

What Do We Envy?

How Internal and External Self-Relevance Shape Envious Reactions
to Upward Comparisons



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Abstract

What do people envy? According to emotion theory, people envy what is self-relevant to them, because self-relevance of a situation is a necessary precondition for every emotion to arise. However, self-relevance is vaguely defined. Self-relevance can be defined by what is important to people themselves, i.e. internally self-relevant, and by what is important to people's social groups, i.e. externally self-relevant. Both forms of self-relevance should influence envy. Envy comes in two distinct forms: benign envy, promoting upward motivation, and malicious envy, promoting hostility. I predicted that internal and external self-relevance would differentially shape benign and malicious envy. Internal self-relevance should increase benign envy and decrease malicious envy. External self-relevance should decrease benign envy and increase malicious envy. I conducted seven studies to test these hypotheses. In all studies, values, as prototypes of what is self-relevant to people, operationalized self-relevance. In the first set of studies, I measured internal and external self-relevance of values in a within-subjects design. In the second set of studies, I manipulated internal and external self-relevance of a value in a between-subjects design. In every study, I then measured participants' envious reactions towards an ideal person who embodied a certain value. The data consistently showed that high internal self-relevance leads to more benign envy and low internal self-relevance leads to more malicious envy.

In sum, people envy what is important to them, but they also envy what is not important to them. More precisely, when people envy what is important to them, benign envy arises fostering upward motivation. When people envy what is not important to them, malicious envy arises fostering harmful behavior, probably because it implies external self-relevance. A more detailed understanding of self-relevance is necessary for a comprehensive understanding of emotions. My research thus provides important implications for emotion research and beyond.

Deutsche Kurzzusammenfassung

Worauf sind Menschen neidisch? Laut Emotionstheorien, beneiden Menschen, was selbstrelevant für sie ist, weil Selbstrelevanz eine notwendige Bedingung für die Entstehung jeder Emotion ist. Selbstrelevanz ist aber nur vage definiert. Selbstrelevanz kann zum einen dadurch definiert sein, was einer Person persönlich wichtig ist, d.h. was intern selbstrelevant ist. Selbstrelevanz kann zum anderen dadurch definiert sein, was für die soziale Gruppe einer Person wichtig ist, d.h. was extern selbstrelevant ist. Beide Formen von Selbstrelevanz sollten Neid beeinflussen. Neid wird durch zwei Formen charakterisiert: gutartiger Neid, der die Motivation sich zu verbessern fördert, und bösertiger Neid, der Feindseligkeit fördert. Ich habe vorhergesagt, dass interne und externe Selbstrelevanz unterschiedliche Effekte auf gut- und bösertigen Neid haben würden. Interne Selbstrelevanz sollte gutartigen Neid verstärken und bösertigen Neid verringern. Externe Selbstrelevanz sollte gutartigen Neid verringern und bösertigen Neid verstärken. Diese Hypothesen wurden in sieben Studien getestet. In allen Studien wurde Selbstrelevanz durch Werte operationalisiert. Im ersten Teil habe ich interne und externe Selbstrelevanz in einem Innersubjektdesign gemessen. Im zweiten Teil habe ich interne und externe Selbstrelevanz in einem Zwischensubjektdesign manipuliert. In jeder Studie habe ich dann die Neidreaktion auf eine ideale Person, die einen Wert verkörperte, gemessen. Die Daten zeigen konsistent, dass hohe interne Selbstrelevanz zu mehr gutartigem Neid führt und niedrige interne Selbstrelevanz zu mehr bösertigem Neid führt. Zusammengefasst, Menschen beneiden, was ihnen wichtig ist und was ihnen nicht wichtig ist. Genauer gesagt, wenn Menschen beneiden, was ihnen wichtig ist, entsteht gutartiger Neid, der die Motivation sich zu verbessern fördert. Wenn Menschen beneiden, was ihnen nicht wichtig ist, entsteht bösertiger Neid, der schädigendes Verhalten begünstigt. Ein detailliertes Verständnis von Selbstrelevanz ist notwendig, um Emotionen umfassend zu verstehen. Meine Forschung hat daher wichtige Implikationen für die Emotionsforschung und darüber hinaus.

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Introduction

“Envy is there to let us know what we want.” (The School of Life, 2016)

“I have a friend who casually remarked feeling envious of a couple in her building who travelled whenever they wanted. “But you hate traveling!” I said. “So you envy what you don’t really want?” (Smookler, 2016).

What do we envy? Conventional wisdom holds that we envy what we really want, what is important and relevant to us. For example, we might continuously envy our colleague’s success or our sister’s athletic achievements. What does that reveal about what we want? Sometimes our envy might reflect that it feels painful to see our colleague or sister succeed because we would like to be successful in these domains as well. Other times, we are envious although we do *not* actually care about promotions or athletics ourselves. We prefer creative writing over athletic achievements or we prefer working closely together in our team rather than striving for a managerial position. It seems that envy can also arise because others care about these achievements. So, do people feel envy because certain domains are important to them, i.e. internally self-relevant? Or do people sometimes feel envy because certain domains promise status in the eyes of others, i.e. because these domains are externally self-relevant?

It seems that we sometimes envy what we really want. Envy is higher when seeing someone who is successful in areas that we want to excel in as well (Salovey & Rodin, 1984), and it is generally higher when a comparison domain is important to us (Van de Ven, Zeelenberg, & Pieters, 2009). However, sometimes we seem to envy what is primarily valued by others, i.e. what symbolizes status in a social group, even though we don’t care so much about it ourselves. In fact, certain comparison domains, such as material possessions, attractiveness, success and popularity, are more likely to fuel envy (Poelker, Gibbons, Hughes,

& Powlishta, 2016). These domains seem to transport social status rather than containing an inherent importance to the individual. Hence, envy is often considered a status-related emotion (Crusius & Lange, 2017). I propose that what is important to a person and what is important to others are both self-relevant dimensions. However, these different sources of self-relevance might lead to different emotional and motivational reactions.

Self-relevance has been proposed as one of the necessary preconditions for the elicitation of emotions (Frijda, 1988; Lazarus, 1991; for a review on appraisal theories see Moors, Ellsworth, Scherer, & Frijda, 2013; Scherer, 2009, 2013; Smith & Kirby, 2009). Self-relevance is described in the “laws of emotion” as the “law of concerns: Emotions arise in response to events that are important to the individual’s goals, motives, or concerns” (Frijda, 1988, p. 351). “A situation could have implications for many things, but would not be appraised as motivationally relevant if the person did not care about those things” (Smith & Kirby, 2009, p. 1358). Self-relevance is not only a primary appraisal for emotions to arise, but it also strongly influences social comparisons (Corcoran, Crusius, & Mussweiler, 2011; LeBoeuf & Estes, 2004; Tesser & Smith, 1980) and, thus, comparison-based emotions – such as envy (Lin, van de Ven, & Utz, 2018; Salovey & Rodin, 1984; Smith, 2004; Van de Ven et al., 2009). However, a systematic experimental investigation of the sources of self-relevance has only recently begun (De Leersnyder, Koval, Kuppens, & Mesquita, 2017; Olteanu, Golani, Eitam, & Kron, 2018). In particular, it remains unclear whether self-relevance is defined by what is important to persons themselves, i.e. *internally self-relevant*, and what is important to persons’ social groups, i.e. *externally self-relevant* (e.g., Scherer, 2013). Accordingly, the distinction between internal and external self-relevance will be important for understanding how emotions, in particular comparison-based emotions such as envy, arise.

Benign and Malicious Envy

Envy is the painful emotion (Lange, Weidman, & Crusius, 2018) that is likely to arise when comparing to another person who acquired a superior quality, achievement, or possession (Parrott & Smith, 1993). People engage in social comparisons on a regular basis (Mussweiler, 2003), most of them being upward comparisons (Nosanchuk & Erickson, 1985). As an emotional reaction to an upward comparison, envy is likely to arise (Smith, 2000). Envy is therefore supposedly a very prevalent emotion in daily life, even though people are hesitant to admit feeling envious (Foster, 1972).

Envy has powerful consequences. On the one hand, envy has been related to upward motivation reflected in increased desire, approach and achievement motivation (Crusius & Mussweiler, 2012; Lange & Crusius, 2015b). Envy is also associated with higher job performance and an increased motivation to study harder (Schaubroeck & Lam, 2004; Van de Ven et al., 2009). On the other hand, envy has been related to anti-social consequences such as rejection of superior others (Salovey & Rodin, 1984), deception (Moran & Schweitzer, 2008), and social loafing (Thompson, Glasø, & Martinsen, 2016). Studies in the professional context show detrimental effects on behavior in the workplace (Cohen-Charash & Mueller, 2007; Eissa & Wyland, 2015; Erdil & Müceldili, 2014; Khan, Quratulain, & M. Bell, 2014; Parks, Rumble, & Posey, 2002). In the academic context, envy mediated the effect of low self-esteem on hostile tendencies (Rentzsch, Schröder-Abé, & Schütz, 2015). Low self-esteem is associated with hostile tendencies towards peers when people feel envious (Rentzsch et al., 2015). Envious reactions can go so far as that they do not only harm the superior person, but also the inferior person herself. For example, participants were ready to burn their own money in order to reduce the other person's money (Zizzo & Oswald, 2001). Taken together, just as upward comparisons have advantageous and disadvantageous effects (Collins, 1996), envy has powerful consequences that can be desirable and hostile.

These diverse consequences of envy partially map onto two distinct forms of envy: benign and malicious envy (Lange, Weidman, et al., 2018; Van de Ven et al., 2009). Benign envy motivates enviers to improve their position, e.g., by trying harder to achieve their goals (Van de Ven et al., 2009). Malicious envy motivates enviers to level the difference between themselves and the superior other by taking away what the superior other had achieved or by harming the superior person (Van de Ven et al., 2009). Both forms are accompanied by negative and painful affect (e.g., Lange, Weidman, et al., 2018).

Despite their equally aversive valence, benign and malicious envy are differently related to appraisal patterns, cognition and behavior (for a review see Van de Ven & Zeelenberg, 2018). First, benign and malicious envy are more likely to arise when different appraisal patterns are triggered in a given situation. Based on how the situation is perceived, one situation is more likely to cause benign envy than malicious envy, and vice versa (Van de Ven, Zeelenberg, & Pieters, 2012). Research that examined appraisal patterns accompanied by benign and malicious envy found that malicious envy is stronger when a situation is appraised as undeserved and when the perceiver experienced low control (Van de Ven et al., 2012). Benign envy was stronger when the envied person was perceived as deserving of the superior position and the situation was appraised as controllable by the envier (Van de Ven et al., 2012). Furthermore, perceived unfairness was a component of malicious envy but not benign envy (Van de Ven et al., 2009). Because of their different appraisal patterns, benign and malicious envy were related to different beliefs and personality traits. Benign envy is more strongly related to beliefs that stress the malleability of success and status, such as Protestant Work Ethic (Blatz, Crusius, & Lange, in prep.). On the contrary, malicious envy is more strongly related to beliefs that stress the stability of success and status, such as Fatalistic Determinism (Blatz et al., in prep.). Benign and malicious envy also differentially direct attention (Crusius & Lange, 2014). Whereas benign envy leads to a focus on the envy object, i.e. the desired

object that the superior person possesses, and the superior other alike, malicious envy leads to a stronger focus on the superior person than towards the envy object (Crusius & Lange, 2014). Benign and malicious envy also differ in how they influence behavior. Whereas benign envy is related to approach motivation, i.e. hope for success, malicious envy is related to avoidance motivation, i.e. fear of failure (Lange & Crusius, 2015a). This is further illustrated by research showing that benign envy is associated with a desire for the other's advantage leading to increased effort, e.g., the intention to study more to also obtain what the other has (Crusius & Mussweiler, 2012; Van de Ven, 2017; Van de Ven, Zeelenberg, & Pieters, 2011). On the other hand, malicious envy entails negative thoughts about the superior other (Van de Ven et al., 2009) and Schadenfreude when the other fails (Van de Ven et al., 2015). Malicious envy was related to other harmful consequences for the person who envies, such as goal disengagement (Lange & Crusius, 2015a), and for the envied person, such as intentions to hurt the superior other (Van de Ven et al., 2009). Taken together, data suggest that benign and malicious envy can be clearly differentiated by their antecedences and motivational consequences.

