature of the influence of specific affective dimensions on moral judgments that can predict the likelihood of the two possibilities.

A complementary possibility remains open. Given the fact that we intentionally matched both sets of primes (disgusting and fearful) in order to avoid significant differences in their subjective ratings of valence and arousal, we believe it is certainly plausible that the similarity in the effect of both affective inductions on moral judgments can be attributed to the similarity of their dimensional ratings of valence *and* arousal. If this prediction is correct, it might be expected that a different unappraised, negative affective response that is also high activating will generate the same effect on moral judgments. Nevertheless, future studies are needed to definitively rule out this concern. In sum, on the basis of the experiments conducted in this research, we argue

that because of (i) the particular strength of the effect of affective primes at short SOAs; and (ii) the similar effects on moral judgments obtained with fearful and disgusting primes, the documented effect can be explained as the result of an early unappraised affective response that involves both the dimensional values of negative valence and high arousal.

3.1.2 The effect of affective priming on moral judgment understood as an effect mediated by the withdrawal motivational function

There is an alternative possibility, which suggests a higher degree of specificity in the dimensional explanation of this effect. It has been postulated that emotions are founded on brain states that organize behavior along a basic appetitive-aversive dimension. From this perspective, all affects are associated either with a behavioral set favoring approach or a set disposing the organism to avoidance (Lang, Bradley, & Cuthbert, 1990). Thus, different investigators have proposed the existence of two basic systems mediating different forms of motivation and emotion (Davidson, 1995; Davidson & Irwin, 1999). Therefore, in the context of moving towards a desired goal, there is an approach system that facilitates appetitive behavior by generating certain types of affect that are approach-related. Likewise, there is a second system that facilitates the withdrawal of an individual from aversive sources and generates particular forms of negative affect that are withdrawal-related. Further, empirical evidence indicates that both systems are implemented in partially separable neural circuits, and that asymmetrical prefrontal activation might reflect such motivational differences, rather than valence (Davidson, 2003).

This accumulating evidence of the importance of the approach-withdrawal motivational function in our understanding of affective responses suggests that the dimensional characterizations of an emotional response that are only based on the dimensions of valence and arousal may be missing some important affective properties. In the particular cases of disgust and fear, both emotions are associated with increasing the distance between the organism and a perceived source of aversive stimulation

(Davidson & Irwin, 1999). Interestingly, there is evidence suggesting that the behavioral effects of different emotions are better understood from their approach-withdrawal distinction (Lerner & Keltner, 2001; Rosselló, Gálvez, Homar & Munar, 2011). Thus, the fact that disgust and fear share a basic aversive dimension might be mediating this effect. In particular, it is possible that, in addition to the involvement of extreme subjective values such as negative valence and high arousal, the withdrawal motivational function might be also implicated in the elicitation of the specific effect of our affective inductions on moral judgments.

3.1.3 The effect of affective priming on moral judgment understood as an effect of discrete emotions

It is important to acknowledge that there is a third possible explanation to the documented effect. Thus, it might be that the affective inductions used in this research *indeed* elicited discrete emotions. Although the current analysis of these results and the literature on emotional processing strongly suggest that this possibility is certainly unlikely, there is some research arguing that emotions can be elicited at very short exposure times. According to this approach, for an emotion to be unconscious, people must not be able to report their emotional reaction at the moment it is caused. Yet evidence of the emotional reaction is needed either in their physiological or behavioral response, or subsequent cognitive evaluations of an affect-laden event (Winkielman & Berridge, 2004).

Interestingly, there is also some empirical data suggesting that emotions may also exert their “cognitive” effects when they are not consciously experienced. Supporting this view, Zemack-Rugar, Bettman, and Fitzsimons (2007) found that participants subliminally primed with sad or guilty emotion adjectives (60ms) did not report any conscious difference in their emotional state, yet they behaved differently (congruently with appraisals of their specific emotion-prime condition) on an indulgence and helping task.

Likewise, as mentioned in (1.4.3), Yang and Tong (2010) found that specific emotional appraisals can be differentially influenced by subliminal emotional primes. In their two studies, participants exposed to subliminal angry facial expressions were more likely to appraise negative events as caused by other people, and participants exposed to subliminal sad facial expressions were more likely to appraise the same events as caused by situational factors. In both studies, participants exhibited distinctive patterns of agency appraisal as a function of the subliminal primes (26-28ms in Experiment 1 and 16-18ms in Experiment 2) despite that the anger and sadness subjective ratings did not differ between prime conditions.

Ruys and Stapel (2008b) used *quick* (120ms) and *super-quick* (40ms) subliminal affective primes of disgust and fear and cognitive, feelings, and behavioral measures to test the possibility of unconsciously evoked emotions. They found that quick (120ms) exposure to disgusting and fearful pictures resulted in emotion-specific effects by increasing cognitive accessibility of disgust/fear words and feelings of disgust/fear. It is intriguing, however, that, although they argue that they found evidence for unconscious emotion, they also found that their emotional inductions influenced participants' subjective feelings, which contradicts the theoretical conception of what an unconscious emotion is, defended by Yang and Tong (2010) and Zemack-Rugar et al. (2007). More importantly, they found that, when exposure to the emotional primes was *super-quick* (40ms), global mood, rather than a specific emotion, was elicited.

Another intriguing finding was obtained by Lee et al., (2011). In this study, they found differential priming effects for subliminal (10-ms SOA) fear and disgust facial expressions. In one task, participants judged 50% happy target faces to be more unpleasant when they were primed by fear faces than when primed by disgust or neutral faces. In another task, participants judged targets more “not genuine” when they were primed by fear *and* disgust faces than when primed by controls.⁶³

⁶³ Indeed, it is especially difficult to explain the first result in the context of existing literature on emotional dynamics (see Chapter I, 4.3). They found differential priming effects for disgust and fear at a 10-ms SOA, which is known to elicit only valence-based responses.

We are skeptical about the likelihood of this emotional-specific explanation of the documented effect. For one thing, direct effects of time course were found in this research, such as that the particular strength of effect of the affective prime was especially salient at short SOAs. As mentioned above, a variety of evidence suggests that only early affective reactions are generated at these types of SOAs, whereas more complex and cognitive-demanding responses (such as discrete emotions) are known to require more time for their elicitation (Murphy & Zajonc, 1993; Paulmann & Pell, 2009; Stapel et al., 2002).

Second, a similar effect in moral judgments was obtained with fearful and disgusting primes. Because it is difficult to assume that both disgust and fear exert a domain-specific influence on moral judgments, that is, at the same time, consistent between both emotions and inconsistent with other studies on the influence of discrete emotions in moral judgments (1.3.3.2). We reject this explanation. Consequently, we argue that such an effect must be explained as a result from an early unappraised affective response, in particular, as a result of (at least) the dimensional values of negative valence and high arousal.

3.2. IMPLICATIONS OF THESE FINDINGS FOR RESEARCH ON THE AFFECTIVE PRIMACY ON MORAL JUDGMENTS

The first aim of the present research was to examine whether disgust (as a discrete emotion) exerts a domain-specific influence on moral judgments. The results of this investigation showed that the influence of disgust on moral judgments is moral-specific, in the sense that it is exclusively limited to moral dilemmas. No effect of disgusting priming on non-moral judgments occurred either in *super-quick* or *quick* conditions. However, results from Study 4 with fear stimuli revealed that the documented effect on moral judgments cannot be attributed (at least not exclusively) to the discrete emotion of disgust. Indeed, as mentioned in the previous discussion, it appears that the

documented effect is caused by more basic affective computations that are involved in the complete experience of disgust and fear. In particular, results from Study 2 and Study 4 strongly suggest that the influence of our affective inductions in moral judgments should be attributed to (at least) the dimensions of negative valence and/or high activation.

An intriguing question that arises from this work concerns the specificity of the obtained effect on moral judgments. Considering this problematic, results from Study 3 suggest a possible explanation of the fact that affective priming only had an effect on participants' moral judgments. Thus, our findings indicate that the specificity of this effect on moral judgments relies on core affective dimensional properties that are in some way inherent to moral dilemmas. Particularly, moral dilemmas seem to be *intrinsically* affective, in the sense that their mere perception elicits activating negative feelings.⁶⁴ This finding constitutes a crucial distinction between moral dilemmas and dilemmas that do not imply moral considerations.

Conversely, the perception of non-moral dilemmas did not elicit any significant affective reaction in participants. Such a finding was supported by the analysis of the differences in RT between the two types of dilemmas. Thus, participants took longer to rate their feelings—in valence and arousal—after reading moral dilemmas than after reading non-moral dilemmas. This finding is in line with the assumption that there is a general increase in RT for responses to affective stimulus (McKenna & Sharma, 1995).

The results of this research have direct implications for the study of the causal relationship between incidental emotions and moral judgments. For instance, the present investigation provides new insights into the growing research on disgust and moral judgments. Therefore, we suggest that the influence of disgust on moral judgments needs to be redefined in terms of an interaction; in particular, effects of disgusting inductions in moral judgments need to be understood in the context of an interaction

⁶⁴ It must be acknowledged that if we argue that the affective nature of moral judgments is mediating the specificity of the affective priming effect, then *any* affective judgments might be influenced in the same particular way. Our data cannot support this prediction, but we will return to this issue when discussing future directions of this research.

between the particular dimensional-cognitive properties of this emotion and the affective dimensional properties of moral dilemmas.

As reviewed in Section (1.2.2), there is strong evidence supporting that emotions are a significant driving force of moral judgment. A variety of evidence suggests that moral judgment is more a matter of emotion and affective intuition than of deliberate reasoning (Greene & Haidt, 2002). According to the Social Intuitionist Model of moral judgment (Haidt, 2001), the perception of a social event automatically elicits an instant feeling of approval or disapproval. These feelings can be understood as affect-laden intuitions, as they appear automatically in consciousness with an affective valence (good/bad) but without any feeling of having gone through a fine-grained inference process.

For instance, neuroscientific studies show that emotional structures are recruited when making moral judgments (Blair, 1995; Greene & Haidt, 2002). Moreover, as mentioned in Section (1.2.2.2), studies on “moral dumbfounding”—a cognitive state where a person *knows* that something is morally wrong, but cannot find reasons to justify this belief—suggest that sometimes, *moral* preferences need no inferences⁶⁵. Further, knowing that something is morally wrong and explaining why appear to be completely separate psychological processes. Consequently, affective-laden intuitions play a crucial role in the *knowing*, while reasoning (argumentative function) is crucial in the explaining.

In this context, the fact that affective priming inductions only influenced moral judgments can be interpreted as new evidence supporting this theoretical position. On the basis of the above-mentioned literature, results from this investigation suggest that feelings of activating negative affects influence moral judgments because the processing of this type of judgments recruits participants’ affective responses. A further clue came from the results of Study 3. Interestingly, unlike non-moral dilemmas, moral dilemmas share the same dimensional properties (negative affect and high activation) with the affective primes used in this research. It is to some extent intriguing that, although

⁶⁵ We apologize to Robert Zajonc for having modified the title of his classic article, “Feeling and thinking: Preferences need no inferences” (1980).

moral judgments are known to involve affective processes (Section 1.2.2), previous research on the influence of incidental disgust in moral judgments have omitted the methodological implications of this fact.

Thus, literature on affective priming suggests that a variant of the Stroop mechanism (MacLeod, 1991) might be underlying the moral-specificity of the documented effect. This mechanism accepts evaluative information just like any other available information. Then, in order to be operative, the Stroop mechanism only requires some amount of overlap between task-relevant features of targets, on the one hand, and features of irrelevant distracters-primers, on the other hand (Klauer & Mush, 2003).

Indeed, results from Study 3 show that this requirement seems to be fulfilled in our experimental paradigms. Thus, the mentioned match in the dimensional properties of target (moral dilemmas) and affective primes suggests that such a mechanism might explain the mechanics underlying the specificity of the documented effect of affective priming on moral judgments. This issue can be appropriately addressed in future investigations of this nature, so we will come back to its consideration in the discussion of the Limitations and Future Directions of this investigation (3.4).

3.3. IMPLICATIONS OF THESE FINDINGS FOR RESEARCH ON THE INFLUENCE OF INCIDENTAL DISGUST ON MORAL JUDGMENTS

These results seem to contradict some important claims of the literature on the effects of incidental affects (such as disgust) on evaluative judgments (such as moral judgments). As reviewed in Section (1.3.3.2), literature on this topic supports that disgust makes moral judgment *more* severe, an effect that can be described as basically “assimilative” (in the sense that a negative judgment results from a negative affect). This claim fits the affect-as-information approach (Schwarz & Clore 1983; see Section 1.4.2)—which predicts that affective feelings provide evaluative information about the current status of objects and situations—particularly well. Moreover, because feelings

tend to take as their object whatever is on mind at the time they are experienced, people often rely on their feelings at the moment of forming a judgment as if asking themselves: *How do I feel about it?* (Schwarz & Clore, 2007). From this perspective, affective priming can be understood as a misattribution process in which participants “use” incidentally induced affects as information relevant to their task (Schwarz & Clore, 2007). Because research from this framework has focused on valence-based inductions of positive and negative affects, a typical finding is hedonic congruence between affect and judgment (Schwarz & Clore, 1983).

It is important to acknowledge that, although the scope of the present research has the explanatory limitations mentioned in Section (3.1), any of the three possible explanations of the documented effect discussed above contradict the typical finding predicted by the affect-as-information approach: misattribution of an incidental feeling to the perceived target, with the resulting hedonic-congruent evaluations. Thus, even if the effect of affective priming on moral judgments is explained as an effect of (a) the valence and/or the arousal dimensions, (b) the valence and/or arousal and the appetitive-aversive dimension, or (c) a discrete emotion, the effect cannot be characterized in terms of a mood-congruent judgment.

The most likely explanation is that methodological differences contributed to the disparate results. Specifically, the current study assessed the influence of affective priming at different time points along the time course. Conversely, other studies have tested their affective induction at a single time point measure of emotional experience. Therefore, it could be that the latter methodology is not capturing important temporal differences in the dynamics of emotion.

When discussing the results from Study 2, we mentioned, as a first possible explanation for this problematic, a difference in the intensity of our negative affective inductions compared with the disgusting inductions used in other experimental paradigms. There are, however, other explanations that can address the peculiarity of our effect. Consistent with the hypothesis that the effect of the affective inductions in moral judgments found in this research is caused by dimensional properties (as

considered in 3.1.1 and 3.1.2), there is (at least) another possible explanation for these results that deserves to be analyzed.

In order to test these ideas, the next section is aimed at analyzing what we think are the two most possible explanations for the apparent divergence between the current results and previous studies on disgust and moral judgment. Therefore, we consider that: (a) the difference between the direction of our affective induction on moral judgments and that of previous studies might be mediated by the “intensity” factor; or (b) the difference in the direction of our effect on moral judgments and that of previous studies might be attributed to the absence of disgust-specific cognitions in our inductions. Because results from the present research do not receive support from data that can rule out any of these alternative explanations, the ultimate rejection of any of these hypothesis should be matter of further empirical treatment.