Based on these results, one could have the impression that benign envy portrays the constructive side of envy and malicious envy portrays the destructive side of envy. However, both forms relate to antisocial personality traits and behavioral intentions (Lange, Paulhus, & Crusius, 2018). Benign envy was found to be related to Machiavellianism, i.e. manipulative behavior. Malicious envy was found to be related to Machiavellianism and psychopathy (Lange, Paulhus, et al., 2018). Despite these adverse effects, this indicated that benign and malicious envy can both be functional by helping to regulate status hierarchies (for similar argument, see Lange & Crusius, 2015b; Lange, Blatz, et al., 2018). The function of envy might thus be to regulate hierarchies by levelling the differences between the envied person and the inferior person. Benign envy does so by moving upwards in the status hierarchy. Malicious envy does so by pulling the envied person down (Van de Ven et al., 2009). Thus, it would be

too simple to say that benign envy marks the “good” side of envy and malicious envy marks the “bad” side of envy. It rather seems that both forms can be functional.

As outlined above, research showed many differences between benign and malicious envy (e.g., Crusius & Lange, 2014; Van de Ven et al., 2009). However, different theoretical conceptualizations of envy coexist that more or less recognize the distinction between benign and malicious envy as distinct forms of envy (e.g., Cohen-Charash & Larson, 2017; Lange, Weidman, et al., 2018). A recently published paper sought to solve this debate by proposing an integrative theory of envy (Lange, Weidman, et al., 2018). Based on data-driven content and factor analyses, the Pain-driven Dual Envy (PaDE) Theory was derived proposing that envy consists of three factors: pain (i.e., *preoccupation with the envy-eliciting situation, inferiority*), benign envy (i.e., *desire for the envy object, improvement motivation, emulation of the other*) and malicious envy (i.e., *communication about the other, directed aggression, non-directed aggression*; Lange, Weidman, et al., 2018, Figure 3). Pain was positively related to benign and malicious envy confirming the frustrating nature of envy, and showing that benign and malicious envy both form a part of the concept of envy. Thus, all components of envy should be considered when studying its antecedences and consequences.

Besides research on the differential effects and antecedences of benign and malicious envy, self-relevance is supposed to be a necessary precondition in the elicitation of envy (Lin et al., 2018; Salovey & Rodin, 1984; Smith, 2004; Van de Ven et al., 2009). Higher self-relevance explained why experiential purchases elicited more envy than material purchases (Lin et al., 2018). In a content analysis of envy episodes, domain relevance was found to be characteristic for benign and malicious envy alike (Van de Ven et al., 2009). Experimental findings also support this notion. In a study by Salovey and Rodin (1984), students were presented with their results in a test that was either relevant or irrelevant to them. Then, they saw the results of another student who was more successful in a test that was either relevant or

irrelevant to the participants. Participants reacted with more envy when presented with test results of a student who was better in a domain that was self-relevant to them (Salovey & Rodin, 1984). Self-relevance, thus, seems to be an important appraisal for the elicitation of envy.

Despite the importance of self-relevance in the elicitation of envy, it has not been investigated how internal and external self-relevance of a comparison domain account for the elicitation of benign or malicious envy. As the example at the beginning of this introduction illustrates, envy can be elicited when a comparison domain is important to a person and when a comparison domain is important on a social level. I argue that both facets of self-relevance can play a role in the elicitation of emotions in general and their distinction is especially important for envy because envy has been construed as a “status-related emotion” (see section “envy as a status-related emotion”). However, the unique contribution of internal and external self-relevance on benign and malicious envy has thus far not been addressed. A research gap that I seek to fill in the current investigation.

The Appraisal of Self-Relevance

The appraisal of self-relevance “*detects and assesses the significance of the environment for well-being. Significance for well-being is best conceptualized as the satisfaction or obstruction of concerns*” (Moors et al., 2013, p. 120). Self-relevance consists of an individual’s needs, attachments, values, current goals, and beliefs (Frijda, 1993; Lazarus, 1991; Scherer, 2005; Smith & Kirby, 2009). Thus, self-relevance contains everything that is important to a person. Self-relevance has been proposed as one of the necessary preconditions for the elicitation of emotions (Frijda, 1988; Lazarus, 1991; for a review, see Moors et al., 2013; Scherer, 2009, 2013; Smith & Kirby, 2009). A situation needs to be self-relevant in order for emotions to arise. Arguably, people cannot react to every stimulus in their environment.

The situation has to be related to their needs, values, or concerns to elicit an emotion. Thus, self-relevance is referred to as the primary appraisal (Lazarus, 1991).

Appraisal theories particularly stress that the self-relevance of a situation is a necessary precondition for the elicitation of emotions (e.g., Scherer, 2013). Appraisal theories are a family of emotion theories that are based on the cognitive evaluation of a given situation for emotion elicitation. Although they differ in their specification, their common factor is that they view emotional episodes as consisting of an appraisal component, containing evaluations of the environment and their interaction with the person, a feeling component, and a motivational component, containing action tendencies (cf. Moors et al., 2013). These emotion components are connected in a recursive process, each component influencing each other. Accordingly, appraisal theories assume that appraisals, in particular the primary appraisal of self-relevance, are at the core of the emotion process. Other theories on emotions, too, mention the role of cognitions in emotional processes, for example basic affect theories (Ekman, 1992) constructionist theories (Barrett & Russell, 2014; Russell, 2003) or more novel network models of emotion (Lange, Borsboom, Dalege, Fischer, & Van Kleef, in prep.). Appraisals are thus not only important according to appraisal theories. However, appraisal theories place a special significance on appraisals and therefore provide more precise definitions and models for appraisal patterns.

Besides the basic appraisal of relevance, other appraisals are also supposed to shape emotions, such as certainty, agency, control potential, or deservingness (see e.g., Roseman, 1996, for a list of appraisals). Some appraisal theories discuss that different concerns or appraisals should be related to different emotions (Roseman, 1996; Scherer, 1988). In a recent investigation, the assumption that different types of concerns are associated with different emotions has been tested (De Leersnyder et al., 2017). The prediction was confirmed: In situations where other-focused values (such as loyalty) were more prevalent, socially engaging

emotions (such as closeness and shame) were more intense. In situations where self-focused values (such as ambition) were more prevalent, socially disengaging emotions (such as pride and anger) were more intense (De Leersnyder et al., 2017). Other evidence supports the idea that specific appraisals cause specific emotions (e.g., Griner & Smith, 2000). People high in affiliative orientation construed situations as more related to affiliative concerns and thereby appraising the situation as important to interpersonal concerns. This effect was associated with higher levels of interest and lower levels of boredom (Griner & Smith, 2000). Thus, it seems that different appraisals are associated with different emotions.

Also for envy, appraisal patterns were studied. As already mentioned above, when a situation is appraised as controllable and the envied person is perceived to deserve her advantage, benign envy is more likely to arise. On the other hand, when a situation is appraised as uncontrollable and undeserving, malicious envy is more likely to arise (Van de Ven et al., 2012). Although there are different appraisals, the appraisal of self-relevance remains a crucial component in the elicitation of emotions in general and envy in particular (Lin et al., 2018; Salovey & Rodin, 1984; Van de Ven et al., 2015). The appraisal of self-relevance should, thus, be studied in more detail.

Values as Prototypes of Self-Relevance

Self-relevance is defined as the individual evaluation of an event as related to a person's needs, goals, values, or concerns, i.e. everything that a person cares about (cf. Ellsworth & Scherer, 2003; Frijda, 1988). This broad definition needs to be broken down in order to study the effects of self-relevance. I started by studying values as prototypical domains of self-relevance. Part of what is relevant to people is reflected in their values. Values are guiding principles in a person's life. They reflect what is important to a person. They are also shared by members of a social group and culture (e.g., Vauclair et al., 2015), and therefore also reflect

what is important to others. Thus, values as guiding principles are prototypes of what is relevant to a person and to a social group.

The most prominent theory of values is the theory of basic values (Schwartz, 1992). Schwartz (1992) proposes a circumplex model of values that defines values as concepts or beliefs about desirable goals that transcend specific situations, guide behavior, and are ordered by relative importance (Schwartz, 2012, p. 12). The theory of basic values has been supported by a large number of studies across different samples in several countries (Brosch & Sander, 2014; Cheung, Maio, Rees, Kamble, & Mane, 2016; Collins, Lee, Sneddon, & Döring, 2017; Gollan & Witte, 2014; Khaptsova & Schwartz, 2016; Sagiv & Schwartz, 2000; Sandy, Gosling, Schwartz, & Koelkebeck, 2016; Schwartz, 1992, 1994; Schwartz et al., 2001, 2012; Schwartz & Butenko, 2014).

Values are important drivers of cognition, emotion, and behavior. Values influence information search in decision making and decision making processes (for a review see Brosch & Sander, 2014; Verplanken & Holland, 2002). Values guide behavior (Maio, Pakizeh, Cheung, & Rees, 2009; Schwartz, 2012) and they are related to a person's needs (Gouveia, Milfont, & Guerra, 2014). For example, people are more likely to act egalitarian after prior contemplation of egalitarian values in a specific situation (Maio, Hahn, et al., 2009). Similarly, priming specific values of the value circumplex systematically increases behavior compatible with the primed values while decreasing behavior compatible with opposing values (Maio, Pakizeh, et al., 2009). Contemplating on one's values has positive effects for a variety of outcomes, such as education, health, and relationship quality (for a review see Cohen & Sherman, 2014). Writing about values can protect people from threats and threatening social comparisons (Burson, Crocker, & Mischkowski, 2012). Burson et al. (2012) found that intentional social exclusion reduces self-control, presumably by threatening the self. This effect was attenuated when people wrote about their important values after the experience of social

exclusion. Values seem to be a relevant factor in a person's life affecting cognition and behavior.

Values also guide which emotions people feel and want to feel (Nelissen, Dijker, & de Vries, 2007; Tamir et al., 2016). For example, the frequency with which certain emotions (e.g., fear) are experienced correlates with the endorsement of a certain value (e.g., security) (Nelissen et al., 2007). De Leersnyder, Koval, Kuppens, and Mesquita (2017) showed that the importance of specific values predicts specific emotions: High relevance of self-focused values increases socially disengaging emotions (e.g., pride, anger), whereas high relevance of other-focused values increases socially engaging emotions (e.g., closeness, shame). Depending on which values are important to a person values also guide which corresponding emotion a person desires to feel (Tamir et al., 2016). In a cross-cultural study, it was found that certain values (e.g., self-transcendence values such as benevolence) predicted emotions that are consistent with these values (e.g., empathy and compassion; Tamir et al., 2016). Taken together, there is compelling evidence that values guide emotional experiences.

Previous research underlined the importance of values for people's cognitions, emotions, and behavior. Thus, values are part of what defines what is self-relevant to a person. I therefore chose values as an adequate operationalization of self-relevance. Moreover, values are determined by internal and external factors. I argue that this distinction needs to be considered when studying the effects of values on psychological processes.

Distinguishing Internal and External Self-Relevance

It is important to distinguish between what is valued by a person and what is socially valued to predict cognition, emotion and behavior (Leary, Raimi, Jongman-Sereno, & Diebels, 2015; Parkinson & Manstead, 2015; Vaclair et al., 2015). On the one hand, human behavior is driven by motives to seek certain internal cognitive and affective states, i.e. intrapsychic

motives. On the other hand, human behavior is driven by motives to obtain social goals, such as certain resources, reactions, or outcomes from other people, i.e. interpersonal motives (cf. Leary et al., 2015). Depending on which goal a person desires to achieve, different psychological processes are triggered. After reviewing literature on that topic, Leary et al. (2015) conclude that differentiating between these two motives that drive human behavior is important to adequately describe the psychological foundations of cognition, emotion, and behavior. Even if not entirely overlapping, my working definition of internal self-relevance, i.e., what is important to people themselves, and external self-relevance, i.e., what is important to people's social groups, is close to the definition of intrapsychic and interpersonal motives (Leary et al. 2015). However, Leary et al. (2015) discuss their theory from the perspective of motivation research. I discuss this differentiation from the perspective of emotion research. Thus, I chose different terms for ease of understanding and to not confuse the different theoretical perspectives. Still, the common factor is that internal and external influences on psychological processes should be disentangled.

Other theories on motivation also propose the differentiation between internal and external factors. Self-determination theory distinguishes between autonomous motivation, i.e., the motivation that stems from the intrinsic enjoyment or personal meaning obtained from goal pursuit, and controlled motivation, i.e., the motivation that stems from perceived pressure to think, feel, or behave in a certain way (Deci & Ryan, 2000; Sheldon, Ryan, Deci, & Kasser, 2004). Thus, the differentiation between internal and external influences on psychological processes is common in motivation research.

For emotions, this distinction translates into distinguishing between internal and external self-relevance. A distinction that lacks empirical investigation. However, social factors in appraisal processes, such as the appraisal of self-relevance, would lead to a better understanding of the social nature of emotions (Manstead & Fischer, 2001). Scherer (2013)

argues that the “motivational classes” that drive the appraisal of relevance (such as tastes, needs, goals, or values) are not clearly defined. It is not clear whether self-relevance means that something is important to persons themselves or whether it is influenced by a social goal (i.e., striving for status [cf. Scherer, 2013, p. 151]). External self-relevance is even proposed to have an influence on self-conscious emotions, i.e. emotions which should be primarily triggered by personal concerns about the self (Baldwin & Baccus, 2004). An idea that has been tested in research on pride (Osch, Zeelenberg, & Breugelmans, 2018). Pride as a self-conscious as well as a social emotion could be prone to external as well as internal concerns. Yet, self-inflation was the most important factor in experiences of pride (Osch et al., 2018). Thus, internal goals seemed to drive experiences of pride. This research shows that distinguishing different sources of self-relevance in the elicitation of emotions leads to a more detailed understanding of emotions.

This more detailed understanding of self-relevance also applies to values. Values are prototypes of what is self-relevant to a person. Arguably, self-relevance is influenced by internal and external factors. Accordingly, values should be influenced by internal and external factors. Let's illustrate this with an example: A person strives for the value of *universalism* (defined as the “understanding, appreciation, tolerance and protection for the welfare of all people and for nature” [Schwartz, 1994, p. 22]). This can be an intrinsic goal of the person. However, this goal can also stem from the person's social group that values *universalism*. The distinction becomes clearer when internal and external values differ. For example, the person who values *universalism* then becomes part of a social group that values *power* more highly. The person then still has the internal value of *universalism*, but is also exposed to the external value of *power*. Therefore, seeing someone excel in the *universalism* domain and in the *power* domain could both elicit emotional reactions but the nature of these emotional reactions might be different.

Thus, there should be internal and external influences on values. Indeed, values are organized in a hierarchical system within a person, but they are also shared by members of a social group and culture (Barni, Vieno, Rosnati, Roccato, & Scabini, 2014; Boer & Boehnke, 2015; Thompson, 1952). Values (e.g., conservatism) are transmitted by a person's family (e.g., the degree to which mothers endorse conservatism). This relationship seems to be especially strong when family values are in line with values transported by a person's social context (e.g., teachers and classmates; Barni, Vieno, et al., 2014). Furthermore, value profiles are similar in cultures, within families and among friends (Barni, Knafo, Ben-Arieh, & Haj-Yahia, 2014; Solomon & Knafo-Noam, 2007). Values are therefore partially defined by a person's social group.

Despite the social influence on values, values are also relatively stable within a person. As a person develops and changes social contexts, personal values remain relatively stable from an early age on (Collins et al., 2017). How important specific values are to a person was found to stay stable across social contexts, such as family, school, or country, from mid-adolescence on (Boer & Boehnke, 2015; Daniel et al., 2012). Further data showed that even from the age of five, children make coherent choices of their values when testing with an instrument adequate to their age (Collins et al., 2017). So, on the one hand, values are shaped by social and cultural influences. On the other hand, individuals form their own internal value system which remains relatively stable across varying contexts. Thus, values reflect what individuals deem important, but also what their social group deems important.

A similar distinction between internal and external values has also been proposed in the theory of basic values (e.g., Schwartz, 2006b). It proposes that value attainment serves different purposes. Personal values (e.g., hedonism or stimulation) "regulate how one expresses personal interests" (Schwartz, 2012, p. 13). Social values (e.g., benevolence or conformity) regulate how one "relates socially to others and affect[s] their interests". Additionally, in a refined theory of

basic values (Schwartz et al., 2012), some values were redefined in a way that can be perceived as reflecting internal and external self-relevance. For example, the value of power is differentiated in “power over domains” and “power over resources” which resembles concepts of personal and social power (Lammers, Stoker, & Stapel, 2009). The value of security was redefined into personal and social security (Schwartz et al., 2012), also reflecting internal and external influences on the same value. Thus, research on values takes internal and external influences into account.

The distinction between internal and external self-relevance is striking when self-relevant values diverge or contradict. Congruence between people’s values and those of their social group promotes greater life satisfaction and subjective well-being (Lu, 2006; Sagiv & Schwartz, 2000). This association even extends to value congruence between people who do not directly interact, but share social-demographic characteristics (Khaptsova & Schwartz, 2016). Value congruence also relates to positive effects at the workplace, such as higher commitment to the organization or job satisfaction (for a meta-analysis, see Verquer, Beehr, & Wagner, 2003). Friends and families share similar values (Barni, Knafo, et al., 2014; Solomon & Knafo-Noam, 2007) and having similar value profiles increases liking between strangers (Boer et al., 2011). In contrast, value discrepancies are associated with adverse effects. Perceived discrepancies between personal (i.e., internal) and societal (i.e., external) values predicts feelings of cultural estrangement, which is a subjective sense of alienation or separation from others (Bernard, Gebauer, & Maio, 2006). Value discrepancies are also related to perceived stress (Bouckennooghe, Buelens, Fontaine, & Vanderheyden, 2005) and decreased well-being (Sagiv & Schwartz, 2000). This research implies that the distinction between what is relevant to a person and what is relevant to a person’s social group influences a variety of psychological phenomena.

To adequately describe the psychological foundations of cognition, emotion, and behavior, internal and external influences on values should be disentangled. I propose that this approach is especially important when studying benign and malicious envy. As outlined above, self-relevance is an important factor in the elicitation of envy. However, self-relevance is not clearly defined and can refer to internal as well as external sources of self-relevance. Furthermore, envy has been conceptualized as a “status-related emotion”. As status is primarily awarded by others, concerns about external self-relevance should be crucial for the assessment of status. Envy, as a status-related emotion, should therefore be prone to external influences as well.

Envy as a Status-Related Emotion

Prominent theories on the elicitation of envy posit that envy arises when comparing one’s own status to another person’s status (Crusius & Lange, 2017; Lange, Blatz, & Crusius, 2018; Smith, 2004). Status is a fundamental human desire (Anderson, Hildreth, & Howland, 2015) that is awarded by a person’s social group to those who possess useful attributes in a given socio-cultural environment (Henrich & Gil-White, 2001). “[S]tatus is defined as the respect, admiration, and voluntary deference an individual is afforded by others, based on that individual’s perceived instrumental social value” (Anderson et al., 2015, p. 2). Status is therefore defined by what is valued by others. Status is desirable for many reasons: Having status increases subjective well-being, self-esteem, and physical and psychological health (for a review see Anderson et al., 2015). A high-status position is therefore a desirable attribute in a social environment. To assess one’s status position relative to other’s status position, it is necessary to perform a social comparison between one’s status to another person’s status. Especially when status is linked to access to scarce resources, a lower status may cause a painful feeling of inferiority – namely envy (e.g., Smith, 2000). In this case, envy has the

function of informing a person about deficiencies in status-relevant domains. Realizing these deficiencies can then motivate behavior to change one's inferior status position, either by moving up or by levelling down (Hill & Buss, 2008; Hill, DelPriore, & Vaughan, 2011; Steckler & Tracy, 2014). This motivation is mirrored in the experiences of benign and malicious envy. Furthermore, envy is connected to status regulation strategies and other status-related emotions. Envy is intertwined with expressions of pride on a social level. Similar to envy, pride occurs in two distinct forms: authentic pride, about effortful achievements, and hubristic pride, when success is attribute to stable features, such as talent (Tracy & Robins, 2007). Benign envy is increased when perceiving a superior other expressing authentic pride. Malicious envy is increased when perceiving a superior other expressing hubristic pride (Lange & Crusius, 2015b). This dynamic interplay between pride and envy was mediated by liking and strategies for status attainment. Whereas authentic pride was linked to benign envy via prestige, hubristic pride was linked to malicious envy via dominance (Lange & Crusius, 2015b). This research illustrates the social-functional nature of envy as an emotion that facilitates status regulation. The interplay between envy and pride and their association to status-regulation strategies, i.e., prestige and dominance, (Cheng, Tracy, & Henrich, 2010; Lange & Crusius, 2015b), underlines why envy can be conceptualized as a status-related emotion.

The psychodynamic tradition also posits that envy is especially influenced by social evaluation. Lacanian theory characterizes envy by a triadic relationship. The triad supposedly consists of the person who envies, the envied person, and the imagined evaluation by others. Therefore, envy should be especially strong when the comparison dimension is important to others (Vidaillet, 2007). Taken together, empirical data and theoretical reasoning suggest envy's strong connection to the regulation and attainment of status.

According to this perspective, status seems to be a driving force in eliciting envy. Where one stands in a social status hierarchy can only be defined by members of a social group. To

obtain status, people need to take into account what is valued by others. Therefore, what people are most envious about should be what is valued by others because it signals what is required to gain a superior status position (for a similar argument, see Crusius & Lange, 2017; Lange, Blatz, et al., 2018). This argumentation would imply that people envy what is important to others and not so much what is important to themselves: What we really desire when we feel envy is more or less independent of the object of envy itself, but what we actually desire is status awarded by our social group. Status, as a facet of external self-relevance, should thus drive envious reactions.