3.3.1 Option A: Intensity of the affective induction

As mentioned in the Discussion of Study 2, Schnall, Haidt et al.’s (2008) study provides some clues to the intensity hypothesis. First, their finding was restricted to participants who were highly sensitive to their internal physical reactions, leaving open the possibility that their participant’s oversensitivity is in some way mediating their results.⁶⁶ Our disgust induction was not restricted to participants who were highly sensitive to their bodily reactions⁶⁷. Also, the former authors explicitly admitted that they were looking for “low-level” disgust inductions (Schnall, Haidt et al., 2008, p. 1106). We believe that this might be a possible point of divergence. Certainly, the facts that we selected human mutilation images as disgusting affective primes and that

⁶⁶ Indeed, it is worthy to note that the restriction of Schnall, Haidt et al.’s (2008) findings can be interpreted in different ways. For instance, it is possible that participants’ oversensitivity biases their affective judgments negatively, regarding the particular affective induction. However, it is also possible that their oversensitivity is mediating the intensity of their disgusting experience, which will increment their severity of moral judgments. This latter alternative would not support the hypothesis that the difference in the intensity of the affective inductions between our research and other studies is mediating the apparent discrepancy in the direction of the effect.

⁶⁷ Despite we did not control private body consciousness (which is a measure of attunement to bodily sensations) for our participants, it certainly seems unlikely that the effect of our inductions was restricted to people with high scores on this scale.

participants perceived these primes at short and very short exposure times suggest that the experimental paradigms used in this research are characterized by intense affective inductions. Therefore, either (a) the thematic content of the primes and/or (b) the time course of affective priming can potentially elicit the argued affective intensity.

3.3.1.1. *Thematic content of the primes*

As previously mentioned, for affective priming of disgust, we selected a set of images that have in common the topic of human mutilations. According to IAPS ratings, these images (together with other mutilation images that did not form part of our set) are rated as very unpleasant in the valence dimension, and very activating in the activation dimension. In fact, the extremity of these ratings was a potential problem when we looked for new stimuli in Study 4. Therefore, Reisenzein (1994) argues that the intensity of the affective response may be the result of the contribution of both valence and arousal. From this perspective, whereas the emotion quality—or at least, the “affective core”⁶⁸—is determined both by the proportion of Pleasure-Displeasure (P) and the proportion of Activation-Deactivation (A), the intensity of the emotion is determined by the absolute degree of P and A. For example, because disgust is an activating unpleasant feeling (Lang, Greenwald, Bradley, & Hamm, 1993; Reisenzein, 1994), increasing intensity of this emotion is accompanied by increasing arousal and decreasing valence.

Interestingly, recent research has proposed an “affective impact” (Croucher, Calder, Ramponi, Bernard, & Murphy, 2011) as a factor mediating the processing of negative emotional images. Impact is understood as an undifferentiated emotional response to a stimulus that relates to the extent to which the self is affected⁶⁹, a factor that is associated with the “core affect” of the emotion and with more sophisticated cognitive attributes, such as immediate relevance-significance, distinctiveness, or incongruity. Based on this concept, Ewbank, Barnard, Croucher, Ramponi, and Calder (2009) found increased amygdala activation to high-impact when compared to low-

⁶⁸ According to Russell (2003), *core affect* is a neurophysiological state that is experienced as a nonreflective feeling, a blend of hedonic (good or bad) and arousal (energized or enervated) values.

⁶⁹ In other words, it is not conceived to measure the quality of this reaction.

impact images. In their study, both sets of images were matched for ratings of arousal, valence, distinctiveness, visual complexity, and approach-avoidance but differed on subjective ratings of impact. More important to the present discussion, affective “impact” and arousal are two feelings that are positively correlated (Croucher et al., 2011), which, applied to this research, suggests that it is very unlikely that highly arousing stimuli (such as human mutilation and fear-horror pictures) are not also high on impact.

3.3.1.2. Time course of affective priming

The standard theoretical model of consciousness in psychology considers the boundary between conscious and unconscious to be a temporal linear continuum (Greenwald, 1992). For Marcel (1983), this model holds that the distinction between conscious and unconscious must be understood as a matter of degree, in the sense that unconscious processes are considered to be limited in cognitive complexity and an early version of what happens consciously. Because representations that constitute conscious and unconscious experiences are indeed the same, the importance of unconscious processes is argued to be structural but not qualitative.

However, it appears that there are some differences in the processing of conscious and unconscious affective stimuli (Wong & Root, 2003). As reviewed in Section (1.4.3), current research on emotional processing suggests that, relative to non-emotional stimuli, there is an attentional bias for processing negative emotional stimuli in unconscious conditions (Le Doux, 1996; Liddell, Williams, Rathjen, Shevrin, & Gordon, 2004). For instance, clinical research on phobias has found that fear-relevant images presented outside of awareness activated stronger galvanic skin response (Öhman & Soares, 1994) and caused spider-fearful participants to come significantly closer to a live spider (Siegel & Weinberger, 2009) than when they were presented consciously.

More important, literature on affective priming shows that SOA is a crucial

moderator of affective priming effects (Fazio, Sanbonmatsu, Powell, & Kardes, 1986). SOA studies have provided insights into the time course of the affective processes underlying automatic feelings and evaluations. For instance, there is evidence suggesting that extremely short exposure times can increase the strength of the affective induction. Results from Ruys and Stapel (2008a) revealed that participants experienced more negative moods when facial expressions of negative emotions were flashed super-quickly (40ms), but no effect of the same primes on moods when they were flashed quickly (120ms). Interestingly, as mentioned in the Discussion of Studies 2 and 4, in the present research, we found that the effect of the affective primes on moral judgments was indeed susceptible to SOA manipulations. Although the tendency of effect of the prime on moral judgment was consistent across the three different exposure times, in both studies, the strongest effect of the prime was found in the super-quick condition (20-ms SOA).

A possible explanation to the current results can be found in the analysis of the time courses of affective processes, in particular, in the distinction between early and late affective reactions. According to the theory of affective primacy (Zajonc, 1980, 2000), a crucial difference between early and late reactions to affective stimuli is that early affective reactions are diffuse and unspecified because they are cognitively unappraised. Given previous results arguing that early affects are “free-floating” and “undirected” (Murphy & Zajonc, 1993), it is possible that the tendency observed across the different SOA manipulations of this research can be explained in terms of the dynamic variations in affective priming.

Drawing on the recapitulated evidence, it is plausible that, along the time course of the current affective inductions, extremely short SOAs elicited only diffuse unappraised reactions, whereas longer SOAs (250ms and 500ms) facilitated the progressive activation of knowledge-based responses. Specifically, using a longer SOA enhances the likelihood that semantic features of the prime are carried over the target (Paulmann & Pell, 2009; Stapel et al., 2002). Thus, longer SOAs might reduce the intensity of affective effects on evaluations by re-directing selective attention to more “semantic” aspects of the primes (such as the communicative function of facial

expressions in Ruys and Stapel's study of 2008b).

As mentioned in Section (1.4.3), such a pattern may be explained as a result of the time course of emotional experience, suggesting that more specific evaluative responses (appraisals) are progressively generated with an increase of the time course of affective perception. Notably, in the case of the current affective primes, both disgusting and fearful images seems to be notably “catching”⁷⁰, which provides additional support to the hypothesis that, at extremely short SOAs, participants were unaware of possible semantic distractions (like the complexity of the images), being unable to make evaluations that involved semantic inferences or other sophisticated evaluative responses.

The finding that the tendency of effect of the prime on moral judgment was consistent across the different SOAs but that the strongest effect was found in the shortest SOA is important to explain this result within the context of the majority of studies, which indicate an opposite influence of disgust in moral judgments. Those studies were conducted by using experimental paradigms that differ substantially from the one used in the present research. Thus, the most likely explanation is that methodological differences contributed to the disparate results. Indeed, the fact that, in the current research, the lesser severity of moral judgments was found at the shortest SOA—which, on the basis of the mentioned literature, is assumed to be more intense—and that longer SOAs showed a more marginal (although still significant) effect on the reduction of the severity of moral judgments is somewhat suggestive. Based on this finding, it seems feasible that this tendency can account for the apparent discrepancy in the particular direction of the effect of affective inductions on moral judgments obtained in other studies. This alternative is, however, complex and will be discussed further in the following section.

⁷⁰ Anecdotic reports from participants.

3.3.2 Option B: Cognitive simplicity of the induced affective response

As noted previously, both types of primes (human mutilation images and fear/horror images, respectively) caused their strongest effects at extremely short exposure times (*super-quick* condition, 20-ms SOA). Literature on emotional processing and affective priming effects favored that a *super-quick* exposure time typically triggered global, unappraised, valence-based reactions (Murphy & Zajonc, 1993; Stapel et al., 2002). This suggests that the influence of the prime on moral judgments found in Study 2 cannot be attributed to the discrete emotion of disgust.

In addition, in the Methods section of Study 1, we mentioned that the current experimental paradigm was a self-paced task, designed so that the next dilemma was not presented until the subject had responded to the previous one (see Figure 6). That is, in the current paradigm, targets (moral and non-moral dilemmas) appear immediately after affective primes, functioning as backward masking⁷¹. As mentioned in (1.4.3), there is evidence suggesting that the full semantic value of an affective stimulus is detected approximately 400ms after the onset of stimulus (Paulmann & Pell, 2009). Moreover, because the appearance of each dilemma immediately demands a judgment response, this task appears to function like a cognitive load⁷² that blocks the elicitation of elaborated appraisals. Based on these considerations, we argue that the time course of the current experimental paradigm rules out the possible emergence of emotional appraisal in the participants' experience.

Consequently, these results suggest that the documented effect is caused by a more basic affective response (probably unappraised) that is involved in the experience of disgust. Indeed, it seems likely that particular appraisals of disgust demand more time than 20 ms for their constitution. Further, it might be that, for the activation of the more

⁷¹ Backward visual masking refers to a phenomenon wherein presenting one visual stimulus ("masking stimulus") immediately after a brief "target" stimulus leads to disruption of the target processing (Maxwell & Davidson, 2004). Consistent with the definition of this technique, in our experimental paradigm, the SOA equals the exposure time of the prime.

⁷² Cognitive load theory argues that people's working memory is limited in the amount of information it can hold and the number of operations it can perform on that information. Thus, it is assumed that cognitive processing performed with a "load" task tends to rely on more automatic processes (Gutierrez & Giner-Sorolla, 2007).

complex components of disgust, participants also require more time than the moderate SOAs (500ms and 250ms) used in our research. As a consequence, if it is the case that all affective inductions were too brief to activate complex cognitions involved in the complete experience of disgust, it might be that this lack of “cognitive” disgust dimensions in participants’ experience is implicated in the apparent incongruence between our results and other experiments.

In the following discussion, we address the viability of this hypothesis by taking insights from two complementary theoretical frameworks with acknowledged explanatory power: (i) embodiment theories of cognition, and (ii) the appraisal-tendency framework (ATF). With this aim, we will consider different theoretical and empirical findings in order to explain whether a possible lack of disgust cognitions may result in an absence of a disgust-specific effect on moral judgments.

3.3.2.1 Embodiment theories of cognition

Embodiment theories claim that human cognition is mapped within our sensory-motor system (Barsalou, Barbey, Simmons, & Santos, 2005; Gallese & Lakoff, 2005; Niedenthal, Barsalou, Winkielman, Krauth-Gruber, & Ric, 2005). Because cognitive processes take into account physical sensations and information from the body, there are psychological correspondences between concrete physical experiences and complex social cognitions. Particularly, embodiment in emotion processing predicts that emotional experiences and bodily reactions are involved in the conceptual representations of emotion (Niedenthal et al., 2005).

Hence, diverse empirical evidence has shown that embodiments also function as potent causes influencing behavior.⁷³ For instance, there is evidence showing that when the face adopts a particular expression, it triggers the associated emotion, which in turn

⁷³Conversely, there is a variety of evidence suggesting that the reverse effect is also operative. For example, it has been shown that the activation of specific emotional concepts, such as pride and disappointment, differentially influenced body posture (Oosterwijk, Rotteveel, Fischer, & Hess, 2009).

influences social judgments. Thus, induced facial expressions have an effect on the perceived funniness of a joke (Strack, Martin, & Stepper, 1988) and the perceived fame of a face (Strack & Neumann, 2000). Both nodding (associated with positive affect) and shaking (associated with negative affect) actions have been shown to differentially influence judgment (Wells & Petty, 1980). Arm actions that pull something towards a person (associated with approach behavior) generate more positive judgments than arm actions that push something away (associated with avoidance behavior) (Cacioppo, Priester, & Bernston, 1993).

In the same line, Williams and Bargh (2008a) showed that participants who briefly held a hot beverage judged an ambiguous person as having a warmer personality, compared to participants who held an iced beverage. People primed with physical closeness reported a stronger negative emotional response to violence in the media, compared to people primed with physical distance (William & Bargh, 2008b). More precisely, all these results converge in the conclusion that, when a particular bodily state occurs, it activates patterns of social knowledge that contain it. Once these patterns (or cognitions) become active, they trigger related emotional states that can influence a wide range of different cognitive processes.

Disgust is experienced as a particularly visceral feeling; in fact, it is suggested that the physically embodied component of disgust is especially pronounced (Schnall, 2011). For example, in Schnall, Haidt et al.'s (2008) study, participants' ratings in private body consciousness did not mediate the influence of sadness inductions on their moral judgments, whereas in the disgust condition, individuals' ratings in private body consciousness were a strong moderator factor.

Certainly, as mentioned in Section (1.3.3.2), a variety of studies showed a bidirectional link between physical disgust-cleanliness and moral cognition. If this relationship is indeed domain-specific, this assumption implies that the particular phenomenology of disgust—which is claimed to play a key role in its co-adaptation to social functions (Rozin et al., 2008)—can be mediating this phenomena. Therefore, if the embodiment of the disgust-morality connection cannot be understood in terms of

basic affective dimensions of disgust—just as the embodiment of the physical-psychological distance connection cannot be explained in valence-terms—, it is possible that the lack of a complete disgusting experience in our participants is impeding the disgust specific cognitions (the embodied knowledge) from exerting their expected influence on moral judgments. For this reason, whether the difference in outcomes can be attributed to the absence of some important disgust-relevant information in the response to our affective inductions is an intriguing possibility that deserves a complementary explanation.

3.3.2.2. Appraisal-tendency framework (ATF)

From the appraisal theory perspective, emotions are understood as patterns of perception or interpretation and their correlates in the central and peripheral nervous systems (Ellsworth & Scherer, 2003; Scherer, 2001). Among appraisal theorists, it is widely accepted that the organism's evaluation of the circumstances plays a crucial role in the elicitation and differentiation of emotions. Therefore, the nature of an emotional reaction can be predicted on the basis of the subjective appraisal of the significance of an antecedent situation (Frijda, 1986; Smith & Ellsworth, 1985).

According to the ATF (Lerner & Keltner, 2001), the experience of an emotion gives rise to an implicit cognitive predisposition to appraise subsequent stimuli in line with the central appraisals characterizing the emotion. This perspective assumes that emotions are associated with specific appraisals that reflect the core meaning of the event that elicits each emotion (Lazarus, 1991). Further, the specific pattern of appraisals of each emotion determines how it influences judgments in domains that are thematically related to the eliciting appraisal. Thus, the ATF has helped illuminate how different negative and positive emotions influence social cognition. For example, whereas fear is associated with appraisals of uncertainty and situational control, anger arises from appraisals of certainty and individual control (Smith & Ellsworth, 1985).