Based on this reasoning, external self-relevance should influence benign and malicious envy. In contrast, other data supports the importance of internal self-relevance appraisals on the elicitation of emotions in general, and envy in particular (Lin et al., 2018; Salovey & Rodin, 1984; Smith, 2004; Van de Ven et al., 2009). Derived from previous literature, there are reasons to assume that internal and external self-relevance both play a role in eliciting envy. I propose that the distinction between internal and external self-relevance is important for a comprehensive understanding of envy. I further propose that to study the effects of internal and external self-relevance on envy, it is important to consider the distinction between benign and malicious envy. Based on the reasoning outlined below, internal and external self-relevance should have different effects on benign and malicious envy.

How Internal and External Self-Relevance Affect Benign Envy

Imagine you are a volunteer for a charity organization that helps children with difficulties in school. You deeply care for that project because the value of universalism is important to you. You give private lessons to a child with dyscalculia. The child enjoys the lessons, but her math abilities barely improve. Another volunteer at the same organization gives private lessons to a child with dyscalculia, too. She tries a new intervention. In the next math

exam her student has the best grade she ever achieved in a math exam. How do you react? I predict that the success of the other volunteer will cause a painful feeling of inferiority, namely envy. This project is very important to you, next time you will implement the new intervention, too. You hope that this helps your student to succeed in the next math exam as well.

As illustrated in this example, I predict that that comparing to a superior other who excels in a domain that is internally self-relevant will elicit benign envy. The more internally important a value is the more benign envy will arise. As benign envy is accompanied by motivations to improve and move up, these hypotheses are in line with previous research that showed that reminding people about what is important in their lives leads to higher achievement motivation (Cohen & Sherman, 2014) and better test performance under stereotype threat (Kinias & Sim, 2016). Furthermore, intrinsic goals, i.e., focusing on inherent interests increases achievement motivation (e.g., Vansteenkiste, Lens, & Deci, 2006). Achievement and approach motivation have been linked to benign envy (e.g., Lange & Crusius, 2015b). I therefore predict that comparing to a superior other who excels in a domain that is internally self-relevant will increase benign envy.

Additionally, internally self-relevant goals are associated with perceived competence about being able to pursue these goals (Ryan & Deci, 2000; Vallerand & Reid, 1987). Intrinsic goals also increase feelings of competence, interest, excitement, and confidence which is associated with better performance (for a review see Ryan & Deci, 2000). Internal self-relevance should, thus, be related to a stronger sense of control. Perceiving a situation as controllable is associated with benign envy (Lange, Crusius, & Hagemeyer, 2016; Van de Ven et al., 2012). Thus, values that are internally self-relevant should result in a stronger sense of control and should therefore increase benign envy.

Furthermore, an advantage in a domain of internal self-relevance might seem more deserved because people try to achieve that value themselves. This underlines that the

achievement is difficult to obtain and therefore increases appraisals of deservingness. Deservingness in turn predicts benign envy (Van de Ven et al., 2012). Arguably, internal self-relevance also makes the comparison domain more salient. When a person cares about an object, she directs her attention towards that object (e.g., Corbetta & Shulman, 2002). Benign envy has also been shown to increase the focus of attention towards the object of envy and the envied person (Crusius & Lange, 2014). Additionally, counterfactual thoughts about the envying person herself induce more benign envy than counterfactual thoughts about the superior other person (Lange & Crusius, in prep.). Because both, internal self-relevance and benign envy, are accompanied by a stronger focus on the comparison domain and the superior other, internal self-relevance should be associated with more benign envy.

In sum, I predict that benign envy will be stronger when a comparison domain is of internal self-relevance. In contrast, I predict external self-relevance to decrease benign envy.

How Internal and External Self-Relevance Affect Malicious Envy

Imagine that you are at your mother's birthday party. Your cousin is also there. She talks about her family, her three kids, and the nice house they recently built close to her parents' house. Your family congratulates her on her well-behaving children, her hardworking husband, and her nice house. You yourself chose a different lifestyle. The value of tradition is not important to you, you care more about the value of self-direction (i.e. the value of autonomy and independence). You always wanted to be independent. Settling down and having a modest, traditional life is not what you want for yourself. However, seeing your cousin being appreciated for her lifestyle, although you wouldn't want it for yourself, causes a painful feeling of inferiority - envy. You secretly wish that your cousin would lose her achievements. At the next possible moment, you will complain about her to someone else.

I predict that values of low intrinsic self-relevance increase feelings of malicious envy. Data suggests that people with high levels of detachment show more harmful intentions towards the envied person than motivation to improve their own situation (Vrabel, Zeigler-Hill, McCabe, & Baker, 2018). Detachment is defined by low motivation and low ability to be aroused by achievement opportunities. A person with a high level of detachment seems to be disconnected from their personal values and goals (Vrabel et al., 2018). Thus, when internal self-relevance is low, people should be more likely to react with malicious envy towards a superior other.

Further research on the effects of internal and external motivation supports this prediction. Low internal self-relevance is associated with fewer implementation intentions and less goal progress (Koestner, Otis, Powers, Pelletier, & Gagnon, 2008). Low intrinsic motivation is also associated with less perceived self-efficacy, i.e., the belief of being capable to succeed (Walker, Greene, & Mansell, 2006). Low internal self-relevance therefore undermines achievement motivation and sense of control and should, thus, be associated with stronger feelings of malicious envy.

Additionally, success in a domain that is not important to a person might seem less deserved. Low deservingness is a predictor of malicious envy (Van de Ven et al., 2012). Therefore, low internal self-relevance should be associated with more malicious envy. When a person does not care about a domain, this domain is not likely to attract much attention. In a social interaction, the person will then focus more on the other person than on the comparison domain. In malicious envy, the focus is stronger on the superior other than on the comparison object (Crusius & Lange, 2014). Additionally, counterfactual thoughts about the superior other induce more malicious envy (Lange & Crusius, in prep.) Arguably, low internal self-relevance should increase malicious envy.

A goal that is externally enforced by others undermines intrinsic motivation (e.g., Deci, Koestner, & Ryan, 1999) supposedly by reducing perceived competence (Williams & Deci, 1996). External goals are also related to increased avoidance motivation (Moneta & Spada, 2009). Additionally, external expectations were associated with more anxiety and maladaptive coping with failures in a school context (Deci & Ryan, 2000; Ryan & Connell, 1989). Motivation driven by external expectations was also associated with antisocial behavior towards teammates in a sports context (Hodge & Lonsdale, 2011). Thus, external self-relevance is associated with increased avoidance motivation and less perceived competence and control, and more harmful tendencies. More external self-relevance of an upward comparison should therefore lead to more malicious envy.

In addition to the main effect of external self-relevance on malicious envy, I propose that this effect should be strongest when internal self-relevance is low. Findings showed adverse effects of value incongruence (e.g., Bernard et al., 2006; Sagiv & Schwartz, 2000). Also, as argued above, when internal self-relevance is low, perceived control and competence are low, and achievement motivation is lacking. Under these circumstances, external self-relevance should be the driving factor for malicious envy amplifying the effect of external self-relevance on malicious envy especially. Thus, I propose that the effect of external self-relevance on malicious envy should be especially strong when internal self-relevance is low.

In sum, I propose a negative association between internal self-relevance and malicious envy, a positive association between external self-relevance and malicious envy, and an interaction effect predicting that the effect of external self-relevance is stronger when internal self-relevance is low.

The Current Research

Self-relevance is a driving factor for the elicitation of emotions. However, a detailed understanding of the sources of self-relevance is missing. I propose that there are at least two sources of self-relevance: what is relevant to the person, i.e., internal self-relevance, and what is relevant to others, i.e., external self-relevance. This distinction should be taken into account for a comprehensive understanding of emotions. It is of particular importance for envy. On the one hand, internal self-relevance should increase feelings of envy. On the other hand, envy has been conceptualized as a status-related emotion and should thus be influenced by external self-relevance. I propose that internal and external self-relevance should have differential effects on benign and malicious envy. Benign envy should be stronger when internal self-relevance is high and when external self-relevance is low. Malicious envy should be stronger when internal self-relevance is low and when external self-relevance is high, with a stronger effect of external self-relevance when internal self-relevance is low.

Self-relevance were studied by investigating the internal and external self-relevance of values. Values are prototypes of what is relevant to a person. At the same time, values are influenced by internal and external factors. Therefore, I consider them an appropriate operationalization of internal and external self-relevance.

Taken together, the current research will provide a more detailed understanding of self-relevance and its differential effects on benign and malicious envy.

Empirical Evidence

Overview

The current research was designed to investigate the role of internal and external self-relevance in the elicitation of benign and malicious envy. In order to understand the role of internal and external self-relevance on benign and malicious envy, I conducted seven studies. The first three studies assessed the association between internal and external self-relevance and benign and malicious envy. In Studies 4 – 7, I manipulated internal and external self-relevance and assessed how they affect benign and malicious envy.

The first part investigated how internal and external self-relevance, measured by internal and external importance of values, predict benign and malicious envy. In Study 1 and Study 2, I measured internal and external value importance at Time Point 1 and benign and malicious envy reactions towards an upward comparison standard one week later. Study 3 extended findings of the first studies in a well-powered online study. Data of Studies 1 - 3 were integrated in a first meta-analysis.

After having obtained first evidence for an association between internal and external self-relevance and envy, I aimed to replicate their relationship in a between-subjects design. To this end, I manipulated internal and external self-relevance in a value affirmation task. Participants had to write about the importance or non-importance of a value for them and their social group. Participants were then confronted with comparison standards described in different vignettes and their envious reaction towards these comparison standards was measured. These data were integrated in a second meta-analysis.

Preregistrations, materials, data, and analysis scripts can be found under the following link: <https://osf.io/c6e9p/>. Preregistrations and materials can also be found in Appendix A, C,

and D. I report all data exclusions (if any), all manipulations, and all measures of this line of research.

Study 1

Study 1 investigates whether internal and external self-relevance of values predict benign and malicious envy. I assessed internal self-relevance using an established measure for personal values (i.e., Portrait Values Questionnaire [PVQ; Schwartz, 2003]). I assessed external self-relevance with an adapted version of this questionnaire. Schwartz (1992) suggested the possibility of measuring institutional and cultural values by modifying the scale anchors of the value questionnaire. Instead of asking how important a value is to a person, participants could be asked: “How important is value X as a guiding principle in people’s lives, in the eyes of (culture group Y)?” (Schwartz, 1992, p. 51). This procedure has been successfully used in previous research (Bernard et al., 2006). I used a similar version adapted to the PVQ. Furthermore, I wrote comparison vignettes based on the PVQ to create an adequate comparison standard for every value. The vignettes were supposed to elicit an upward comparison and an envious reaction. To explore the effectiveness of that procedure, I ran an exploratory study. The predicted relationships between internal and external self-relevance and benign and malicious envy based on my research question and hypotheses were further investigated in the following studies.

Methods

Sample. I collected data from 70 participants at Time Point 1 via Amazon MTurk. I excluded one participant who indicated after an attention check that I should not use their data (Meade & Craig, 2012). After one week, I contacted the same participants again. The final

sample at Time Point 2 consisted of 58 participants ($M_{\text{age}} = 34.65$, $SD = 10.57$, 25 female, 33 male). All analyses were calculated with the final sample of $N = 58$.