Guided by this approach, Lerner and Keltner (2000, 2001) examined risk perception among dispositionally fearful and angry individuals and found that fearful people made pessimistic risk assessments, whereas angry people made optimistic risk assessments. Moreover, according to appraisal theories, anger can be elicited when an undesirable event is appraised as caused by other people (agency) and sadness results when the same event is appraised as caused by uncontrollable circumstances (Lazarus, 1991; Scherer, 1999). In fact, Keltner, Ellsworth, and Edwards (1993) induced anger and sadness via facial muscle movements and found that, when compared to sad participants, angry participants were more likely to attribute negative events to other people and were less likely to attribute them to situational factors. Likewise, jurors that were incidentally primed to feel anger (which involves agency) made more punitive attributions in a fictional tort case than jurors in a neutral state (Lerner, Goldberg, & Tetlock, 1998).

In a recent study, Oveis, Horberg, and Keltner (2010) examined how pride and compassion produce contrasting judgments of self-other similarity. They found that the experience of compassion—which involves concern for those who suffer and motivates care-taking behavior—increased feelings of similarity with weak others. On the other hand, pride—which is a rank-elevating emotion centering on appraisals of strength—enhanced the sense of self-other similarity to strong others. Moreover, there is some evidence suggesting that appraisal tendencies influence depth of thought. Tiedens and Linton (2001) predicted that incidental emotions associated with certainty appraisals (such as anger) would result in heuristic processing, whereas emotions associated with uncertainty appraisals (such as anxiety) would result in systematic processing. Indeed, they found that angry participants evidenced greater reliance on a heuristic source cue than did anxious participants.

An important assumption of the ATF is that the effect of distinct emotions on judgment and choice are domain-specific. That is, the influence of emotion is restricted to fields of judgment related to appraisals of the emotion. Moreover, emotional effects on judgment are constrained by a match between the core appraisal dimensions/themes of the emotion and the salient cognitive dimensions of the judgment at hand. Applied to

the study of emotion-morality associations, the ATF predicts that experiencing certain emotions will influence moral judgments primarily in moral situations that involve cognitive dimensions that match the emotion-specific appraisals (Horberg, Oveis, & Keltner, 2011).

As reviewed in Section (1.3.1.3), the core of the disgust phenomenology is a sense of offensiveness and revulsion accompanied by thoughts of contamination (Angyal, 1941; Haidt et al., 1994), a knowledge structure that makes this emotion a good candidate to function as a defensive mechanism against different sorts of offensive entities. Indeed, disgust is an emotion of extraordinary inclusiveness; it is susceptible to be triggered by a wide range of “offensive” entities that are perceived as contaminants even in the absence of any real physical threat. As mentioned earlier, biological and cultural evolutionary processes appear to have extended disgust appraisals: disgust has expanded its scope to police not only *what* gets eaten but also *how* things get eaten; to guard the body from *oral* threats and to guard the soul from *moral* threats; in other words, from preserving *physical* health to preserving *spiritual* health. As Rozin and colleagues (2008, p. 771) point out: “*The elicitors of disgust may have expanded to the point where the only thing they have in common is that decent people want nothing to do with them*”.

Of special relevance to the present discussion is the fact that the experience of disgust is accompanied by an implicit degradation of the elicitor, resulting in the establishment of a superior rank against the object (Miller, 1997). Moreover, as mentioned in (1.3.3), moral violations that expose people who “de-grade” themselves, in other words, that reveal the cruelty or monstrosity of persons who lack normal human motivations, appear to elicit moral disgust (Haidt et al., 1994; Rozin et al., 2008; Rozin, Haidt, & Fincher, 2009). Because the ATF claims that the experience of an emotion gives place to implicit cognitions that influence the evaluation of subsequent events congruently with appraisals of the emotion, it seems possible that the “offensive” and “degrading” cognitions that are involved in the appraisal of disgust influence the perception of moral situations congruently. This mechanism can elegantly explain the

moralization phenomena in which morally neutral acts that turn out to be disgusting enter the moral sphere (Inbar et al., 2009; Rozin et al., 1997).

From all this evidence, our position is that the current findings do not contradict previous studies on the influence of incidental emotions in moral judgments. Therefore, the apparent divergence between the particular effect of affective priming found in the present research (a decreasing in the severity of moral judgments) and previous studies seems to be a matter of methodological differences between experimental paradigms. One radical implication of this difference is the cognitive complexity of the induced affective response. Thus, several findings reviewed in this section show that a hallmark of the experience of a discrete emotion is the associated appraisals. As noted above, there is substantial literature showing that fully experiencing an emotion implies experiencing the cognitive appraisals that comprise the emotional state (Han et al., 2007). On the basis of (a) the particular strength of the effect of affective primes at extremely short SOAs, and (b) the similar effects in moral judgments obtained with fearful and disgusting primes, we argue that the influence of affective primes on moral judgments cannot be explained as a result of specific emotional appraisals.

In conclusion, based on a variety of research that shows the critical influence of time course on the effects of affective priming, we suggest that the documented effect can be explained as a result of an early unappraised affective response, in particular, a response involving (at least) the dimensional values of negative valence and high arousal. Further, we propose this insight as a fundamental distinction between this research and previous studies of the influence of incidental emotion on moral judgments. Consequently, if we adopt a dynamic conception of the effects of incidental emotion on moral judgments, then both lines of research are complementary rather than exclusive (temporal dynamics of affective elicitation)

As previously mentioned, it is plausible that, along the time course of the current affective inductions, extremely short SOAs elicited only diffuse unappraised reactions, whereas longer SOAs facilitated the progressive activation of knowledge-based responses. The finding that the tendency of the effect of the prime on moral judgment

was consistent across the different SOAs, but that the strongest effect was found in the shortest SOA, is important in this context. More interesting, activation of more sophisticated specific cognitions appears to be inversely correlated with the strength of the effect on moral judgments (Olivera La Rosa, Rosselló, & Munar, 2011).

From the present point of view, it might be that, across the time course of affective priming, an increase in the SOAs leads to the activation of more fine-grained emotional appraisals, which in turn leads to the attenuation of the affective priming effect (reduction of the severity of moral judgments). Finally, it is important to acknowledge that this is the first study to investigate the temporal course of emotional influences on moral judgments in the experimental domain. We believe that assessment of the influence of the time course of affective priming across different SOAs enhances our understanding of emotion dynamics and the affective influences on moral judgments.

3.4. LIMITATIONS AND FUTURE DIRECTIONS

On the basis of the current analysis, we believe that these findings regarding the influence of emotion time course on the severity of moral judgments reveals important contributions to research of the influence of incidental emotions on moral judgments. There are, however, many blossoming lines of research that can be framed within the context of these results. Although not all these lines are directly related to our central hypothesis, future studies that are considered in this section are consistent with, and perhaps intrinsically related to, the central themes analyzed in the General Discussion. Based on unanswered questions derived from this research that demand further empirical treatment, here, we outline some important directions for future work.

3.4.1. To test the particular weight of the dimensions of valence and arousal in the effect of affective priming effect on moral judgments

Although results from this research support the dimensional explanation of the obtained effect, our data do not allow us to delimit the specific weight of the influence of each particular dimension on moral judgments. As mentioned in the General Discussion section, it is possible that the reduction of the severity of moral judgments is caused by: (a) *any* negative unappraised affective response; (b) *any* unappraised affective stimulus that is highly activating (regardless of the valence); or (c) an unappraised affective negative response that is also highly activating. As far as we know, there is no evidence in the literature about the influence of specific affective dimensions on moral judgments that can predict the likelihood of both possibilities. Thus, further experiments should be carried out to examine the proportion to which a negative valence and/or a high arousal feeling is biasing this response. For example, to explore the potential weight of highly arousing versus negative valence feelings on the current effect, it might be interesting to use different primes, such as highly arousing positive primes (e.g., sexual images from IAPS) or slightly arousing negative primes (sadness elicitors).

3. 4.2. To test the possible influence of the withdrawal motivational function in the effect of affective priming effect on moral judgments

There is evidence suggesting that the behavioral effects of different emotions are better understood from their approach-withdrawal distinction (Lerner & Keltner, 2001; Rosselló et al., 2011; for a review, see Rosselló & Revert, 2008). In the particular cases of disgust and fear, both emotions are associated with increasing the distance between the organism and a perceived source of aversive stimulation (Davidson & Irwin, 1999). Thus, it is possible that, in addition to the involvement of extreme subjective values such as negative valence and high arousal, the withdrawal motivational function is also implicated in the elicitation of the obtained effect on moral

judgments. To explore this possibility, we propose to use an affective induction that matches previous ones both in the valence and arousal values but differs in the approach-withdrawal dimension. For instance, anger is a negative activating emotion that differs from disgust and fear in its approach dimension (Carver & Harmon-Jones, 2009a, 2009b). Further experiments on the behavioral effects of the approach-withdrawal motivational functions should adopt anger to assess whether the withdrawal dimension is mediating the documented reduction of the severity of moral judgments.

3.4.3. To test whether different methods of affective induction influence moral judgments in the same manner

Whether or not different affective inductions of disgust and fear will replicate the current results remains an important unanswered question. The current research used evocative pictures as affective primes, which are known to present unique properties relative to other affective elicitors. For instance, literature on emotions shows the potential of emotional facial expressions as affective stimuli (Phillips et al., 2004; Winkielman et al., 2005; Wong & Root, 2003). As mentioned in (1.4.3), the facial expression of a particular emotion has the quality of an emotional elicitor, in the sense that it elicits a response similar to other elicitors of the same emotion. Concerning facial expressions of emotion, there is evidence suggesting that subjective ratings of IAPS images are higher in arousal and valence. Thus, it may be that IAPS pictures are more intense and potent as affective primes than facial expressions, even though facial expressions appear to be more easily identified on discrete emotion labels (Britton et al., 2006).

Further, given that the priming-and-evaluative judgment paradigm differs in substantial aspects from other techniques of affective induction (Fiedler, 2003) experimental paradigms should be developed to explore whether the effect documented in the current research can be susceptible to methodological variations. For example, autobiographical recall and guided imagery have been successfully used in several studies to induce positive and negative affective states (Brewer, Doughtie & Lubin,

1980; Wright & Mischel, 1982). Importantly, because in these procedures emotions are activated mentally by the subjects themselves, both autobiographical recall and guided imagery appear to be more sensitive to individual variables.

3.4.4 To test the effect of negative affects on the moral domain in clinical populations

Further studies on clinical populations that involve affective-related impairments and dysfunctions can provide key insights to the understanding of the influence of negative affective variables on the moral domain. As mentioned in (1.2.2.2.2), neuropsychological data suggest that bilateral damage to the ventromedial prefrontal cortex, a brain region associated with the normal generation of social emotions, produces an abnormally “utilitarian” pattern of moral judgments (Koenigs et al., 2007). Psychopathological disorders, such as affective and anxiety disorders, can also illuminate some important issues about this problematic. For instance, psychopaths, who lack the capacity for guilt, remorse, and empathy, often engage in immoral acts (Blair, 1995). Obsessive-compulsive disorder patients have also been shown to respond to disgusting stimuli differently from healthy people (Phillips et al., 2000; Shapira et al., 2003).

In addition, some studies suggest that subliminal affective processing might be related to psychopathologies. Participants with schizophrenia showed a stronger subliminal priming effect for negative emotions (Höschel & Irle, 2001), and people with pervasive developmental disorders did not show a priming effect for fear (Kamio, Wolf, & Fein, 2006) compared to healthy participants. Altogether, such studies indicate a promising research program, one aimed at explaining the interaction between particular affective processes and moral judgments.

3.4.5 To test the moral-specificity of the obtained effect

There is a broader interpretation of the current results. We found that highly activating negative affective primes reduced only the severity of moral judgments, whereas no effect of affective primes was observed for non-moral judgments. However, it might be that the current effect cannot be restricted to the moral domain. In the General Discussion we argued that the differential factor mediating the moral-specificity of this effect relies on the inherent affective nature of moral dilemmas: that is, their perception triggers negative activating feelings, and their judgmental processes predominantly involve affective processes. Consistent with this assumption, it cannot be ruled out that targets other than moral dilemmas, but that also involve high recruitment of affective processes in their cognitive processing, can be influenced by our primes consistently. In short, it might be that “affective priming of highly activating negative images makes *affective judgments* less severe”.

With this explanatory aim in place, further experiments should use affective targets that are not moral. For example, to explore the potential influence of the current effect on affective judgments, we propose using as targets different vignettes that describe negative activating events (e.g., “*X is on his way home, thinking about his daughter, when suddenly a terrible car accident takes place right in front of him*”). Likewise, other types of affective targets, such as aesthetic pieces (e.g., poetry fragments), can be also worthwhile to test. We believe it is especially interesting to investigate this hypothesis because such results may provide support for the characterization of moral judgment as a type of affective judgment.

3.4.6 To test the possible application of the present findings to research on persuasion

As noted above, it might be that our effect is not moral-specific and can be extended to affective judgments in general. An alternative interpretation of these results can be made at an attitudinal level. Thus, in the present research, affective primes

shaped participants' moral judgments by making them more permissive about the wrongness of dilemma cues. Consequently, it is possible that our affective inductions can also increase people's receptiveness to some types of arguments. In particular, it might be that current affective primes will lead people to accept as more valid some persuasive messages that rely on affective arguments.

In order to explore this possibility, we propose to design a variant of the current experimental paradigm. In short, we can apply the same experimental paradigm and follow the same procedure except that, after completing the evaluation of the dilemmas, participants would be asked to evaluate two pieces of communication that share the same message but differ in their persuasive treatment: a "personal/affective" piece and an "impersonal/rational" piece of communication. We believe that such an experimental design serves as a first attempt to test the applicability of the current findings to the persuasion field.

3.4.7 To test the temporal dynamic of the present effect

Investigations of subliminal affective priming often assume that its influence on subsequent evaluations is short-lived. However, it might be that subliminal affective priming influences people's evaluations and behaviors in a more pervasive manner. For instance, there is evidence suggesting that unconscious emotional processing has long-lasting effects, in addition to the short-term effects that are widely observed in the literature. Thus, Sweeny, Grabowecky, Suzuki, and Paller (2009) found that surprise faces (neutral target) subliminally primed by happy faces (30ms) were better remembered 24h later than those primed by fear or neutral faces. In their study, this pattern was not observed when participants processed the same primes supraliminally. Based on this finding, future studies should be designed to test whether reduction of the severity of moral judgments by super-quick negative affective primes is a transient phenomenon or a long-lasting effect.

3.4.8. To test the fundamental mechanisms by which negative affective priming reduces the severity of moral judgments

A central unanswered question in this research is why affective primes make moral judgments *less* severe. Although the current analysis of these results and the review of the literature on emotional processing strongly suggest that our effect on moral judgments can be understood as a dimensional effect, specifically, as the effect of a negative-activating unappraised affective response, it is unclear why this response reduced the severity of moral judgments. With regard to this issue, it might be argued that affective primes elicit an extreme negative affective feeling that was used as a sort of affective standard. Thus, because relative to primes, moral dilemmas elicit a less extreme negative activating feeling, this second response would be experienced as more pleasant, favoring more permissive judgments. However, this explanation faces an important obstacle. If the mechanism that explains the direction of our effect is indeed a non-technical contrastive effect, it would be expected that this pattern would also be observed in judgments of non-moral dilemmas. Moreover, because non-moral dilemmas are more affectively neutral, it might be expected that the extreme negative affect elicited by the primes would even increase the permissiveness of non-moral judgments relative to moral dilemmas. This was not the case. Further studies on the influence of incidental affects on moral judgments should be carried out to examine the fundamental processes by which early activating negative affects produce this effect.

3.4.9. To search for the neural correlates of the response(s) induced through affective priming

Future neuroimaging studies can provide complementary data in the effort to understand the brain mechanisms underlying affective processing in participants during our experimental paradigms. For instance, various studies indicate that the neurocircuitry needed for basic affective responses is largely contained in subcortical emotional brain structures (Le Doux, 1996). Of special relevance to the present research is the fact that subcortical systems provide a rapid analysis of the affective attributes of the stimuli, before any fine-grained analysis or attentional modulation can occur.

Likewise, Lang (1995) argues that the structural foundation of valence and arousal effects is in the brain's appetitive and aversive motive systems (which are largely subcortical). These subcortical structures are phylogenetically ancient and may carry out basic operations that are essentially preconscious, compared with the more elaborated involvement of the human cortex in conscious emotional feelings (Liang, Zebrowitz, & Aharon, 2009; Tamietto & Gelder, 2010). Thus, although non-conscious perception of affective stimuli is mainly processed in subcortical structures⁷⁴, direct connections exist between subcortical and cortical regions—for example, between the amygdala and cortical regions such as the orbitofrontal, the anterior cingulate cortex or the temporal cortex—(Tamietto & Gelder, 2010).

Furthermore, neuroimaging data might contribute to test the dimensional explanation of the effects of affective priming that is proposed in this research. For instance, it is interesting that despite that disgust and fear are known to have different neural basis⁷⁵, both emotions exerted a remarkably similar influence on moral judgments. In addition, the particular nature of our disgusting primes (pictures of human mutilations) might be accounted for by neuroimaging techniques. For example, Wright, He, Shapira, Goodman, and Liu (2004) found distinct neural responses to viewing pictures of contamination and human mutilation. Specifically, viewing pictures of mutilation caused greater activation of the occipitotemporal cortex and unique activation of the right superior parietal cortex than viewing pictures of contamination

3.4.10. To examine possible implications of this line of research for neuro ethics

The present findings support the claim that preferences and judgments are influenced by irrelevant features of the decision context. In Section (1.3.3.2), we reviewed various studies that show how seemingly unconnected events largely influenced the outcomes of moral decisions without the awareness of the decision

⁷⁴ Interestingly, activity in subcortical structures is, in several cases, enhanced in response to non-consciously perceived stimuli compared with activity in response to consciously perceived stimuli (Anderson, Christoff, Panitz, De Rosa, & Gabrieli, 2003).

⁷⁵ Thus, whereas the amygdala is involved both in conscious and non-conscious processing of fear-relevant information, this brain area has rarely been associated with the processing of disgust stimuli (typically associated with activity in the insula and basal ganglia nuclei; Calder et al., 2001).

maker. Clearly, the finding that incidental affective responses can distort moral judgments has serious implications for certain social issues outside the laboratory. Consider the presence of disgust in the legal system. For instance, a defense lawyer may attempt to elicit disgust in jurors. In so doing, the appraisal tendencies of disgust can color subsequent judgments by prioritizing specific concerns (such as a sense of offensiveness) resulting in harsher judgments. Likewise, what happens if a judge briefly perceives an extremely negative image in the news before he arrives at the courtroom; does that play a role in who gets punished or who ends up in prison? More specifically, can the perception of that image reduce the severity of his incoming judgments? Given the particular nature of the present findings, we believe that such questions deserve to be answered.

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APPENDICES

APPENDIX I: MORAL DILEMMAS

1.a

Una madre con sus dos hijos estaban caminando por el bosque. Ellos querían llegar a la cima de la montaña para contemplar las cataratas. De repente, cuando los niños ven las cataratas corren hacia la cima de la montaña, tropezando con una gran piedra que hace que empiecen a caer por el precipicio. En ese mismo momento, su madre atrapa a los dos, tomando a cada uno con una mano. Desafortunadamente son muy pesados para ella y empiezan a resbalarse. En este contexto, la única opción que la madre tiene es utilizar sus dos manos, lo cual implica dejar caer a uno de sus hijos. Si ella continúa utilizando solo una mano para cada hijo, los dos morirán.

En esta situación, piensas que está bien que utilice las dos manos?

1.b

Una madre y sus dos hijos deciden visitar un famoso rascacielos para celebrar el cumpleaños de uno de ellos. Cuando ellos están en el piso más alto, ellos piensan que sería buena idea salir a la terraza y disfrutar la vista de la ciudad. Sin embargo, los niños están muy emocionados y no dejan de jugar, con la mala suerte que ambos tropiezan con un cable y empiezan a caer por el precipicio. Inmediatamente, su madre reacciona y logra atraparlos, utilizando una mano para cada uno, pero los niños son muy pesados y empiezan a resbalar. La única opción que ella tiene es utilizar las dos manos, lo cual supone dejar a uno de sus hijos caer. Si ella continúa utilizando una mano para cada niño, ambos morirán.

En esta situación, piensas que está bien que utilice las dos manos?

2.a

Un anciano está caminando por el parque cuando de repente encuentra una billetera. Decide abrir la billetera y comprueba que contiene la identificación de su dueño, junto con 200 euros. El anciano considera devolver la billetera, pero es consciente que ese dinero es exactamente el que le permitiría poder realizarse la operación por la cual lleva esperando más de un año.

En esta situación, piensas que está bien (que conserve el dinero)?

2.b

Es el día de noche vieja. Una señora de la tercera edad se encuentra en la plaza del centro jugando al parchís con sus amigas. Una vez finalizada la partida, cada una decide regresar a su casa. En el camino de regreso, a dos calles de llegar a su piso, la señora descubre que alguien se ha dejado su billetera olvidada en una banca. En ella figura la identificación del propietario, junto con 220 euros. La señora considera devolver la billetera, pero recuerda que ese dinero es justo el que necesita para no postergar más su operación y empezar el año con el pie derecho.

En esta situación, piensas que está bien (que conserve el dinero)?

3.a

Un joven ha estado intentando encontrar un trabajo sin éxito en los últimos meses. Después de tantos intentos, el descubre que necesita inventar una buena historia para incrementar sus posibilidades de ser contratado. En la siguiente entrevista está dispuesto a inventar que su hermano tiene una enfermedad degenerativa y que necesita el trabajo urgentemente para ayudarlo. Al hacer esto, incrementará las posibilidades de ser contratado, en detrimento de otros candidatos que se encuentran más calificados que él.

En esta situación, piensas que está bien (que invente la historia)?

3.b

Un joven fue despedido del restaurante donde trabajaba como parte de las medidas de recorte de personal. Después de varios meses sin poder encontrar un trabajo, decide que necesita buscar nuevas estrategias, por lo que considera acudir a la siguiente entrevista inventando una historia: acaba de perder a su familia en un accidente de tráfico y necesita con urgencia el empleo. Al hacer esto, incrementará las posibilidades de ser contratado, perjudicando a otros candidatos que se encuentran más calificados que él.

En esta situación, piensas que está bien (que invente la historia)?

4.a

Un joven universitario está jugando con su cachorro favorito. Él solo lleva puestos unos calzoncillos, y el gatito algunas veces camina sobre ellos. Algunas veces, esto le genera al joven un gran placer. El gatito parece disfrutar también el juego.

En esta situación, piensas que está bien (que continúe jugado con su gato)?

4.b

La perra de un joven universitario ha parido 10 cachorros. Como en anteriores ocasiones, decide venderlos y quedarse solo con uno. Sin embargo, esta vez establece una relación muy cercana con el cachorro, por lo que le hace dormir en su cama. El joven nunca utiliza pijama, así que cuando está en la cama con el cachorro existen contactos que le generan placer. El cachorro también parece disfrutar del contacto.

En esta situación, piensas que está bien (que continúe durmiendo con su cachorro)?

5.a

Un perro ha sido atropellado a unos metros de la casa de su dueño. El dueño no entiende dónde se ha metido su perro, sin embargo, cuando sale de su casa encuentra su cadáver. Él ha visto diferentes reportajes en los cuales en ciertos países la gente ocasionalmente come carne de perro, y tiene curiosidad de comprobar a qué sabe.

En esta situación, piensas que está bien (que coma a su perro como cena)?

5.b

Un perro se encuentra en el campo con su dueño, en plena excursión. De repente, el dueño ha perdido de vista a su perro y después de una hora le encuentra muerto víctima de una trampa de cazador. Él es muy aficionado a las pieles, así que piensa que sería una buena idea utilizar la piel de su perro para decorar su sala, pues hace juego con sus

muebles.

En esta situación, piensas que está bien (que utilice la piel de su perro para decoración)?

6.a

Un avión se ha estrellado en el Himalaya como resultado de una tormenta impredecible. Solo hay un superviviente, el resto de la tripulación murió en el accidente. Después de días sin comida, el sobreviviente entiende que si quiere sobrevivir debe alimentarse del único cadáver que ha encontrado, el cual, curiosamente, viajaba en el asiento de al lado. En esta situación, piensas que está bien (que se alimente del cadáver)?

6.b

Una expedición científica fue enviada a la Antártida. Un día, mientras caminaban por los glaciares, una gran capa de hielo que les servía de apoyo sufrió una fractura, lo que supuso que gran parte de la expedición muera congelada en el agua. Solo dos sobrevivieron, pero uno de ellos, al cabo de unos días murió como consecuencia del frío. El único científico sobreviviente, al verse solo y sin provisiones, entiende que si quiere seguir con vida debe utilizar como alimento a su compañero. En esta situación, piensas que está bien (que se alimente del cadáver)?

7.a

Un hombre con una enfermedad terminal está enfrentándose a sus últimas horas. Él ha consultado a los mejores especialistas del mundo en su enfermedad y todos han coincidido en el mismo diagnóstico: no le queda ninguna posibilidad de sobrevivir más de un día. El enfermo está convencido que para salvar su alma su cadáver debe ser utilizado como alimento para lobos, así que decide llamar a su mejor amigo para que se encargue de llevar su cadáver a una reserva de lobos que se encuentra a unas horas de la ciudad. Su amigo comparte la misma creencia.

En esta situación, piensas que está bien (que su amigo utilice el cuerpo como alimento para lobos)?

7.b

Un hombre que ha dedicado su vida al cuidado de los perros abandonados ha sufrido un accidente de tráfico. Cuando es trasladado al hospital, el médico le informa que su muerte es inevitable e inmediata, así que se hace responsable de cumplir su última voluntad. El hombre le asegura que lo que más desea es ser útil a su causa, por lo que pide al médico que utilicen su cuerpo como alimento para los perros a los que les ha dedicado su vida. Para el médico no hay nada más importante que los deseos de un moribundo.

En esta situación, piensas que está bien (que el médico utilice el cuerpo como alimento para perros)?

8.a

Un joven de una tribu amazónica se dedica a cazar jaguares. Tiene mujer e hijos, y como es costumbre en su tribu el debe hacerse cargo de la economía de la familia. Aunque sabe que se trata de una especie en extinción, es la única forma de ganarse la vida que le permite mantener a su familia en condiciones dignas. Sabe que siempre podría dedicarse a recolectar frutos, pero esto le supondría a su familia muchas dificultades para sobrevivir.

En esta situación, piensas que está bien (que se dedique a la caza furtiva)?

8.b

La caza furtiva de tigres ha dejado a esta especie al borde de la extinción. Una de las causas de esta situación ha sido el gran valor de su piel, codiciada en diferentes mercados negros del mundo. Al entrevistar a un cazador furtivo, este admitió que era consciente de la situación de riesgo de la especie, pero que la gran demanda de los productos derivados de esta especie había posibilitado poder ofrecerles a sus hijos la posibilidad de educación.

En esta situación, piensas que está bien (que se dedique a la caza furtiva)?

9.a

Un joven está celebrando su cumpleaños en su casa de campo. Él ha bebido muchas copas de más pero tiene ganas de continuar la celebración. Al cabo de unas horas, todos sus invitados se han retirado, excepto su novia. De repente, ella empieza a sentir un fuerte dolor en el pecho, y entra en estado de shock. El joven llama a la ambulancia, pero nadie contesta. Él se encuentra mareado por el exceso de alcohol, pero entiende que la única opción que tiene de salvar a su novia es conducir hasta el hospital más cercano.

En esta situación, piensas que está bien (que conduzca en esas condiciones)?

9.b

En una íntima ceremonia, una pareja celebra sus bodas de oro acompañados de sus familiares y amigos más cercanos. Todos han disfrutado de una gran velada. Cuando la ceremonia llega a su fin, los invitados proceden a retirarse, dejando solos a la pareja. Inesperadamente, la señora empieza a sentir un fuerte dolor en el pecho, y entra en estado de shock. El señor llama a la ambulancia, pero la señal es muy mala y no establece contacto. Él ha bebido muchas copas de más durante la celebración y se encuentra mareado, pero entiende que la única opción que tiene de salvar a su mujer es conducir hasta el hospital más cercano.

En esta situación, piensas que está bien (que conduzca en esas condiciones)?

10.a

Una pareja de hermanos se encuentra de vacaciones de verano en una isla paradisíaca. Las vacaciones marchan muy bien, y ellos se sienten muy unidos. Un día, los hermanos deciden que sería divertido tener relaciones sexuales. Ambos han sido diagnosticados repetidas veces de esterilidad, sin embargo ellos deciden que no pierden nada siendo extremadamente responsables, por lo que los dos hermanos utilizan métodos anticonceptivos.

En esta situación, piensas que está bien (que tengan sexo) ?

10.b

Es el día de la graduación de uno de los mellizos de la familia. Dentro de dos días dejará su casa para vivir en Japón, donde ha obtenido una beca. Él es muy unido a su hermana melliza, por lo que le propone que una buena forma de despedirse sería manteniendo relaciones sexuales la noche anterior a su marcha. Ella piensa que es una buena idea. Desde hace varios años, los mellizos han sido diagnosticados de esterilidad por un problema genético. Sin embargo, ellos deciden que tampoco supondría un gran

sacrificio que ambos utilizaran métodos anticonceptivos.

En esta situación, piensas que está bien (que tengan sexo) ?

11.a

Es periodo electoral. Uno de los candidatos ha sido acusado de ser el responsable de una gran cantidad de asesinatos. Las evidencias son clarísimas, incluso ha realizado asesinatos en lugares públicos, pues no teme a las autoridades. Todos aquellos que se enfrentan a él son eliminados. Un joven se encuentra presenciando el discurso de este candidato desde la ventana de su piso y considera que es una opción irrepetible para utilizar el arma que acaba de comprar y pegarle un tiro. Sin embargo, las únicas municiones que tiene están diseñadas con una pólvora especial que genera instantáneamente la muerte. Él sabe que de lo contrario nadie hará nada y los asesinatos masivos continuarán indefinidamente.

En esta situación, piensas que está bien (que utilice el arma) ?