Materials. To measure internal self-relevance, participants completed the Portrait Values Questionnaire (PVQ; Schwartz, 2003). The PVQ consists of 21 portraits of people endorsing different values (e.g., item for benevolence: *It's very important to her to help the people around her. She wants to care for their well-being.*). Participants rated the extent to which this value is important to them by indicating their similarity to the portrayed person (*How much is this person like you?*) on a 6-point scale (1 *very much like me* – 6 *not like me at all*). The phrasing of the items was matched to participant gender. Prior research indicates that the PVQ has adequate psychometric properties (Schwartz, 2003). A complete list of items can be found in Table 11. Next, I adapted the PVQ to measure external self-relevance. I confronted participants with the same portraits as described above. This time, I asked them to rate the extent to which the portrayed person is like people in their social environment (*How much is this person like the average member of your society?*) on a 6-point scale (1 *very much like him/her* – 6 *not like him/her at all*).

At time point two, all participants read ten vignettes describing a person who perfectly embodied a certain value. Vignettes were written based on the value descriptions of the PVQ (example for self-direction vignette: *He/She thinks up new ideas and is very creative. He/She does things in his/her own original way. He/She makes his/her own decision about what he/she does. He/She is free and not dependent on others*, see Table 14 for a list of all vignettes). After every vignette, I measured participants' emotional reaction towards the described person. I measured benign envy (*The person inspires me to get this quality myself.*), malicious envy (*I want this person not to have this quality anymore.*), pain (*Imagining this person feels painful.*), general envy (*I feel envy towards this person.*) and admiration (*I feel admiration towards this*

person.) on a 7-point scale (1 *not at all* – 6 *very much*). I chose a prototypical item for each emotion based on established measures of envy (Lange, Weidman, et al., 2018) and admiration (Schindler, Paech, & Löwenbrück, 2014). I included admiration for exploratory reasons. To explore the quality of the vignettes, I also measured how vividly participants were able to imagine the described person on a 7-point scale (*How vividly could you imagine this person?* 1 *not at all* – 6 *very much*).¹

Procedure. To avoid memory effects and participants' tendency to answer consistently to similar items, I measured internal and external self-relevance and emotional reactions to upward comparisons separately from each other. At Time Point 1, participants completed both, internal and external self-relevance of value scales. After one week, I invited participants again to take part in a study. In this study, I confronted each participant with every vignette describing the ten basic values. Then, participants rated their emotional reaction towards these vignettes in a within-subjects design.

Data analysis strategy. Because every participant rated their emotional reaction to every vignette representing a certain value, values were crossed with participants. To account for the nested structure of the data, I analyzed data with multilevel regression models using packages *lme4* (Bates, Mächler, Bolker, & Walker, 2014) and *lmerTest* (Kuznetsova, Brockhoff, & Christensen, 2017) in *R* (R Core Team, 2017). I calculated a model for each dependent variable with fixed effects for internal and external self-relevance and their interaction (predictors were group mean-centered for participant and value) and random intercepts for participant and value. Scales for internal and external self-relevance ranged from

¹ Analyses did not reveal any results that could be of interest for this investigation and are therefore not reported.

1 (*very much like me*) to 6 (*not at all like me*) with increasing numbers signalling less value endorsement. I reverse coded these scales to facilitate interpretation and comparability to the results of the following studies.

Results

Correlation of internal and external self-relevance. There was an average correlation between internal and external measures of value self-relevance of $r_{\text{mean}} = .213$ ($SD = .149$; see Table 1, for correlations per value). Thus, there was a small to medium correlation between measures of internal and external self-relevance. This implies that internal and external self-relevance correlated, but could still be distinguished as the correlation was not perfect.

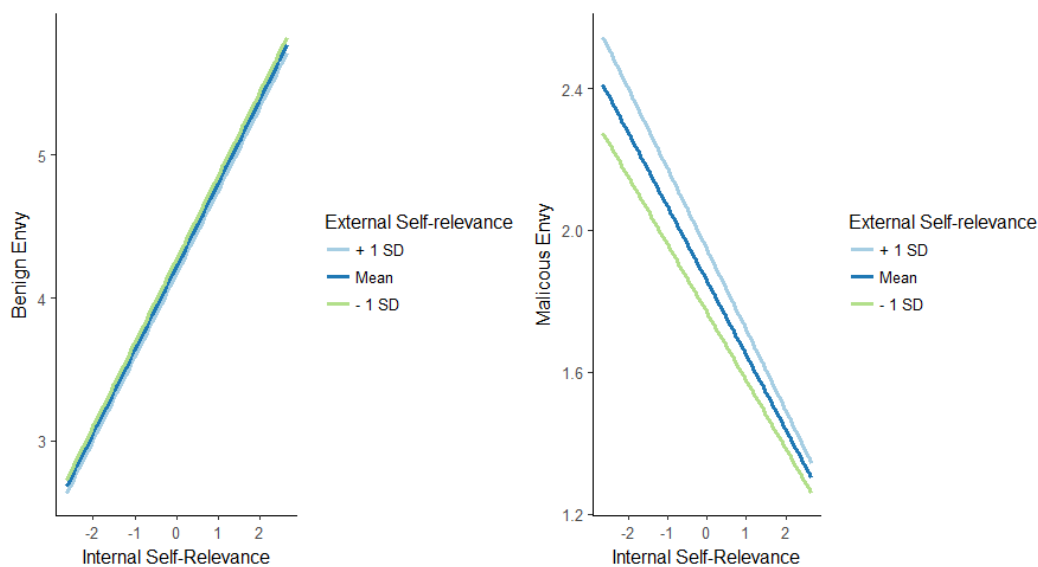


Figure 1. Fixed effects of internal and external self-relevance on benign and malicious envy in Study 1. Left: Benign envy predicted by internal and external self-relevance and their interaction. Right: Malicious envy predicted by internal and external self-relevance and their interaction. Scales of internal and external self-relevance were group mean-centered. Y-Axes were zoomed in to illustrate the differences between conditions.

Model comparison. For all dependent variables, I first compared null-models to the full multilevel regression models. A null-model is an empty multilevel regression model that contains only the random effects. A comparison between the null-model and a multilevel

regression model that contains all predictors indicates whether the predictors explain a significant part of the variance of the dependent variable. Models including internal and external self-relevance, and their interaction as predictors provided a better fit to the data than the null-model (pain: drop-in deviance $\chi^2 = 11.51, p < .001$; general envy: $\chi^2 = 30.29, p < .001$; admiration: drop-in deviance $\chi^2 = 73.90, p < .001$; benign envy: drop-in deviance $\chi^2 = 79.16, p < .001$; malicious envy: drop-in deviance $\chi^2 = 25.71, p < .001$). Thus, internal and external self-relevance explained variance in dependent measures and are meaningful predictors for all dependent variables.

Multilevel regression results. My hypotheses expected that internal self-relevance would be associated with more benign envy and less malicious envy. Furthermore, I hypothesized that external self-relevance would be associated with less benign envy and more malicious envy. I also predicted an interaction of internal and external self-relevance for malicious envy. Separate multilevel regression analyses were conducted to predict each emotion by internal and external self-relevance and their interaction. More internal self-relevance was related to increased feelings of benign envy, $B = 0.58, SE B = 0.06, p < .001^2$ (see Table 2 for statistics of all regression analyses in Study 1, see Figure 1 for regression results for benign and malicious envy). More internal self-relevance was related to lower feelings of malicious envy, $B = -0.21, SE B = 0.04, p < .001$. External self-relevance was related to more malicious envy, $B = 0.12, SE B = 0.06, p = .034$. External self-relevance did not significantly predict benign envy, $B = -0.07, SE B = 0.08, p = .389$.

Additionally, internal self-relevance was a positive predictor of general envy, $B = 0.31, SE B = 0.06, p < .001$ and admiration, $B = 0.50, SE B = 0.06, p < .001$, and a negative predictor

² Please note that calculations of effect size in multilevel modelling is complex and their interpretation difficult (Nezlek, 2008, p. 854). Some Author even recommend not to use effects sizes for fixed effects in multilevel models at all (Kreft & Leeuw, 1998, p. 119). I do not report effect sizes because of their limited interpretability.

of pain, $B = -0.15$, $SE B = 0.05$, $p = .001$. External self-relevance did not significantly predict feelings of envy, $B = 0.04$, $SE B = 0.06$, $p = .623$, admiration, $B = -0.08$, $SE B = 0.07$, $p = .300$, or pain, $B = 0.03$, $SE B = 0.016$, $p = .623$. There were no significant interactions between internal and external self-relevance on feelings of envy, $B = 0.14$, $SE B = 0.08$, $p = .087$, benign envy, $B = -0.002$, $SE B = 0.09$, $p = .981$, admiration, $B = 0.06$, $SE B = 0.08$, $p = .467$, malicious envy $B = -0.02$, $SE B = 0.06$, $p = .704$, or pain, $B = 0.05$, $SE B = 0.07$, $p = .394$.

Discussion

Study 1 showed differential associations between internal self-relevance and emotional reactions to upward comparisons. First, measures for internal and external self-relevance of values showed a small to medium correlation indicating that participants were able to disentangle both measures. Second, whereas more internal self-relevance was related to stronger feelings of benign envy, more internal self-relevance was related to lower feelings of malicious envy. That supports my predictions on the effects of internal self-relevance. Data showed that seeing someone excel in a domain that is internally self-relevant is linked to benign reactions towards that person, seeing someone excel in a domain that is not internally self-relevant is linked to malicious reactions towards that person. Additionally, external self-relevance predicted increased feelings of malicious envy. Seeing someone excel in a domain that is important to others was related to malicious reactions towards that person. The predicted interaction between internal and external self-relevance on malicious envy and external self-relevance as a predictor of benign envy were not found in this study. One reason might be that this initial study relied on a small sample of participants. I will increase power in the following study to allow a better test for my predictions. In addition, different comparison processes may have elicited different emotional processes besides the one I intended to measure. The PVQ measures forced participants to compare to the person described in the items. In the vignettes,

participants had to compare themselves to another person. . I aimed to overcome this limitation by using a different measure for internal and external self-relevance.

Interestingly, internal self-relevance was related to increased levels of general envy and admiration and decreased levels of pain. However, these tests were exploratory and should be interpreted cautiously. Further studies will reveal whether these associations will be replicated.

Study 2

Study 2 set out to replicate and extend the effects found in Study 1 with a larger sample and by using a different measure for internal and external value importance and emotions.

Methods

Sample. I collected data from 201 participants at Time Point 1 via Amazon MTurk. No participant had to be excluded based on my attention check (Meade & Craig, 2012). After one week, I contacted the same participants again. The final sample at Time Point 2 consisted of 178 participants ($M_{\text{age}} = 36.01$, $SD = 11.98$, 86 female, 90 male, 2 other). All analyses were calculated with the final sample of $N = 178$.

Materials. To measure internal self-relevance, participants first completed the Schwartz Value Survey (SVS; Schwartz, 1992). The SVS consists of 56 single-worded items measuring the different basic values (e.g., *pleasure, freedom, creativity, wealth, authority, curious, daring*; see Table 12 for a complete list of items). Participants rated the extent to which these values are important to them as a guiding principle in their life (*Rate the importance of each value item as a guiding principle in YOUR LIFE*) on a 9-point scale (1 – *opposed to my values*, 2 – *not important*, ..., 8 – *very important*, 9 – *of supreme importance*). Next, I adapted the SVS to measure external self-relevance. I presented the same items as in the SVS described

above to the participants. This time, I asked them to rate the extent to which each value item was a guiding principle in their social group (*Rate the importance of each value item as a guiding principle in YOUR SOCIETY*).