11.b

La policía lleva persiguiendo a un asesino en serie desde hace mucho tiempo. Cuando finalmente dan con su casa, encuentran que está vacía. Por esos días, un joven se encuentra haciendo fotos sobre una desértica frontera del país que no es vigilada por ningún gobierno. En ese momento aparece el asesino en serie, quien corre desesperado hacia la frontera. El joven lo identifica y considera que sería una buena idea utilizar la escopeta que le regalo su padre y matarlo. La escopeta está diseñada exclusivamente para disparar unas balas que generan la muerte sin importar la localización del tiro. Él sabe que si no hace nada, el asesino huirá y seguirá con sus crímenes.

En esta situación, piensas que está bien (que utilice el arma) ?

12.a

Un joven arquitecto se encuentra inspeccionado un edificio en construcción. Es una obra importante, por lo que ese día está acompañado por su jefe. Su jefe ha sido acusado de violación en muchas ocasiones por empleadas de la constructora, pero debido a sus poderosas influencias siempre ha sido absuelto de los cargos. El joven arquitecto sabe que las acusaciones son fundamentadas, pues una de las víctimas fue una persona muy cercana a él que nunca le mentiría. Si el joven arquitecto empuja a su jefe cuando están revisando el nuevo edificio el jefe morirá y todos pensarán que fue un accidente.

En esta situación, piensas que está bien que empuje a su jefe?

12.b

Una compañía de seguros acostumbra realizar un sorteo mensual en el cual dos de sus empleados tienen la opción de ganar un viaje. Este mes, los ganadores fueron un joven practicante y su jefe, quienes ganaron un billete a Chile y la posibilidad de escalar las montañas. El jefe del practicante es una persona muy poderosa, lo cual le ha valido para salir absuelto de una gran cantidad de acusaciones de violación a sus empleadas. Una de sus víctimas fue una persona muy cercana al practicante a la cual le tiene máxima confianza, por lo que él sabe que las acusaciones son fundamentadas. Si el practicante empuja a su jefe cuando se encuentran en la montaña el jefe morirá y todo quedará como un accidente.

En esta situación, piensas que está bien que empuje a su jefe?

13.a

Una pareja de famosos ha contraído matrimonio. Una estudiante de fotografía se encuentra realizando diversas fotos en el centro de la ciudad, cuando de repente reconoce a uno de los famosos besándose apasionadamente con una persona que no es su pareja. La estudiante considera la opción de realizarles una foto y enviarla a su pareja oficial, para que descubra el engaño.

En esta situación, piensas que está bien (que haga la foto) ?

13.b

Un sábado por la tarde, la catedral más importante de la ciudad es el escenario de la boda de dos jóvenes adinerados. Debido a la gran cantidad de coches e invitados, mucha gente curiosa merodea afuera de la iglesia, intrigada por tanto *glamour*. Cuando ha terminado la ceremonia, uno de los novios se aparta de los invitados asegurando que ha recibido una llamada de su padre, sin advertir que una estudiante de periodismo se encuentra justo al lado y escucha toda la conversación, en la cual reconoce que toda la boda es solo un montaje y ama a otra persona. La estudiante considera la opción de utilizar su grabadora y registrar la conversación, con el fin de enviarla a su pareja y descubrir el engaño.

En esta situación, piensas que está bien (que grabe la conversación) ?

14.a

La patrulla de bomberos de una ciudad minera tiene como regla número uno el trabajo en equipo. Son conscientes que el error de un miembro del grupo puede costar muy caro a los demás. Un noche, durante el incendio de un edificio, el jefe de los bomberos decide que es imprescindible que el grupo no se separe a más de dos metros entre cada bombero, por lo cual entran todos al edificio en ruinas con una cuerda en la cintura que les imposibilita dispersarse. Cuando el jefe ordena la retirada, uno de los bomberos cree divisar a una persona atrapada en el fuego, por lo cual considera hacer un esfuerzo y acercarse. El bombero sabe que si no se retira al mismo tiempo que los otros miembros de la patrulla, esto supondría poner en alto riesgo la vida de todos.

En esta situación, piensas que está bien (que rompa con las órdenes de retirada) ?

14.b

Un escuadrón de policías especialistas en rescatar rehenes se dispone a realizar una peligrosa misión. Según los han informado, la casa donde se encuentra el rehén está protegida por un numeroso grupo de terroristas altamente preparados, por lo cual cualquier error puede costar el fracaso de la misión y numerosas vidas. Ellos han sido entrenados de tal forma que cada miembro del equipo hace la función de una extremidad de un solo cuerpo, que es el escuadrón. Si alguien falla, todos fallan. Mientras se encuentran realizando la operación, uno de los miembros del equipo cree identificar al rehén escondido debajo de una cama, por lo que considera hacer el esfuerzo y acercarse. El sabe que si realiza ese movimiento el equipo se encontrará desconcertado y esto supondrá un alto riesgo para la vida de todos.

En esta situación, piensas que está bien (que rompa con la organización) ?

15.a

Es el año 2020. En la ceremonia del premio Nobel de la Paz se le va a otorgar el premio a la persona que solucionó los problemas de pobreza extrema en varios países del tercer

mundo. El insiste en que aún queda mucho por hacer, y que tiene un plan para solucionar la pobreza extrema en los próximos años. Una madre soltera presencia el discurso con gran satisfacción, cuando de repente visualiza a un francotirador que está dispuesto a disparar al flamante ganador. Ella sabe que la única forma de salvarlo es interponerse en la trayectoria de la bala, pero que esto supondría dejar huérfano a su hijo de 4 años, quien no tiene a nadie más que cuide por él. Si no se interpone en el disparo, el ganador del premio Nobel morirá, y la pobreza extrema no encontrará solución.

En esta situación, piensas que está bien (que se sacrifique)?

15.b

Es el año 2030. Ha terminado la tercera guerra mundial y muchos países han quedado en ruinas. En una ex -potencia mundial se han realizado las elecciones, resultando ganador el único candidato que está dispuesto a mantener la paz entre su país y los países vecinos. Con la elección de este presidente surge la única posibilidad de restablecer la prosperidad, pues sus rivales buscan mantener la pobreza extrema para sus beneficios personales. El día del primer discurso del nuevo presidente, un francotirador está dispuesto a disparar. Una señora advierte su presencia. Ella sabe que si no se interpone en la trayectoria de la bala el nuevo presidente morirá, pero es consciente que esto supondría dejar a su hijo pequeño huérfano, pues no tiene más familia que ella. De lo contrario, si no se interpone al disparo la pobreza extrema de la post-guerra se mantendrá.

En esta situación, piensas que está bien (que se sacrifique)?

16.a

Es la reunión trimestral de una empresa exportadora de libros. Llevan reunidos muchas horas realizando el balance económico. Un padre de familia le ha prometido a su hijo que lo iría a ver actuar en una obra de teatro que realiza junto a otros compañeros de su colegio. El niño ha ensayado mucho y es su única representación. Cuando finalmente termina la reunión de la empresa, el padre de familia conduce hacia el teatro, pero por controles rutinarios es detenido momentáneamente por un policía, quien le solicita el carnet de conducir. Para su mala suerte, el padre de familia lo ha olvidado, por lo que considera sobornar al policía, quien le ha sugerido esa posibilidad. Él sabe que si no lo hace, no podrá ver a su hijo y se sentirá muy decepcionado.

En esta situación, piensas que está bien (que realice el soborno)?

16.b

Un joven estudia en un colegio muy prestigioso. Su familia es muy pobre, y para pagar el colegio su padre debe hacer un gran esfuerzo y trabajar prácticamente todo el día. En el examen final de una asignatura el joven tiene un mal día y suspende. Cuando conversa con su profesor, este le sugiere que podría modificar la nota si recibe una cantidad de dinero. El niño tiene amigos que le podrían prestar esa cantidad, por lo que considera aceptar la oferta. Él sabe que si no lo hace, suspenderá la asignatura y su padre se sentirá muy decepcionado.

En esta situación, piensas que está bien (que realice el soborno)?

17.a

Un practicante necesita ir al baño con urgencia. En ese momento todos están ocupados,

así que entra al que se encuentra al lado de la oficina del gerente general. Como las paredes son muy delgadas, el practicante escucha con toda claridad una conversación en la cual el gerente asegura que tiene pensado despedir a su jefe directo, y que el propio practicante será ascendido al cargo disponible. Cuando el practicante regresa a su oficina se encuentra con su “aún” jefe directo y considera que sería buena idea informarle de las nuevas noticias.

En esta situación, piensas que está bien (que sea indiscreto)?

17.b

Un estudiante se encuentra cursando las últimas asignaturas de su carrera. Él ha solicitado al Decano del departamento una plaza para ser profesor asociado. Una tarde, mientras realiza unos trámites cerca de la oficina del Decano, el estudiante lo escucha gritar visiblemente alterado que tiene decidido despedir a un profesor asociado y contratar al propio estudiante para que lo reemplace. El profesor que van a despedir es su director de tesis. Cuando el estudiante termina sus trámites se encuentra a su “aún” director de tesis y considera que sería buena idea informarle de las próximas noticias.

En esta situación, piensas que está bien (que sea indiscreto)?

18.a

Una mujer se encuentra descansando en casa cuando recibe el mail de una importante organización internacional para la lucha contra el SIDA. La organización le solicita realizar una donación equivalente a la mitad de su ingreso mensual. La carta le explica que esa donación hará posible que la organización pueda facilitar atención médica para gente en extrema pobreza alrededor del mundo. La mujer le ha prometido a su hijo pequeño que lo llevaría a Disney esas navidades y el niño está muy ilusionado. Si realiza la donación no podrá cumplir su promesa, pues no le alcanzará el dinero.

En esta situación, piensas que está bien que haga la donación?

18.b

Un niño está muy ilusionado con pasar las navidades en una cabaña en la nieve y su madre le ha prometido que cumplirá su deseo. Un día, la madre recibe una carta de una organización muy importante que se dedica a ayudar a enfermos de cáncer. La organización le solicita que realice una donación (equivalente a la mitad de su sueldo) que les permitirá ayudar a aquellos enfermos que se encuentran en extrema pobreza en el tercer mundo. Si la madre realiza la donación no le alcanzará el dinero para cumplir con la promesa que le hizo a su hijo de pasar la navidad en la cabaña.

En esta situación, piensas que está bien que haga la donación?

19.a

Un joven estudiante se encuentra muy preocupado. Una persona muy cercana a él ha decidió ingresar a una secta religiosa que promueve una vida de reclusión extrema, por lo que ahora esta persona vive en una montaña aislada de toda la civilización. Los miembros de esta secta están convencidos que solo mediante esa forma de vida se puede alcanzar la salvación. El joven estudiante recuerda que hasta hace poco esta persona disfrutaba mucho de los placeres cotidianos de la vida, y era muy conocida por ser especialmente alegre. Él decide conversar con esta persona para conocer su opinión, pues teme que haya sido manipulada por el líder de la secta. La persona le asegura que no ha sido manipulada y que desde que ingresó a la secta ha descubierto la verdadera

felicidad.

En esta situación, piensas que está bien (que respete su decisión)?

19.b

Dos estudiantes de filosofía comparten una relación muy cercana. Ambos están sorprendidos por el crecimiento de una nueva secta religiosa que promueve un estilo de vida en absoluta soledad como camino a la salvación. Los dos estudiantes están convencidos que es posible refutar los principios de esta secta, y han dedicado los últimos años a obtener evidencias para informar a la opinión pública. Ambos deciden que es tiempo de tomar unas vacaciones pues están exhaustos. Al regreso, uno de ellos le comunica al otro que se ha unido a la secta. El otro estudiante no entiende el cambio y le expresa su temor que haya sido manipulada por el líder de la secta. La estudiante le asegura que no ha sido manipulada y que desde que ingresó a la secta ha descubierto la verdadera felicidad.

En esta situación, piensas que está bien (que respete su decisión)?

20.a

Al terminar sus estudios universitarios, un joven decide que es momento de vivir algo diferente. Él ha sido el mejor estudiante de su promoción, sin embargo no tiene ningún interés en aceptar las ofertas de trabajo que recibe. Un día decide irse a las montañas a sentir el contacto con la naturaleza. No informa a nadie, solo a su hermano, pero le hace jurar que no diga nada a sus padres, pues son muy represivos. Al cabo de unos días los padres han movilizad a la policía para que lo busque, pero no tienen la menor idea de cuál puede ser su paradero. Él joven aventurero se comunica regularmente con su hermano y le dice que es increíblemente feliz, y que por favor no comente a nadie sobre su nueva vida. Su hermano sabe que si rompe su promesa y les dice a sus padres que está todo bien, ellos insistirán hasta que les haga confesar su paradero, y la nueva y feliz vida del joven aventurero terminará.

En esta situación, piensas que está bien (que mantenga silencio)?

20.b

Un joven y brillante deportista se siente inconforme con su vida. El tiene un futuro profesional prometedor, pero decide no fichar por ningún club, pues siente que es momento de cambiar drásticamente el rumbo de su vida. El día que se va de casa decide no avisar a nadie. Cuando su familia advierte que se ha marchado inicia una búsqueda constante, sin ningún éxito. Al cabo de un tiempo, su hermano lo encuentra en la calle y nota que la personalidad del joven deportista ha cambiado por completo. El joven deportista le dice que es realmente feliz, que desde que dejó su casa ha vivido en el campo y que ha encontrado la paz interior que buscaba. Cuando se van a despedir, el joven deportista le hace jurar a su hermano que no dirá nada, pues con toda seguridad sus padres no se detendrán hasta llevarle de vuelta a casa. Su hermano accede a guardar el secreto.

En esta situación, piensas que está bien (que mantenga silencio)?

21.a

Un flamante padre de familia ha sido contratado por una prestigiosa empresa multinacional. Él siempre se ha sentido orgulloso de ser fiel a sus principios, renunciando en varias ocasiones a oportunidades laborales que se enfrentaban a sus

valores. La multinacional le ofrece un sueldo que mejorará en gran medida la calidad de vida de su familia, que acaba de tener un nuevo miembro. Cuando ingresa a la empresa, es testigo de conductas gravemente racistas, lo cual le hace considerar la posibilidad de denunciar a la empresa. Él sabe que esto le supondrá ser despedido, lo cual es un gran problema, pues debe mantener a su hijo recién nacido.

En esta situación, piensas que está bien (que denuncie a la empresa)?

21.b

Un profesional encuentra trabajo en la industria líder en manufacturación de productos textiles. Al cabo de los meses comprueba que la empresa utiliza mano de obra de países del tercer mundo en condiciones ilegales, pues estos empleados se ven forzados a trabajar sin descanso y por un sueldo mínimo. El profesional es un humanista convencido y considera denunciar a su empresa. Él sabe que esto le supondrá ser despedido y tendrá que encontrar un nuevo empleo rápidamente, pues debe mantener a su hijo recién nacido.

En esta situación, piensas que está bien (que denuncie a la empresa)?

22.a

Durante la Segunda Guerra Mundial, un campo de concentración es el escenario de diversas barbaridades. El máximo responsable de este campo de concentración es un guardia que disfruta de hacer sufrir a sus prisioneros. Un día, elige a dos prisioneros y le realiza una proposición al más joven de ellos: si el joven prisionero no ejecuta al otro prisionero (quien es su propio padre), el guardia ejecutará a ambos, padre e hijo.

En esta situación, piensas que está bien (que ejecute a su padre)?

22.b

Un grupo terrorista ha secuestrado una embajada. Ellos saben que si abandonan la embajada, la policía y el ejército tiene orden de disparar contra ellos, así que deciden permanecer en sus posiciones. Después de varios días, el jefe decide que es necesario tomar alguna medida, por lo que autoriza que entre una cámara de televisión a transmitir en directo una escena. Posteriormente, el jefe terrorista escoge a un prisionero para que ejecute una tarea: debe matar a su propio padre, quien también es prisionero. Si no lo hace, el jefe terrorista ejecutará a ambos, padre e hijo.

En esta situación, piensas que está bien (que ejecute a su padre)?

23.a

Un vendedor comprueba que los ordenadores que ha recibido para comercializar son de mala calidad, ya que suelen sobrecalentarse con mucha facilidad y dejar de funcionar. Los fabricantes que le suministraron el producto niegan todo. Un hotel le ha solicitado una gran cantidad de productos. Esto supondría un gran ingreso económico para el vendedor, quien necesita el dinero para operar a su abuelo de una hernia.

En esta situación, piensas que está bien (que realice la venta)?

23.b

La demanda por productos “light” se ve incrementada año tras año. En este contexto, un vendedor de suplementos dietéticos ha recibido un nuevo producto para comercializar. Se trata de unas pastillas dietéticas que dificultan la asimilación de grasas en el cuerpo. Según las indicaciones, es necesario ingerir dos pastillas diarias durante 2 meses para

observar resultados. Un amigo del vendedor ha trabajado en la fábrica de estas pastillas y le informa que en realidad son un placebo y si bien no suponen ningún daño, tampoco sirven para nada. El vendedor tiene un importante pedido de un gimnasio, el cual le supondría la cantidad de dinero que necesita para la operación de su abuelo, quien padece de una úlcera.

En esta situación, piensas que está bien (que realice la venta)?

24.a

La asistencia a un museo que expone cuerpos humanos está disminuyendo. La representante de marketing de la empresa recibe un ultimátum de los directores del museo: si no propone una medida que cambie la tendencia será despedida. Después de descartar muchas opciones, a ella se le ocurre inventar el robo de un pulmón de uno de los cuerpos en exposición y convocar a conferencia de prensa para obtener impacto mediático e impulsar la asistencia. Los directores del museo aprueban la idea.

En esta situación, piensas que está bien (que mienta al público)?

24.b

Una vendedora de casas necesita hacer una venta antes que termine el mes si no quiere ser despedida. La situación económica de todo el país es difícil y no son buenos tiempos para la adquisición de grandes propiedades. La vendedora piensa que sería buena idea inventar que en dicha casa tuvo lugar hace muchos años un increíble milagro. Ella sabe que si su cuento es creíble puede facilitar mucho la venta, por lo que contrata un espacio en un diario para contar la historia. Sus jefes aprueban su iniciativa.

En esta situación, piensas que está bien (que mienta al público)?

25.a

Un joven empleado intenta estacionar en la cochera de su oficina. Accidentalmente le da un ligero golpe al coche de al lado, lo cual se traduce en una abolladura. Ésta no se ve a simple vista, por lo que el dueño del coche probablemente no la detecte inmediatamente. El empleado mira a su alrededor y nadie ha observado lo sucedido.

En esta situación, piensas que está bien (que ignore lo sucedido)?

25.b

Un domingo por la mañana, un joven empleado está jugando al fútbol. Decide chutar con la izquierda, y como es diestro, el balón le sale muy desviado con la mala suerte que da a pegar con un coche que está estacionado cerca del campo de fútbol. El coche es abollado, pero solo levemente. El joven mira a su alrededor y nadie ha observado lo sucedido.

En esta situación, piensas que está bien (que ignore lo sucedido)?

26.a

Una señora acostumbra a alimentar a su perro todas las mañanas antes de ir a su oficina. Su perro nació con problemas en el estómago, por lo que requiere de una dieta muy especial. Por esta razón, la señora tuvo que aprender cuidadosamente cómo prepararle la comida a su mascota, pues cualquier error le supondría la muerte. Se trata de un perro travieso, por lo que ella contrató a un entrenador para que le pasee todos los días a primera hora y le enseñe cómo comportarse. Una mañana, mientras espera que su perro vuelva de su paseo, recibe una llamada de la oficina. Surgió una emergencia laboral y

requieren que realice un viaje con urgencia, de lo contrario será despedida. Ella sabe que si viaja no le podrá preparar la comida especial a su perro y este morirá.

En esta situación, piensas que está bien (que acuda al viaje)?

26.b

Una señora ha sido ascendida a un cargo muy importante en su trabajo. Sin embargo no todo es perfecto, pues su perro ha enfermado. El veterinario le informa que se trata de un nuevo virus, pero que con mucho esfuerzo él ha creado la fórmula que le permitirá sobrevivir. Solo hay un problema: el veterinario se marcha para Japón esa misma noche, así que le deja todo el preparado a la señora para que se lo administre diariamente al perro. Una noche, la señora recibe una llamada urgente de su trabajo donde le piden que realice un viaje de emergencia que la mantendrá dos días fuera. Si ella no realiza el viaje será despedida. Por otro lado, si permanece dos días fuera su perro morirá. Ella sabe que no tiene tiempo de enseñarle a nadie como administrarle el preparado al perro, pues requiere de un delicado procedimiento que tarda muchos días en ser aprendido y equivaldría a condenar a una muerte segura a su mascota.

En esta situación, piensas que está bien (que acuda al viaje)?

27.a

Hace muchos años, un joven cometió un robo. El era muy pobre, por lo que robo un poco de pescado. A los pocos días, un ladrón que ya había cometido diversos robos fue atrapado y enviado a prisión por ese crimen, pues el ladrón y el joven eran homónimos. El joven respiró por aquel entonces aliviado, pero después de muchos años tiene muchos remordimientos. Él piensa que debe entregarse a la justicia, pero sabe que si lo hace perjudicaría a mucha gente, pues ahora es médico y se encarga de cuidar por la salud de muchas familias sin recursos.

En esta situación, piensas que está bien (que se entregue a la justicia)?

27.b

Hace muchos años, un joven desesperado por su pobreza decidió robar algunos alimentos del supermercado. El joven logró escapar, y la policía detuvo a un conocido ladrón en su lugar, pues eran físicamente muy parecidos. Cuando el ladrón fue enviado a prisión el joven sintió un gran alivio. Actualmente, sin embargo, tiene muchos remordimientos. Él piensa en decir la verdad y entregarse, pero es consciente que si lo hace no podrá continuar con su labor humanitaria ayudando a los enfermos de lepra.

En esta situación, piensas que está bien (que se entregue a la justicia)?

28.a

Un señor de mediana edad es testigo de un asalto. El ladrón acaba de asaltar a una señora mayor, quien ha quedado fuertemente golpeada por el forcejeo. El señor consideró intervenir pero pensó que probablemente el ladrón tendría un arma, así que se mantuvo al margen.

En esta situación, piensas que está bien (que se mantuviera al margen)?

28.b

Un hombre en evidente estado de ebriedad ha golpeado fuertemente a una mujer. Cuando la mujer recibe el golpe, el borracho decide que es momento de irse y se aleja de la escena. Un señor de mediana edad ha presenciado todo lo ocurrido. Él considero

intervenir para ayudar a la mujer, pero le pareció identificar un arma en la chaqueta del borracho, por lo que optó por mantenerse al margen.

En esta situación, piensas que está bien (que se mantuviera al margen)?

29.a

Una madre tiene una relación muy difícil con su hija adolescente. Ellas se ven inmersas constantemente en fuertes peleas y pueden llegar a insultarse. Cuando no pelean, la relación es inexistente, llegando a estar días sin dirigirse la palabra. La madre siempre ha evitado utilizar la fuerza, sin embargo un día pierde el control y le pega un fuerte bofetón a su hija. La hija ha quedado fuertemente golpeada, incluso ha perdido un diente. La hija escapa de su casa y considera denunciar a su madre por maltrato familiar. Recientemente se ha aprobado una ley que especifica que en todos los casos de maltrato familiar los(las) agresores(as) serán penalizados con dos semanas de cárcel.

En esta situación, piensas que está bien (que denuncie a su madre)?

29.b

Una adolescente vive con su madre en un piso. La adolescente considera a su madre una persona histérica que lo único que hace es gritarle constantemente. Por otro lado, la madre considera a su hija una irresponsable que solo busca estar fuera de casa. La relación entre ellas es bastante mala. Un día, la hija decide escaparse sin avisar y tienen una dura discusión, que termina en un fuerte bofetón. La madre nunca antes había querido llegar a la violencia física, pero esta vez no pudo contenerse. La hija ha quedado fuertemente golpeada, incluso se ha fracturado la nariz, por lo cual decide escaparse y considera denunciar a la madre por maltrato al menor. Recientemente se ha aprobado una ley que especifica que en todos los casos de maltrato a menores los(las) agresores(as) serán penalizados con dos semanas de cárcel.

En esta situación, piensas que está bien (que denuncie a su madre)?

30.a

Un joven estudiante tiene una enfermedad terminal. Toda su familia intenta evitar el fatídico desenlace y ha decidido explorar todas las opciones que existen para poder ayudar al joven. Después de consultar con diferentes expertos, ellos deciden unirse para poder pagar un caro tratamiento. Sin embargo, pasan los meses y el tratamiento no ofrece ningún resultado importante, por lo que la familia debe decidir si continúan invirtiendo todo su dinero o deciden poner una fecha límite de mejoría. Ninguno de ellos es millonario, y todos tienen hijos que mantener.

En esta situación, piensas que está bien (que establezcan una fecha de mejora límite para continuar con el tratamiento)?

30.b

Un joven aficionado al deporte ha sido diagnosticado con una enfermedad terminal. Los médicos son pesimistas con sus posibilidades, pero le informan que existe un tratamiento que, en caso tenga éxito, podría alargar un poco su vida. La familia del joven está dispuesta a ayudar en todo lo posible pero el tratamiento es carísimo y las probabilidades de éxito son prácticamente inexistentes. Además, dependiendo de cómo asimile el joven el tratamiento, la inversión inicial puede verse incrementada progresivamente. Realizar la inversión supondría dejar a todos los miembros de la

familia en una muy delicada situación económica y todos tiene hijos que mantener. En esta situación, piensas que está bien (que establezcan una cantidad límite para invertir en el tratamiento)?

APPENDIX II: NON-MORAL DILEMMAS

1.a

Un estudiante de periodismo se levantó tarde y tiene un examen muy importante. Si no lo aprueba suspende la asignatura por segunda vez. Para ir a la universidad tiene dos opciones: coger el metro o el bus. El metro es más rápido por lo que no tendría problemas en llegar a tiempo; sin embargo, algunas veces puede llegar a tardar hasta media hora entre cada tren y en ese caso podría llegar 20 minutos tarde. El bus es más lento pero pasa con la misma frecuencia por lo que llegaría con seguridad 10 minutos tarde. El estudiante considera que vale la pena arriesgarse y decide utilizar el metro.

En esta situación, te parece buena elección que utilice el metro?

1.b

Un estudiante de publicidad anotó mal la fecha de su examen y acaba de descubrir que es dentro de 30 minutos. Si no consigue llegar a tiempo va a suspender por segunda vez. Para llegar tiene dos opciones: coger el bus o ir en bicicleta. Es invierno y está lloviendo torrencialmente. El bus es muy puntual pero llegaría 10 minutos tarde. En bicicleta llegaría a tiempo si va a toda prisa; sin embargo, la lluvia podría jugarle una mala pasada y obligarla a desviarse, lo cual supondría que llegue a su examen con 20 minutos de retraso. El estudiante se arriesga y elige la bicicleta.

En esta situación te parece una buena elección que prefiera ir en bicicleta?

2.a

Un trabajador en una planta industrial se encarga de llenar con galletas las cajas de cartón que son transportadas por una cinta hasta su puesto. Como lleva varios años en la misma planta, el trabajador sabe que la cinta transportadora circula muy lentamente. Él tiene tiempo de descansar entre caja y caja mientras sus compañeros de trabajo no cesan de laborar. El trabajador podría incrementar la velocidad de la cinta para que las cajas circulen más rápido, lo cual posiblemente le merecería una felicitación de parte de su jefe, pero reduciría su descanso.

En esta situación, te parece una buena elección que incremente la velocidad de la faja y reduzca su descanso?

2.b

Un trabajador de una fábrica de calzados es el encargado de colocar la etiqueta interior a los calzados de damas. Su trabajo lo hace con gran minuciosidad y, aún así, le queda mucho tiempo para descansar, mientras que sus compañeros siguen trabajando. El trabajador sabe que con la nueva máquina de etiquetado el trabajo es muy veloz y le sobra mucho tiempo. Si él comunica a su jefe que le sobra tiempo, este seguramente lo felicitaría por su fidelidad, pero el trabajador ya no podría gozar de ese descanso.

En esta situación, te parece una buena elección que hable con su jefe y reduzca su descanso?

3.a

Un empleado acaba de regresar de la oficina. Unos niños están jugando futbol en la calle de su casa, cerca de su nuevo coche. En el momento que el empleado se percató de

ello está a punto de echarse una breve siesta, muerto de cansancio. Él sabe que es probable que el balón quiebre alguno de los cristales de su auto, pero sabe también que el ascensor estará fuera de servicio toda la tarde, lo cual significa que tendría que bajar 8 pisos por las escaleras.

Es esta situación, te parece una buena elección que el empleado suspenda la siesta?

3.b

Un empleado acaba de comprar un hermoso sofá y lo ha colocado en su sala. Al rato de regresar de un duro día de trabajo, él sube a su dormitorio porque echarán su serie favorita y se merece ese gusto. Cuando está a mitad de la serie el empleado recuerda que olvidó cerrar la puerta del jardín y que su perro suele aprovechar esos descuidos para entrar a su sala y morder los muebles. De otro lado, sabe que si baja, su perro insistirá para que lo saques a pasear, por lo que es probable que no pueda regresar a tiempo para ver su programa.

En esta situación, te parece una buena elección que el empleado interrumpa su serie?

4.a

Una joven trabaja como asistente de un cardiólogo. Entre otras labores, ella es la encargada de asignar las citas a los pacientes. La llama por teléfono un paciente nuevo solicitando una cita de atención para el lunes por la tarde. Al minuto siguiente un paciente antiguo se acerca al consultorio solicitando una cita para el mismo lunes, preferiblemente también por la tarde. La joven revisa su agenda y verifica que hay un espacio libre para el lunes por la tarde y otro para la mañana.

En esa situación, te parece una buena elección que asigne al paciente antiguo al lunes por la mañana?

4.b

Una joven es empleada de una famosa línea aérea. Ella está a cargo de asignar los asientos a los pasajeros. De repente, un pasajero se le acerca y le solicita un asiento libre que se encuentra en la primera fila. Inmediatamente, un segundo pasajero que es cliente habitual de la línea aérea le expresa también su deseo de cambiar de asiento, preferiblemente a un asiento de la primera fila. La joven revisa los asientos libres y comprueba que solo queda un asiento en la primera fila y otra en la cuarta fila.

En esa situación, te parece una buena elección que asigne al pasajero habitual a la cuarta fila?