At Time Point 2, every participant read the ten vignettes developed in Study 1 (see Table 14). Again, every vignette described a person who perfectly embodies a certain value. Vignettes were written based on the value descriptions of the PVQ. After each vignette, I measured participants' emotional reaction towards the person described in every vignette. To measure emotions, I built composite items combining several items from established measures for envy (Lange, Weidman, et al., 2018) and admiration (Schindler et al., 2014) on a scale from 1 (*not at all*) to 7 (*very much*). Pain in envy was measured by *I feel tormented, inadequate, and depressed.*, benign envy was measured by *I feel deep longing for this person's quality and want to work harder to also obtain exactly the same quality. I feel motivated by this person and devise a plan to obtain this quality as well*, admiration was measured by *His/her quality impresses and elates me. I admire him/her for his/her quality. I am continually impressed by what he/she does and I feel that his/her quality is admirable*, and malicious envy was measured by *I feel hatred and hostile towards this person and secretly wish that he/she would lose this quality. I would like to complain to someone else about this person*. To explore the quality of the vignettes, I also measured how vividly participants were able to imagine the described person on a 7-point scale (*How vividly could you imagine this person? 1 not at all – 6 very much*).³

Procedure. As in Study 1, I measured internal and external self-relevance and emotional reactions to upward comparisons separately from each other. At Time Point 1,

³ Analyses did not reveal any results that could be of interest for this investigation and are therefore not reported.

participants completed internal and external value scales. After one week, I invited participants again to take part in another study. In this study, I measured participants' emotional reaction towards the person described in each vignette portraying one of the ten basic values.

Data analysis strategy. As in Study 1, values were crossed with participants. To account for the nested structure of the data, I analyzed data with multilevel regression models using packages *lme4* (Bates et al., 2014) and *lmerTest* (Kuznetsova et al., 2017) in *R* (R Core Team, 2017). I calculated a model for each dependent variable with fixed effects for internal and external self-relevance and their interaction (predictors were group mean-centered for participant and value) and random intercepts for participant and value.

Results

Correlation of internal and external self-relevance. There was an average correlation between internal and external measures of value self-relevance, $r_{\text{mean}} = .385$ ($SD = .110$; see Table 1 for correlations per value), indicating a medium-size correlation between measures of internal and external self-relevance. This implies that internal and external self-relevance were related but could still be distinguished.

Model comparison. Models including internal and external self-relevance and their interaction as predictors provided a better fit to the data than the null-model without any predictors for admiration, benign envy and malicious envy (benign envy: drop-in deviance $\chi^2 = 206.01$, $p < .001$; malicious envy: drop-in deviance $\chi^2 = 33.73$, $p < .001$; admiration: drop-in deviance $\chi^2 = 211.08$, $p < .001$). I conclude that internal and external self-relevance are significant predictors for admiration, benign envy, and malicious envy. For pain, the predictors did not increase model fit compared to the null-model, drop-in deviance $\chi^2 = 1.93$, $p = .587$. To

treat all dependent variables consistently, I report multilevel regressions for pain although the model including the predictors did not provide a better fit to the data than the null-model.

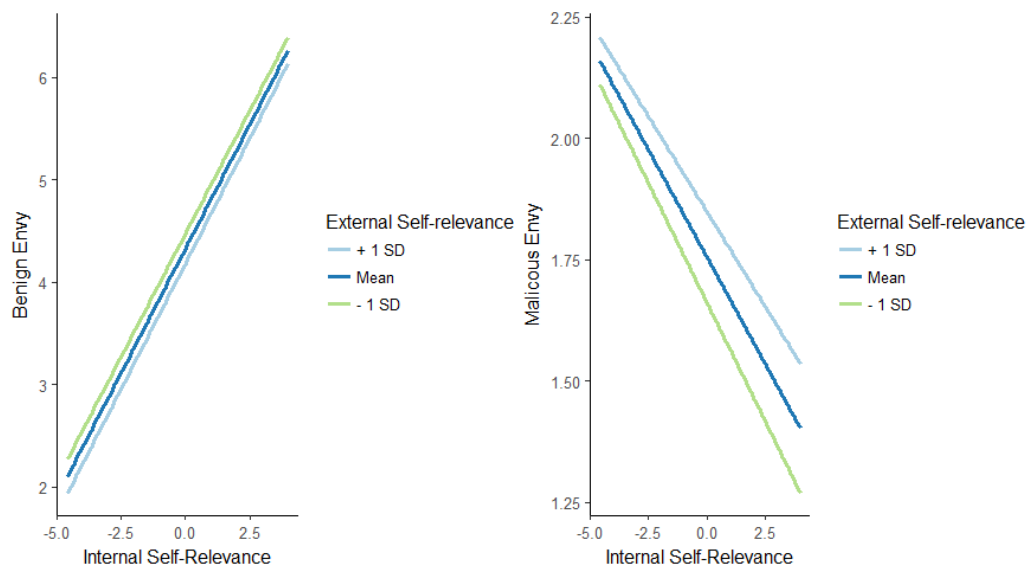


Figure 2. Fixed effects of internal and external self-relevance on benign and malicious envy, Study 2. Left: Benign envy predicted by internal and external self-relevance and their interaction. Right: Malicious envy predicted by internal and external self-relevance and their interaction. Scales of internal and external self-relevance were group mean-centered. Y-Axes were zoomed in to illustrate the differences between conditions.

Multilevel regression results. I predicted that internal self-relevance would be associated with more benign envy and less malicious envy. Furthermore, I predicted that external self-relevance would be associated with more malicious envy and less benign envy. Additionally, I predicted an interaction between internal and external self-relevance on malicious envy. Indeed, internal self-relevance positively predicted feelings of benign envy, $B = 0.48$, $SE B = 0.03$, $p < .001$ and negatively predicted feelings of malicious envy, $B = -0.09$, $SE B = 0.02$, $p < .001$ (see Table 3 and Figure 2 for statistics of regression analyses in Study 2). As predicted, external self-relevance negatively predicted feelings of benign envy, $B = -0.14$, $SE B = 0.03$, $p < .001$, and positively predicted malicious envy $B = 0.09$, $SE B = 0.02$, $p < .001$. There were no significant interactions between internal and external self-relevance on

feelings of benign envy, $B = 0.00$, $SE B = 0.03$, $p = .893$ and malicious envy, $B = 0.00$, $SE B = 0.02$, $p = .650$.

Neither internal self-relevance, $B = -0.01$, $SE B = 0.02$, $p = .527$, nor external self-relevance, $B = 0.02$, $SE B = 0.02$, $p = .254$, nor their interaction, $B = 0.01$, $SE B = 0.02$, $p = .591$, predicted feelings of pain. Internal self-relevance positively predicted admiration, $B = 0.44$, $SE B = 0.03$, $p < .001$. External self-relevance negatively predicted admiration, $B = -0.17$, $SE B = 0.03$, $p < .001$. There was no interaction between internal and external self-relevance on admiration, $B = -0.03$, $SE B = 0.03$, $p = .298$.

Discussion

Study 2 confirmed and extended the results of Study 1. Measures for internal and external self-relevance of values showed a medium correlation indicating that participants were able to disentangle both measures. Most importantly, as predicted, the more internally self-relevant a value was the more benign envy and the less malicious envy people experienced when confronted with a person who perfectly embodied the value. Additionally, I found the expected effects of external self-relevance: The more externally important a value was the stronger people reacted with malicious envy towards the comparison standard. In contrast, and also as expected, people reacted with less benign envy towards a person who perfectly endorsed a value of external self-relevance. Data did not show the expected interaction between internal and external self-relevance on malicious envy. Study 2 mirrors and extends the predicted effects of internal and external self-relevance shown in Study 1. I sought to further confirm the pattern, by preregistering my hypotheses and increasing power to provide an adequate test of my hypotheses.

There were no significant associations between internal and external self-relevance on pain. Data in Study 1 suggested that internal self-relevance was related to less pain. A finding

I could not confirm here. I will further explore the relation between internal and external self-relevance and pain.

Data revealed a positive association between internal self-relevance and admiration and a negative association between external self-relevance and admiration. These data resemble the relation between internal and external self-relevance and benign envy. However, benign envy was positively associated with pain, $B = 0.13$, $SE B = 0.00$, $p < .001$ ⁴. Admiration was not associated with pain, $B = -0.02$, $SE B = 0.04$, $p = .482$. Thus, benign envy is clearly a painful feeling of envy. Other research also showed that benign envy and admiration can be differentiated (Crusius, Blatz, & Lange, in prep.; Van de Ven et al., 2011). I measured admiration in Study 1 and 2 for exploratory reasons. The next studies will focus on how internal and external self-relevance predict benign and malicious envy.

Study 3

Study 3 aimed to replicate the findings of Studies 1 and 2 in a larger sample and with an established measure for benign and malicious envy and pain in envy (Lange, Weidman, et al., 2018). Procedure, hypotheses, and analysis plan were preregistered for this study (see Figure 10).

Methods

Sample. I collected data from 412 participants via Amazon MTurk. I excluded those who did not agree that I could use their data after an attention check ($n = 4$; Meade & Craig, 2012). The final sample consisted of 408 participants ($M_{age} = 38.58$, $SD = 11.50$, 226 female, 182 male). Different to Studies 1 and 2, I included all questionnaires at one time point.

⁴ I conducted multilevel regressions with random intercepts for participant and value, and pain as a predictor for benign envy and pain as a predictor for admiration.

Materials. Internal and external self-relevance of values were measured as in Study 2. To measure internal values, participants completed the SVS (Schwartz, 1992). To make items easier to understand, I added descriptions of every item (Schwartz, 2012). Participants answered on a scale from 0 (*not important*) to 7 (*of supreme importance*). Next, participants completed an adapted version of the SVS to measure external self-relevance (see Table 13 for a complete list of items).

After completing the two measures for internal and external self-relevance of values, participants read the ten vignettes developed in Study 1 (see Table 14). Again, every vignette described a person who perfectly embodies a certain value. After each vignette, I measured participants' emotional reaction towards the described person. I measured benign envy, malicious envy, and pain using the PaDE Scale (Lange, Weidman, et al., 2018). Participants answered on a scale from 1 (*not at all*) to 7 (*very much*). All items can be found in Table 17.

Data analysis strategy. I analyzed the data as in Studies 1 and 2. I calculated multilevel models with fixed effects for internal and external values and their interaction (group mean-centered scales for participant and value) and random intercepts for participants and values. I preregistered to run models that also included random slopes for internal and external self-relevance. However, these models did not converge. As preregistered, I reduced model constraints by removing random slopes for participants and values.

Results

Correlation of internal and external self-relevance. There was an average correlation between internal and external measures of value self-relevance of $r_{\text{mean}} = .527$ ($SD = .057$; see Table 1 for correlations per value) indicating a large correlation between measures of internal

and external self-relevance. This implies that internal and external self-relevance were difficult to distinguish in the present study. However, the correlation was not perfect indicating that the two concepts were at least partially distinguishable.