5.a

Una joven se ha levantado con un ligero escozor. Antes de ir a la oficina decide pasar por la farmacia que queda en el primer piso para comprar la crema que suele utilizar en estos casos. El farmacéutico le dice que ese producto se le ha terminado pero que tiene en stock el mismo medicamento en nombre genérico, el cual le recomienda como un producto de la misma calidad.

En esa situación, te parece una buena decisión que siga el consejo del farmacéutico?

5.b

Es el día de lavandería de una joven. Tiene ropa muy delicada para lavar así que decide buscar un detergente de confianza. Cuando llega a la tienda no puede encontrar la

marca que tenía pensada así que le pregunta a un empleado de la tienda, al cual conoce hace muchos años, por alguna otra marca similar. El empleado le dice que compre la versión genérica, que es tan buena como el detergente de confianza.

En esta situación, te parece una buena decisión que acepte la recomendación del empleado?

6.a

La Navidad se acerca y una madre le ha ofrecido a su hija preparar alguno de los famosos potajes que preparaba la abuela en Navidad. Después de muchas indecisiones la madre se dispone a preparar las galletas navideñas que preparaba la abuela. La madre sabe que la hija tiene mucha ilusión en probar la receta original; sin embargo, la receta original lleva nueces, pero como a su hija no le gustan, decide reemplazarlas por higos para que le agrade más.

En esta situación, te parece una buena elección que la madre le diga a su hija que ha reemplazado un ingrediente?

6.b

Un padre de familia se encuentra indeciso. Hace muchos años, cuando él cumplió siete años, su padre le regaló un tren eléctrico que le pareció en ese momento el mejor regalo del mundo. Ahora es su hijo quien cumple siete años y le ha pedido que le regale el mismo regalo que recibió él a su edad. El padre de familia sabe que su hijo no siente fascinación por los trenes, sino por los coches.

En esta situación, te parece una buena elección que el padre le diga a su hijo que ha reemplazado el regalo?

7.a

Una joven asistente está organizando una fiesta sorpresa para su jefe. Los invitados empezarán a llegar a las 7 pm y su jefe una hora después. Falta apenas una hora para que empiecen a llegar los invitados y aún no ha comprado el pastel de cumpleaños. Ella ha visto un hermoso pastel en la tienda, uno de los preferidos de su jefe, pero el empleado no le asegura que pueda estar listo para las 7 pm, ni siquiera para las 8 pm. La asistente considera comprar un pastel que ya está listo para poder llevarlo a su casa de inmediato.

En esta situación, te parece una buena decisión que compre el pastel estándar?

7.b

Una joven recepcionista tiene su fiesta de cumpleaños el sábado por la noche. Es sábado por la tarde y su mejor amiga quiere hacerle un regalo sorpresa a la joven. La mejor amiga ha pensado en comprarle el vestido que la joven recepcionista tanto quiere, pero en la tienda la dependienta le comenta que ese modelo no lo tienen en stock y que no sabe con seguridad que día puede llegarles. En la tienda hay otros buenos vestidos de la talla de la joven que ya están listos para comprar.

En esta situación, te parece una buena decisión que compre alguno de los modelos que ya están listos para llevar?

8. a

Un camarero desea comprar un nuevo televisor de pantalla grande para poder disfrutar más de sus películas favoritas. El modelo que le agrada cuesta casi la misma cantidad de

dinero que el camarero cobre en un mes. Cuando el camarero le comenta su idea a un amigo especializado en artefactos eléctricos, él amigo le sugiere que espere hasta fin de mes porque los precios bajarán significativamente hasta un 40%.

En esta situación, te parece una buena decisión que postergue su compra algunas semanas para aprovechar los descuentos?

8.b

Un panadero está en Japón y quieres comprar una extraordinaria cámara fotográfica profesional para reemplazar a su antigua cámara. La cámara cuesta mucho dinero, y el panadero debería invertir gran parte de su sueldo mensual. Sin embargo, un amigo japonés le ha confirmado que a comienzos de diciembre, es decir en tres semanas, los precios bajarán en un 45%.

En esta situación, te parece una buena decisión que postergue su compra algunas semanas para aprovechar los descuentos?

9.a

Un joven se encuentra disfrutando de una cena a solas en su piso. Ha puesto su música favorita y está a punto de empezar la cena cuando de repente suena el teléfono. Al contestar le solicitan que participe en una encuesta de opinión telefónica. Al parecer, el joven ha sido seleccionado entre cientos de candidatos y su opinión es importante por lo que le pagarán 100 euros, es decir, lo que gastó en la cena.

En esta situación, te parece una buena elección acceder a responder la encuesta ?

9.b

Una joven es peluquera y suele ir al masajista todos los viernes. Ella sufre de dolores en la espalda y los masajes la renuevan para seguir con su rutina diaria. De pronto, justo antes de salir a su masaje semanal, una clienta le ofrece 100 euros si acepta ir a su casa para hacerle un nuevo peinado. Esos 100 euros es lo que le cuesta semanalmente el masajista.

En esta situación, te parece una buena elección acceder a realizar ese trabajo imprevisto?

10.a

Un becario se propone disfrutar de un fin de semana largo. Los hoteles están muy demandados y casi no quedan cupos en su balneario favorito. Tiene para escoger entre dos alternativas, ambas por el mismo precio. La primera le ofrece chalets en la primera fila de la playa con una preciosa vista al mar, pero el servicio de limpieza no está incluido. La segunda opción le ofrece servicio completo en apartamentos situados a medio kilómetro de la playa.

En esta situación, te parece una buena decisión elegir los apartamentos con servicio completo?

10.b

Finalmente, un becario viajará a la ciudad de sus sueños. Ha buscado hospedaje y consiguió dos alternativas interesantes, ambas por el mismo precio. La primera es alquilar un pequeño piso en pleno centro histórico de la ciudad, justo al lado de todos los lugares que quiere visitar. El otro es una suite en un hotel ubicado en la zona bancaria, una zona que se caracteriza por su modernidad y por ser el centro de los

negocios.

En esta situación, te parece una buena decisión elegir la suite en el hotel?

11.a

Un estudiante de tercer año necesita presentar un proyecto para aprobar una asignatura. El plazo vence en una semana, y él ha calculado que si le dedica 4 horas al día no tendrá ningún problema en terminarlo. Al siguiente día avanza algo más de lo que tenía previsto, por lo que considera utilizar el tiempo “ganado” para dar un paseo.

En esta situación, te parece una buena elección que de el paseo?

11.b

En el tercer año de su carrera, un estudiante ha decidido mudarse a un piso. El contrato exige que el piso se limpie al menos una vez por semana, y para asegurarse de eso el arrendatario está autorizado para hacer una breve visita cada sábado. El único día que el estudiante no tiene clases es el jueves, por lo que ese día se ve obligado a realizar todos los quehaceres del hogar. Es jueves por la tarde, y el estudiante ya casi ha terminado de limpiar, por lo que considera salir un momento a dar un una vuelta en bicicleta.

En esta situación, te parece una buena elección que de la vuelta en bicicleta?

12.a

Es cumpleaños de una gran amiga de una enfermera. Es día de semana y todos los invitados deben trabajar al día siguiente, por lo que la celebración se limitará a una cena en un buen restaurante. La enfermera ha gastado mucho dinero ese mes, por lo que considera llamar a su amiga para excusarse.

En esa situación, te parece una buena elección que no asista a la cena?

12.b

Una tarde, una becaria recibe una llamada. Una de sus mejores amigas ha ganado una beca y quiere celebrarlo, por lo que ha reservado asientos para una obra de teatro. A continuación, todos los invitados compartirán una cena. La becaria tiene una importante reunión en su oficina, y para llegar a tiempo tendrá que levantarse a las 4 de la madrugada, por lo que considera llamar a su amiga para disculparse.

En esa situación, te parece una buena elección que no asista a la celebración?

13.a

Un vendedor se dirige a su centro de trabajo, el cual se encuentra a tan solo una calle de distancia. Él tiene mucha pereza y considera una buena opción utilizar el coche.

En esa situación, te parece una buena elección que utilice el coche?

13.b

Un vendedor ha decidido visitar a un amigo. Su amigo vive en la segunda planta del edificio. Sin embargo, él siente pereza de utilizar la escalera y considera hacer uso del ascensor.

En esa situación, te parece una buena elección que utilice el ascensor?

14.a

Un señor ha decidido hacer un viaje. Él considera que es un buen momento, pues tiene

un poco de dinero ahorrado y hace buen tiempo. Tiene dos opciones: la primera es ir a una ciudad que le queda cerca y donde conoce gente que le podría ofrecer donde dormir. La segunda es ir a una ciudad bastante más lejana, que le interesa más pero donde no conoce a nadie. En la primera opción podría conservar algo del dinero presupuestado, en la segunda gastaría hasta el último euro.

En esa situación, te parece una buena elección que elija la segunda opción?

14.b

Por el día de su cumpleaños, un señor ha decidido que merece un buen regalo. Ha sido un año un poco difícil y cree que necesita un premio. La empresa donde trabaja le ha otorgado un sueldo extra por buen rendimiento y decide invertirlo en una moto. La primera opción es una moto que cumple con lo que pide y está a muy buen precio, además la vende un colega suyo. La segunda opción es una moto que no se encuentra en stock, pero le gusta más. En la primera opción podría conservar parte del sueldo extra, en la segunda lo gastaría todo.

En esa situación, te parece una buena elección que elija la segunda opción?

15.a

Una joven ha sido contratada por una agencia de publicidad. A los dos meses de iniciar su nuevo trabajo, le ofrecen la posibilidad de ser transferida a un nuevo país. Ella considera que la opción es interesante y acepta la oferta. Al realizar sus cuentas, ella destina una cantidad mensual para ahorrar. Una tarde, mientras camina por la calle observa un vestido que la deslumbra y se siente tentada a comprarlo. Si lo compra no podrá ahorrar dinero ese mes.

En esa situación, te parece una buena elección que compre el vestido?

15.b

Una joven ha terminado sus estudios de licenciatura. Después de diversas entrevistas, obtuvo un trabajo que le satisface y decide mudarse a un nuevo piso. Ella cree que es muy importante hacer un balance económico cada mes, pues así se siente segura que todo marcha bien. Además, a ella le gusta terminar el mes con cierto beneficio que a la larga le permita hacer una buena inversión. Una mañana mientras revisa el diario ve el anuncio de unas botas que la deslumbran. Ella está tentada a comprarlas, pero sabe que si lo hace no terminará el mes con ningún saldo positivo.

En esa situación, te parece una buena elección que compre las botas?

16.a

Un joven deportista acostumbra ir al gimnasio regularmente. Él prefiere entrenar por las tardes, pues es cuando menos interfiere con el resto de actividades que realiza. Recientemente, los directores del gimnasio han decidido reducir los precios, por lo cual se ha incrementado las inscripciones. Por esta medida, últimamente hay mucha gente en el horario de la tarde, por lo que el joven deportista considera buscar un nuevo horario y reorganizar sus actividades.

En esa situación, te parece una buena elección que cambie de horario?

16.b

En unas residencias universitarias, un joven deportista disfruta de cenar en tranquilidad. Normalmente, el comedor abre a las 8 para cenar, y recién una hora después suele llegar

la mayoría de la gente con el ruido excesivo. El joven deportista se ha acostumbrado a cenar a las 8 cuando hay poca gente, y además cenar a esa hora le viene mejor para poder entrenar por la noche. Sin embargo, últimamente la mayoría de la gente está acudiendo a cenar a esa misma hora, y como el ruido excesivo le resulta molesto considera buscar un nuevo horario y reorganizar su rutina.

En esa situación, te parece una buena elección que cambie de horario?

17.a

Una practicante ha recibido una llamada de sus nuevos compañeros de trabajo. Ellos le informan que tienen pensado ir a cenar a una pizzería. Unos días atrás, la practicante se había hecho la firme promesa de iniciar una dieta, pues no está satisfecha con su apariencia. Ella sabe que si cena en la pizzería no podrá resistir la tentación y romperá su compromiso, sin embargo, le apetece muchísimo una pizza.

En esa situación, te parece una buena elección que cene en la pizzería?

17.b

En el aniversario de la empresa donde trabaja, una practicante disfruta de una cena. Ella ha iniciado recientemente una severa dieta para cambiar su apariencia, pues ha ganado muchos kilos en los últimos meses y está cansada de no verse como le gustaría. Durante toda la cena ella ha sido muy cuidadosa con sus elecciones, pues sabe que es muy importante mantener firme su compromiso. Sin embargo, cuando llega el momento de los postres observa uno que le apetece muchísimo.

En esa situación, te parece una buena elección que pida el postre?

18.a

Un joven camarero ha ingresado un dinero y decide ir a un almacén a comprar algo. Después de evaluar diferentes artículos interesantes, decide comprar unos vaqueros. Él está muy satisfecho con su compra, sin embargo, cuando los lleva a clases sus amigos le recriminan su mal gusto, pues ellos consideran que los vaqueros del joven camarero son bastante “horteras”. Él se siente incómodo por los comentarios, por lo que considera devolver los vaqueros.

En esa situación, te parece una buena elección que devuelva los vaqueros?

18.b

Es el día de Nochevieja y un joven recepcionista ha decidió que es el mejor momento para un cambio. Por la mañana, decide visitar una peluquería y teñirse el pelo de rubio. El está muy satisfecho con el resultado, pero cuando sus colegas lo ven no cesan de hacer bromas de su nuevo “look” y de reprocharle su mal gusto. El joven se siente incómodo ante tanto reproche, y considera recuperar su antiguo color de pelo.

En esa situación, te parece una buena elección que recupere su color de pelo original?

19.a

Un estudiante tiene un importante examen. Es la noche anterior, y si bien lleva muchos días preparándose, no le vendría mal unas horas más de estudio. Es ya bastante tarde y empieza a sentirse muy cansado, por lo que considera beberse otra taza de café. Él ya ha bebido mucho café ese día por lo que quizás le podría sentar un poco mal.

En esa situación, te parece una buena elección que beba una última taza de café?

19.b

Es la noche anterior a la defensa de tesis de un estudiante de posgrado. Él se encuentra preparando su presentación, pero empieza a sentir mucho sueño. El estudiante es alérgico a la cafeína por lo que acostumbra darse una ducha fría cuando quiere espantar el sueño. Él necesita avanzar un poco más de su presentación, pero es muy tarde y hace mucho frío, por lo que una ducha fría podría sentarle un poco mal.

En esa situación, te parece una buena elección que se dé una ducha fría?

20.a

Un señor de mediana edad ha decidido empezar a practicar deporte. Él ha consultado con diversos expertos y le han recomendado que lo mejor para alcanzar una buena condición física es salir a correr o nadar. Él solo puede escoger una opción, pues no tiene tiempo de practicar los dos deportes. A él le gusta más correr, pero en su barrio las calles son muy transitadas y resulta difícil. Recientemente han abierto una piscina a unos metros de su casa, por lo que considera elegir esta opción.

En esa situación, te parece una buena elección que elija practicar natación?

20.b

Un señor ha consultado un dietista pues ha decidido empezar una dieta. El dietista le recomienda que cambie sus alimentos en el desayuno, pues el señor acostumbra excederse en las grasas. El dietista le da a elegir entre un desayuno basado en frutos secos o en pan integral. A él le gustan más los frutos secos, pero no los venden cerca de su casa, mientras que el pan integral lo puede comprar en la panadería de la esquina.

En esa situación, te parece una buena elección que elija el desayuno de pan integral?

21.a

Un señor ha decidido estudiar un máster. Él ha revisado muchas opciones, y finalmente ha reducido su decisión a dos opciones. El primer máster le resulta muy interesante, pues está relacionado a temas que siempre le han producido gran inquietud. El segundo no le produce el mismo entusiasmo, pero está muy relacionado a su profesión y le resultará de mayor utilidad.

En esa situación, te parece una buena elección que elija la opción más útil?

21.b

Al finalizar el instituto, un joven debe decidir qué carrera estudiar. Su familia tiene la tradición de dedicarse al derecho, y tienen un importante negocio familiar. El joven siempre ha asumido que seguiría en el mismo negocio, pues le agrada el derecho y le garantiza un buen futuro. Sin embargo, tiene también un gran interés por la medicina, y considera que quizás esta línea profesional le resulte más gratificante.

En esa situación, te parece una buena elección que elija la opción más útil?

22.a

Un joven que es muy aficionado al cine acude al estreno de una película que ha esperado mucho tiempo. Cuando empieza la película, la señora que se encuentra a su lado le pregunta por el nombre del director. El joven está muy emocionado, y empieza a comentarle innumerables curiosidades de la película. La señora no le interrumpe, pero tampoco se muestra muy interesada y como el joven disfruta compartiendo su afición

por el cine, continúa hablando sin parar.

En esa situación, te parece una buena elección que continúe hablando?

22.b

Han estrenado una nueva obra de teatro en la ciudad, la cual tiene como tema la ilustración. Esta obra despierta un gran interés en un joven, pues él siempre ha sentido gran pasión por este tema. El día del estreno, una vez empezada la función, escucha que el señor de la fila de adelante le hace un comentario erróneo, por lo cual el joven aficionado le corrige. El señor le agradece su gesto, por lo cual el joven entiende que es una buena oportunidad para compartir sus conocimientos. El señor no le interrumpe, pero tampoco parece compartir su interés, y como el joven aficionado disfruta mucho de conversar sobre el tema continúa hablando sin detenerse.

En esa situación, te parece una buena elección que continúe hablando?

23.a

Un joven regresa caminando a su casa después de un duro día en la oficina. A lo lejos, en la acera de enfrente, ve acercarse a un amigo que no ve hace tiempo. Él sabe que si lo saluda se verá en el compromiso de quedar para salir con su amigo, quien siempre ha sido muy insistente y aficionado a la vida nocturna. Por el contrario, si se escabulle a la panadería que tiene a unos metros, podrá evitar el encuentro y utilizar su tiempo libre para descansar y recuperarse de el exceso de trabajo.

En esa situación, te parece una buena elección que se evite el encuentro?

23.b

Después de trabajar, un empleado se inscribe a un taller. El primer día, descubre que el hijo de un amigo asiste a su misma clase. El empleado sabe que el hijo de su amigo no lo conoce, por lo que considera que debería presentarse. Sin embargo, si el empleado se presenta se sentirá en compromiso de realizar el trabajo en grupo con él, lo cual le supone un inconveniente pues prefiere trabajar con otras personas.

En esa situación, te parece una buena elección que evite la presentación?

24.a

La abuela de un joven becario le ha tejido una bufanda por su cumpleaños. Ella ha trabajado mucho para ofrecerle un buen regalo, pero realmente el joven becario siente que la bufanda no le “pega” nada, pues su forma de vestir es muy diferente. Es la fiesta de cumpleaños del joven y la abuela ha prometido que asistirá. El joven becario sabe que ella espera verle con la bufanda, pero si la utiliza se sentirá ridículo ante sus invitados.

En esa situación, te parece una buena elección que no utilice la bufanda?

24.b

Es el día del cumpleaños de un joven pianista. Su hermano le ha regalado unas gafas de sol de una muy buena marca. El joven pianista sabe que su hermano ha ahorrado mucho para poder comprárselas, pero realmente a él no le gustan nada. Además, la tienda dónde han sido compradas las gafas no acepta devolución. Para celebrar el cumpleaños el joven pianista había organizado una gran reunión en la playa, y su hermano está invitado. El joven pianista sabe que él espera verle con sus nuevas gafas, pero si las lleva puestas se sentirá ridículo ante sus invitados.

En esa situación, te parece una buena elección que no utilice las gafas?

25.a

El nivel de inglés de un practicante no es bueno. Él sabe que debe de mejorarlo, pero no le parece que sea urgente, pues suele apañarse con sus conocimientos elementales. Una mañana recibe un mail de la empresa donde trabaja invitándole a que se inscriba en un curso de inglés, que se impartirá todos los días a las 6 a.m (horario único). La empresa pagará todos los gastos. El practicante suele acostarse muy tarde, pues después de trabajar en la oficina le dedica varias horas a estudiar, por lo que inscribirse en el curso de inglés en ese horario le supondría un gran esfuerzo.

En esta situación, te parece una buena elección que se inscriba en el curso de inglés?

25.b

Un practicante es invitado a inscribirse en un curso acelerado de Excel, con todos los gastos pagados por la empresa donde trabaja. Él no está familiarizado con el programa, y sabe que en algún momento necesitará aprender cómo funciona, pero no siente urgencia pues por el momento suele apañarse con las dos cosas que sabe. El curso de Excel al que es invitado se impartirá todos los días a las 6 a.m (horario único). El practicante tiene un segundo trabajo como diseñador gráfico, al cual le dedica varias horas por la noche, cuando regrese de la oficina por lo que suele irse a la cama muy tarde. Si se inscribe en el curso de Excel en ese horario le supondrá un gran esfuerzo.

En esta situación, te parece una buena elección que se inscriba en el curso de Excel?

26.a

Ha comenzado el verano y un estudiante de derecho tiene mucho calor. El último día la temperatura ha sido muy altas y él no ha podido dormir bien, pues no ha dejado de sudar, por lo que el estudiante considera que sería buena idea comprar un ventilador. Sin embargo, en solo 24 horas él viajará a otro país donde no es verano y las temperaturas suelen ser muy moderadas durante todo el año, por lo que el ventilador solo le servirá para llevar bien ese último día y tener una noche tranquila.

En esta situación, te parece una buena elección que compre el ventilador?

26.b

En una ciudad del norte la temperatura acaba de cambiar drásticamente. Las últimas 24 horas han sido de un frío muy intenso, y un joven administrador incluso no ha podido dormir bien por esta razón. El es muy friolero y piensa que sería una buena opción comprar una pequeña calefacción. Sin embargo, el joven administrador sabe que en 24 horas viajará al extranjero, concretamente a un país donde hace muy buena temperatura y no necesitará la calefacción. Si compra la calefacción, esta solo le servirá para llevar mejor el último día y pasar una noche más placentera.

En esta situación, te parece una buena elección que compre la calefacción?

27.a

Un joven licenciado ha sido contratado por una importante empresa multinacional. Él siempre había tenido la ilusión de pertenecer a esa organización y finalmente lo ha conseguido. Todas las condiciones del nuevo empleo le satisfacen ampliamente pero tiene una mala relación con sus compañeros de trabajo. Si bien no ha sucedido ningún problema, no hay un buen “feeling” entre ellos y el joven licenciado no se siente

cómodo en ese ambiente laboral. Después de un periodo de prueba, al joven le ofrecen renovar por 3 años.

En esta situación, te parece una buena elección que el joven renueve?

27.b

Un joven ha dedicado un gran esfuerzo a su carrera como futbolista. Finalmente, un gran club lo ha fichado y él siente que ha cumplido su gran objetivo. Sin duda, se trata de uno de los mejores clubs, pues ofrece a los futbolistas de las mejores condiciones profesionales, sin embargo, el joven no se siente bien en el vestuario, pues es evidente que no hay un buen “rollo” con sus compañeros. No han tenido ningún enfrentamiento, pero es evidente que la relación no es de compañerismo y el joven futbolista no se siente cómodo en un vestuario de este tipo. Después de la pretemporada, el club le ofrece al joven futbolista renovar por 3 años.

En esta situación, te parece una buena elección que el joven renueve?

28.a

Un joven es muy aficionado a un equipo de futbol. Su equipo juega la final de un torneo mundial y él está muy ilusionado con poder ganar ese título. El problema es que por diferencias horarias, debe levantarse a las 3 A.M si no quiere perderselo. El joven sabe que tiene una práctica muy temprano, y debería ir a clases. A la mañana siguiente suena el despertador y el joven considera apagarlo.

En esta situación, te parece una buena elección que apague el despertador?

28.b

Una joven es una gran admiradora de un actor de Hollywood. Es la noche de los Oscar y el actor ha sido nominado. Ella está muy entusiasmada con esto, pues le haría mucha ilusión que su actor favorito gane el premio. La ceremonia comienza muy tarde, y para cuando entregan el premio al mejor actor son ya las 3 A.M. Ella tiene una práctica muy temprano, por lo que debería ir a la universidad. A la mañana siguiente suena el despertador y la joven considera apagarlo.

En esta situación, te parece una buena elección que apague el despertador?

29.a

Un doctor ha pasado los últimos meses fuera de su país. Cuando regresa decide visitar a su madre, y se da con la sorpresa que ella ha dejado su antiguo cuarto impecable, pero al saludarla advierte que su pelo huele realmente mal.

En esa situación, piensas que está bien (que le haga saber lo que piensa)?

29.b

Para celebrar su ascenso, un abogado decide cenar con su madre. Ella le ha preparado su cena favorita. Sin embargo, cuando se dispone a probarla descubre que hay muchos pelos en la sopa.

En esa situación, piensas que está bien (que le haga saber lo que piensa)?

30.a

Es una calurosa noche de verano y un abuelo decide abrir la ventana para respirar un poco de aire fresco. Con la ventana abierta la temperatura es buena, y como es un poco tarde, el abuelo decide que es buen momento para irse a dormir. Sin embargo, cuando

está en la cama recuerda que si deja abierta la ventana entrarán a su cuarto los mosquitos y le causarán diversas molestias. Si cierra la ventana, el calor seguirá siendo insoportable.

En esta situación, te parece una buena elección que el abuelo cierre la ventana?

30.b

Es un día de intensas lluvias. Cuando paró de llover, un anciano abrió la ventana pues necesitaba respirar algo de aire fresco. Al minuto siguiente las lluvias se reanudaron y el anciano se dio con la sorpresa que habían entrado mosquitos a su cuarto. La única opción para evitar las molestias que le suponen los mosquitos es utilizar un spray muy efectivo pero que genera un olor insoportable.

En esta situación, te parece una buena elección que el anciano utilice el spray?

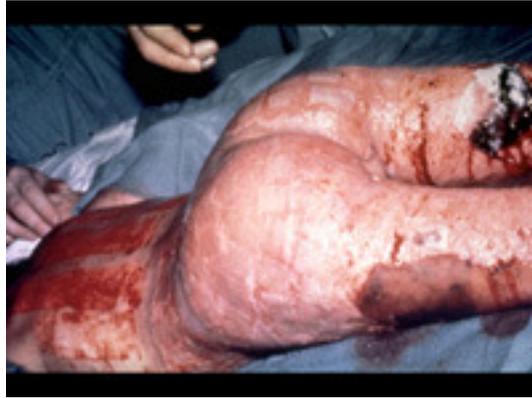
APPENDIX III: DISGUST PICTURES (IAPS) (STUDY 1 AND STUDY 2)















APPENDIX IV: NEUTRAL PICTURES (IAPS)



APPENDIX V: HORROR PICTURES (STUDY 4)



Effects of the time course of negative affective priming on moral judgment: the shortest the SOA, the lesser the severity.













APPENDIX VI: INFORMED CONSENT AGREEMENT



Condicció	
Participant ID:	

EVOCOG

CONSENTIMENT INFORMAT

Informació:

Benvingut a aquest experiment. Estàs a punt de participar a un experiment del grup de recerca de *Evolució i Cognició Humana* de la UIB. En aquest experiment et demanarem la teva valoració ètica sobre alguns dilemes de caire moral, valoració que té una certa càrrega de privacitat. La teva resposta no serà utilitzada en cap cas a nivell individual i per tant no se'n podrà fer ús en cap acció envers la teva persona. La tasca consistirà en avaluar una sèrie d'histories segons el teu criteri personal. L'objectiu de la recerca és conèixer amb un poc més de detall la participació dels processos cognitius i emocionals en la valoració de dilemes morals, però en cap cas avaluar les vostres respostes a nivell individual. Durant l'experiment poden aparèixer alguns imatges (o no) amb un contingut certament impactant a nivell emocional, per aquest motiu t'informam amb antelació per si creus que no has de participar en l'experiment. En qualsevol moment pots interrompre la participació si no et sents en condicions de continuar. En aquest cas, et demanam que romanguis assegut fins que la resta de participants acabin la tasca.

Les dades seran tractades confidencialment. Només l'investigador principal podrà conèixer la identitat de cada participant. L'estudi forma part del projecte *La naturalesa moral i estètica humana* del qual l'investigador responsable és el Dr. Camilo José Cela Conde, membre del Departament de Filosofia i Treball Social de la UIB, el despatx del qual es troba a l'edifici Ramón Llull (UIB). En compliment del que disposa la Llei Orgànica 15/1999, de 13 de desembre, de protecció de dades de caràcter personal, us informam que les dades recollides seran incloses en el fitxer Laboratori de Sistemàtica Humana gestionat per la UIB, la finalitat del qual és gestió del grup de recerca Evolució i Cognició Humana. Les dades sol·licitades són necessàries per complir amb l'esmentada finalitat i, per tant, el fet de no obtenir-les impedeix aconseguir-la. Així mateix, us informam que podreu exercir els drets d'accés, de rectificació, de cancel·lació i d'oposició en el Laboratori de Sistemàtica Humana, que es troba al segon pis, Edifici Guillem Cifre, bloc A (UIB).

Així mateix, per participar en la investigació, caldrà atorgar el vostre consentiment per tractar dades especialment protegides, consentiment que podreu revocar en qualsevol moment.

La UIB és responsable del tractament de dades i com a tal us garanteix els drets d'accés, rectificació, cancel·lació i oposició quant a les dades facilitades, per exercir els quals us heu d'adreçar per escrit a: Universitat de les Illes Balears, Secretaria General, a l'atenció del responsable de seguretat, cra. de Valldemossa, km 7,5, 07122 Palma (Illes Balears). De la mateixa manera, la UIB es compromet a respectar la confidencialitat de les vostres dades i a utilitzar-les d'acord amb la finalitat del fitxer.

Dades personals (Aquesta informació és confidencial):

Nom i llinatges:..... DNI:.....

Email: Número de mòbil:

Sexe: Home; Dona Edat:.....

Estudis:.....(Curs:)

Assignatura (si cal): Data:.....

◇ No vull participar en aquest experiment* (marca amb una creu si ho creus procedent)

◇ No desig ser informat de nous experiments EVOCOG* (marca amb una creu si ho creus procedent)

Tota la informació que apareix en aquesta pàgina m'ha estat explicada i els possibles dubtes que tenia m'han estat resolts. Sóc conscient del meu dret a no participar i a retirar-me de l'estudi en qualsevol moment. He comprès que el meu nom i tota la informació que m'identifiqui serà confidencial. He comprès els objectius exposats en aquest experiment.

Signatura:

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