Model comparison. For all dependent variables, models including internal and external self-relevance as predictors provided a better fit to the data than the null-model without any predictors (benign envy: drop-in deviance $\chi^2 = 732.11$, $p < .001$; malicious envy: drop-in deviance $\chi^2 = 82.67$). Thus, internal and external self-relevance explained a significant part of the variance in dependent measures. For pain in envy, the model with predictors did not provide a better fit to the data than the null-model, drop-in deviance $\chi^2 = 1.43$, $p = .699$. For consistency in treating the dependent variables, I report multilevel regression results for all models.

Multilevel regression results. I predicted that internal self-relevance would be related to more benign and less malicious envy. Furthermore, I predicted that external self-relevance would be related to less benign and more malicious envy. I also predicted an interaction between internal and external self-relevance on malicious envy. As predicted, internal self-relevance was related to higher feelings of benign envy, $B = 0.59$, $SE B = 0.02$, $p < .001$ (see Table 4 and Figure 3 for statistics of regression analyses in Study 3). As predicted, internal self-relevance was related to lower feelings of malicious envy, $B = -0.05$, $SE B = 0.01$, $p < .001$. Contrary to predictions, external self-relevance did not significantly predict feelings of benign envy, $B = -0.03$, $SE B = 0.02$, $p = .157$, nor malicious envy, $B = 0.01$, $SE B = 0.01$, $p = .495$. Unlike as predicted, there was no significant interaction between internal and external self-relevance on malicious envy, $B = 0.00$, $SE B = 0.01$, $p = .710$. There was no interaction between internal and external self-relevance on feelings of benign envy, $B = -0.03$, $SE B = 0.02$, $p = .137$ (exploratory).

Additionally, I predicted that internal self-relevance would be related to less pain and external self-relevance would be related to more pain. Multilevel regression analyses for pain in envy revealed that neither internal self-relevance, $B = 0.01$, $SE B = 0.01$, $p = .293$, nor external self-relevance, $B = -0.01$, $SE B = 0.01$, $p = .461$, nor their interaction, $B = -0.00$, $SE B = 0.01$, $p = .905$, predicted pain in envy.

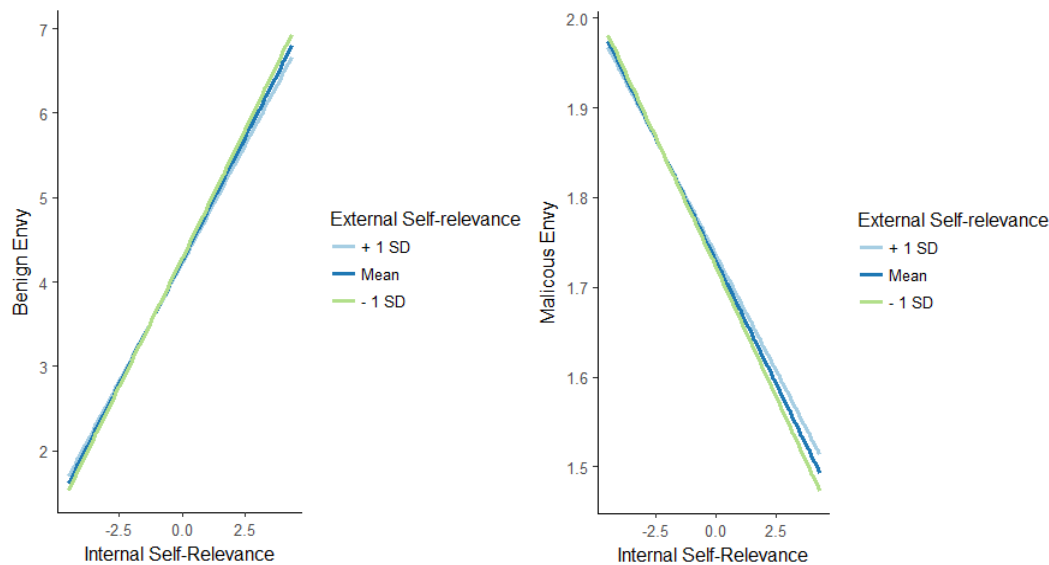


Figure 3. Fixed effects of internal and external self-relevance on benign and malicious envy, Study 3. Left: Benign envy predicted by internal and external self-relevance and their interaction. Right: Malicious envy predicted by internal and external self-relevance and their interaction. Scales of internal and external self-relevance were group mean-centered. Y-Axes were zoomed in to illustrate the differences between conditions.

Discussion

Study 3 confirmed the predicted relations between internal self-relevance and benign and malicious envy. Seeing someone excel in a domain that was internally self-relevant was related to more benign envy, but less malicious envy. The predicted effects of external self-relevance on benign and malicious envy, and the predicted interaction between internal and external self-relevance on malicious envy did not emerge in Study 3. This might be due to the strong correlation of measures for internal and external self-relevance. As I always controlled

for the other form of self-relevance, and these were highly correlated in this study, external self-relevance was unlikely to show an effect beyond internal self-relevance, especially as the effect of internal self-relevance was stronger in all studies. Additionally, the means of malicious envy ratings were rather low, which may have reduced the variance making it difficult to show effects on malicious envy. Nevertheless, the data confirmed the effect of internal self-relevance on malicious envy.

I also expected internal self-relevance to be related to decreased levels of pain and external self-relevance to be related to increased levels of pain. Data did not reveal that internal, or external self-relevance, or their interaction predicted pain. The different forms of self-relevance did not seem to be related to painful feelings when seeing someone excel.

To provide a comprehensive test of my predictions, I integrated data from Studies 1, 2 and, 3 in a meta-analysis. Since all three studies used a similar design, this is viable way to test for the consistency of the predicted effects across studies.

Meta-Analysis of Studies 1, 2, and 3

Methods

Data analysis strategy. I integrated data from studies 1, 2 and 3 by merging the data from all three studies into one dataset. Then, I ran one multilevel analysis on the merged data set for each dependent variable. The dataset consisted of data by 648 participants measured on 10 values in three studies. I specified random intercepts for participants, values, and studies. Introducing a random effect for study allowed me to control for variations between studies. This approach is similar to a classic random effects meta-analysis (Pastor & Lazowski, 2018). I further specified fixed effects for internal and external self-relevance (group mean-centered for participants, values, and studies) and their interaction. I ran separate models to predict

benign envy, malicious envy, and pain by internal self-relevance, external self-relevance, and their interaction (see Table 5).

Results

Benign envy. The multilevel regression analysis revealed that internal self-relevance positively predicted benign envy, $B = 0.55$, $SE B = 0.02$, $p < .001$. External self-relevance negatively predicted benign envy, $B = -0.07$, $SE B = 0.02$, $p < .001$. There was no significant interaction between internal and external self-relevance on benign envy, $B = -0.03$, $SE B = 0.01$, $p = .056$ (see Figure 4 for a descriptive plot of these results).

Malicious envy. The multilevel regression analysis revealed that internal self-relevance negatively predicted malicious envy, $B = -0.08$, $SE B = 0.01$, $p < .001$. External self-relevance positively predicted malicious envy, $B = 0.05$, $SE B = 0.01$, $p < .001$. There was no significant interaction between internal and external self-relevance on malicious envy, $B = 0.00$, $SE B = 0.01$, $p = .648$ (see Figure 4 for a descriptive plot of these results).

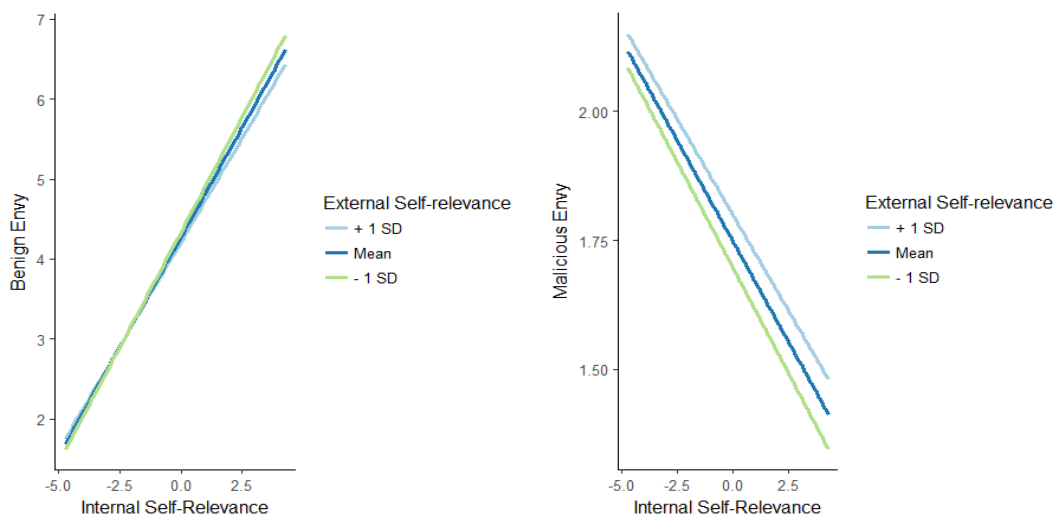


Figure 4. Meta-analytical multilevel regression for benign envy and malicious envy predicted by internal and external self-relevance. Left: Benign envy predicted by internal and external self-relevance and their interaction. Right: Malicious envy predicted by internal and external self-relevance and their interaction. Scales of internal and external self-relevance were group mean-centered. Y-Axes were zoomed in to illustrate the differences between conditions.

Pain. The multilevel regression analysis revealed no significant effects of internal self-relevance, $B = -0.02$, $SE B = 0.01$, $p = .092$, external self-relevance, $B = 0.02$, $SE B = 0.01$, $p = .086$, or their interaction on pain in envy, $B = 0.01$, $SE B = 0.01$, $p = .497$.

Discussion

Meta-analytical findings confirmed the predicted effects of internal self-relevance on benign and malicious envy: Seeing someone excel in a domain that is internally self-relevant, was related to more benign envy, but less malicious envy. Meta-analytical findings also confirmed the predicted effects of external self-relevance on benign and malicious envy: Seeing someone excel in a domain that is externally self-relevant, was related to more malicious envy, but less benign envy.

I furthermore predicted an interaction between internal and external self-relevance on malicious envy. I expected the positive relation between external self-relevance and malicious envy to be stronger for lower levels of internal self-relevance. However, there was no empirical evidence in this set of studies for an interaction on malicious envy.

Neither internal self-relevance, nor external self-relevance, nor their interaction significantly predicted pain. The results indicate that pain is not influenced by internal and external self-relevance. Based on the literature, I would have expected self-relevance to influence pain. However, I did not have directional predictions about differential effects of internal and external self-relevance on pain. The present data suggest that internal and external self-relevance influence those forms of envy that are related to motivational consequences rather than the core affective component of envy, namely pain.

The non-significant effects on pain might question whether I captured envy at all. However, the data replicated previous findings on the relationships between the envy

components (Lange, Weidman, et al., 2018). Pain was positively correlated with malicious envy, $r = .698$, $p < .001$, and benign envy, $r = .067$, $p < .001$, indicating that all envy components showed the expected relationships.

An advantage of classical meta-analysis is that it provides an effect size of the average effect across studies that is comparable to other investigations. However, it is not advised to calculate conventional effect size measures, such as beta regression coefficients, for multilevel analyses because standard errors of fixed effects are influenced by the random effects structure (Hox, Moerbeek, & Van de Schoot, 2017; Kreft & Leeuw, 1998; Nezlek, 2008). The nested structure makes it difficult to compare effect sizes of multilevel designs with each other. However, provided that the same study design is used, unstandardized regression coefficients can still be compared with each other. The current meta-regression showed an association between internal self-relevance and benign envy that was in absolute terms about seven times as large as the negative association between internal self-relevance and malicious envy. Similarly, the effect of internal self-relevance on benign envy was in absolute terms about eight times as large as the effect of external self-relevance on benign envy and ten times as large as the effect of external self-relevance on malicious envy. The association between internal self-relevance and malicious envy was only 1.5 times as large as the association between external self-relevance and malicious envy. From this I conclude that internal self-relevance is the strongest predictor overall, in particular for benign envy. Internal and external self-relevance predicted malicious envy equally strong.

Taken together, correlational studies showed that self-relevance can be distinguished in internal and external self-relevance. Internal and external self-relevance have different effects on envious reactions towards upward comparisons. The more important a comparison domain is to the person him/herself, the more the person tries to achieve this quality as well. However, the less important a comparison domain is to the person the more the person wishes harm to

the superior other and the more painful this comparison feels. Even though of smaller effect sizes, the effects of external self-relevance were in the opposite direction. The more important a comparison domain is to a person's social group, the more likely people react with malicious tendencies towards the superior person. Thus, the less important a comparison domain is to others, the less people will try to achieve the same qualities as well, while still feeling envy, namely malicious envy.

The data were not in line with the more secondary prediction that internal and external self-relevance interact in predicting malicious envy. From these non-significant results cannot be differentiated whether the statistical power was not high enough to reveal an interaction effect or whether there is no interaction effect in the first place. At the very least, the data suggest that an interaction between internal and external self-relevance does not have a strong influence on envy.

Overview of Studies 4 – 7

The data of Studies 1 – 3 suggested that the more internally self-relevant a value is the more benign envy and the less malicious envy people feel when comparing to a superior other. Additionally, the data suggested that the more externally self-relevant a value is the more malicious envy and the less benign envy people feel when comparing to a superior other.

The second part of the current research investigates the question how internal and external self-relevance influence benign and malicious envy with a different methodological approach. I manipulated internal and external self-relevance in a between-subjects design to test whether the effects of Studies 1 – 3 can be replicated. I expected that internal self-relevance will increase benign envy, and external self-relevance will decrease malicious envy. I also expected that internal self-relevance will decrease malicious envy, and external self-relevance will increase malicious envy. Additionally, I made the more secondary prediction of an

interaction effect on malicious envy. I expected the effect of external self-relevance to be especially strong when internal self-relevance was low. To test these predictions, participants were randomly assigned to one of the four conditions of a 2 (internal self-relevance: low, high) x 2 (external self-relevance: low, high) between-subjects design. Self-relevance was induced by the internal and external self-relevance of values in a value affirmation writing task. After the value affirmation task, participants read a vignette about a person who perfectly embodied a certain value. I measured participants' envious reactions towards that person. In Study 4, I first measured the importance of values with the PVQ (Schwartz et al., 2001). Then, participants wrote about why their most important value was important to them or not and why this value was important to their social group or not. Participants were then confronted with a person who perfectly lived according to that value. Vignettes were the same as in Studies 1 – 3. Then, benign envy, malicious envy, and pain were measured with the PaDE scale (Lange, Weidman, et al., 2018). In Study 5, participants first ranked values according to their importance. Then, a value of average importance was selected for the manipulation of internal and external self-relevance. This procedure was supposed to strengthen the manipulation of particularly external self-relevance. The same procedure for value manipulation was used in Study 6, but the vignettes were put in a more concrete context. This was again supposed to strengthen the manipulation as well as the validity of the vignettes. Finally, Study 7 had a similar design with even more concrete vignettes that were supposed to fuel envious reactions by putting the story in a different context. Study 7 was also supposed to provide the strongest causal evidence for the effect of internal and external self-relevance on benign and malicious envy by using a strong manipulation and high-powered tests for my predictions. Procedure, hypotheses, and analysis plan were preregistered for Studies 4 – 7 (see Appendix A). All materials can be found in Appendix C.

Study 4

Methods

Sample. Previous research showed a small to medium effect of the value affirmation task on emotion ratings (Tamir et al., 2016). A-priori power calculations indicated that I would need 350 participants to find a significant interaction between internal and external self-relevance of values ($d = 0.30$, $\alpha = .05$, $1-\beta = .80$). Sample sizes for all studies were planned with G*Power (Faul, Erdfelder, Buchner, & Lang, 2009). To ensure enough power after drop-outs, I aimed for 400 participants who were collected via Amazon MTurk. As preregistered, I excluded data from participants who indicated that I should not use their data after an attention check ($n = 10$; Meade & Craig, 2012). The final sample consisted of 393 participants ($M_{\text{age}} = 37.31$, $SD = 12.36$, 222 female, 171 male). Procedure, hypotheses, and analysis plan were preregistered for this study (see Figure 11).

Materials and procedure. Participants were randomly assigned to one of the four conditions of the 2 (internal self-relevance: low, high) x 2 (external self-relevance: low: high) between-subjects design. First, I measured the importance of the ten basic values using the PVQ (Schwartz et al., 2001), as in Studies 1 and 2. The PVQ was followed by a writing task using an adapted version of the value affirmation task (e.g., Tamir et al., 2016). The value affirmation task supposes that the importance of a value for a participant can be increased or decreased by him/her by writing about why a certain value is important or not important to him/herself. In the high internal self-relevance condition, participants wrote about a value that was of high importance to them. In the low internal self-relevance condition, participants wrote about a value that was of low importance to them (instructions: *You indicated that value X is of (NO) special IMPORTANCE to YOU. Why is value X of (NO) special importance to you? Please explain why you think that it is (not) important to behave according to this value; for*

detailed instructions, see Table 18). As the terms for values are rather abstract words (e.g., self-direction), I inserted keywords describing the respective value to facilitate writing (e.g., creativity, freedom, choosing own goals, curious, independent; cf. Schwartz, 2012). After the internal self-relevance task, external self-relevance of the value was manipulated. In the low external self-relevance condition, participants wrote about why the value they wrote about in the internal self-relevance task was of low importance to their social group. In the high external self-relevance condition, participants wrote about why this value was of high importance to their social group (instruction: *Now, think about why value X could be of [NO] special IMPORTANCE in your SOCIAL GROUP! Please explain why it could be [not] important to the people around you to behave according to value X.*).

As a manipulation check, I asked participants to rate whether the value they were writing about was important to them (*[value X] is important to me*, internal self-relevance manipulation check) and to their social group (*[value X] is important to my social group*, external self-relevance manipulation check) on a 7-point scale (1 - *not at all important*, 7 - *very important*).

Then, I confronted participants with a vignette describing a person who perfectly embodied a certain value. The described person represented the value that participants wrote about in the value affirmation task. I created the vignettes according to the PVQ (example of a person who represents the value of achievement: *“He/She shows his/her abilities. People admire him/her for what he/she does. He/She is very successful. People recognize his/her achievements“*). All vignettes can be found in Table 22. I measured participants’ reaction of benign and malicious envy, and pain in envy towards this person (Lange, Weidman, et al., 2018; see Table 25).

Results

Manipulation check. An ANOVA on ratings of how important the value participants wrote about was to themselves, revealed a main effect of internal self-relevance, $F(1,389) = 375.29, p < .001, \eta_p^2 = .491$. As expected, values of high internal self-relevance were rated as more important to the participants, $M = 6.31, SD = 1.00$, than values of low internal self-relevance, $M = 2.63, SD = 1.59$. The manipulation check also revealed the predicted main effect of external self-relevance on the question how important the value was to participants' social group, $F(1,389) = 25.24, p < .001, \eta_p^2 = .060$. As predicted, high externally self-relevant values were rated as more important to others, $M = 4.88, SD = 1.68$, than values of low external self-relevance, $M = 3.77, SD = 1.88$. Additionally, internal self-relevance affected the perceived importance of the value to others, $F(1,389) = 58.81, p < .001, \eta_p^2 = .130$ (exploratory). High internally self-relevant values were rated as more important to others, $M = 5.19, SD = 1.44$, than low internally self-relevant values, $M = 3.48, SD = 1.85$.

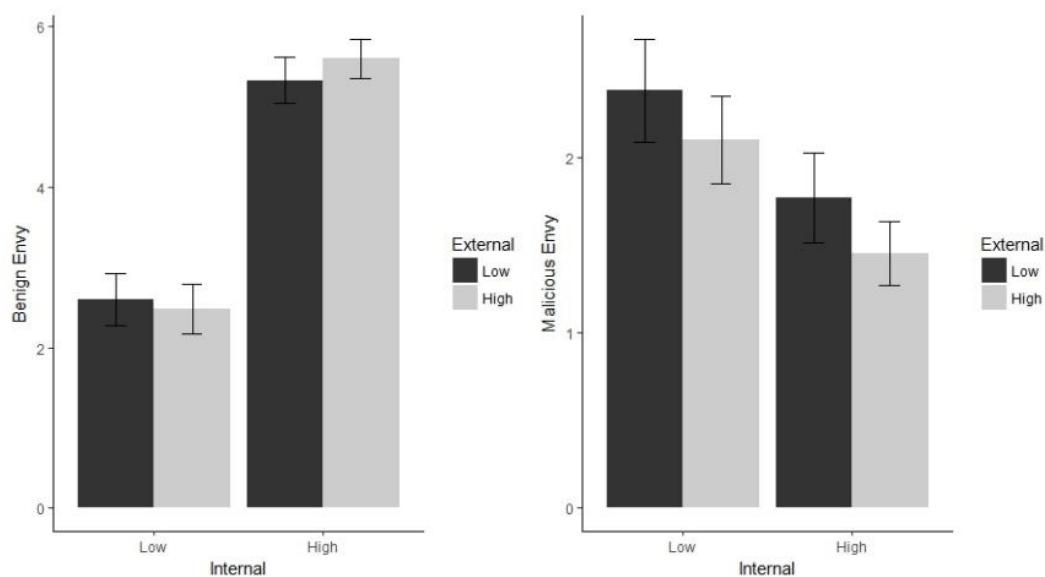


Figure 5. Means and SEM of benign envy and malicious envy by internal self-relevance (high, low) and external self-relevance (high, low) in Study 4. Y-Axes were zoomed in to illustrate the differences between conditions.

Effect on envy. I predicted that a MANOVA on all envy ratings (i.e. benign envy, malicious envy, pain) would reveal an interaction between internal and external self-relevance.

The MANOVA revealed a main effect of internal self-relevance, Pillais' trace = 0.51, $F(2,387) = 201.00$, $p < .001$, but no main effect of external self-relevance, Pillais' trace = 0.01, $F(2,387) = 1.62$, $p = .199$, nor an interaction between internal and external self-relevance or interaction, Pillais' trace = 0.01, $F(2,387) = 2.01$, $p = .135$.

The main predictions focused on effects of internal and external self-relevance on benign and malicious envy, separately. The main predictions were that internal self-relevance would increase benign envy and decrease malicious envy, and that external self-relevance would decrease benign envy and increase malicious envy. I also preregistered the more secondary prediction of an interaction effect on malicious envy.

To test these predictions, I preregistered to run separate 2 (internal self-relevance: low, high) x 2 (external self-relevance: low, high) ANOVAs for benign envy, malicious envy, and pain (see Figure 5 for results on benign and malicious envy, see Table 6 for descriptive statistics). As predicted, the ANOVA for benign envy revealed a main effect of internal self-relevance, $F(1,388) = 164.54$, $p < .001$, $\eta_p^2 = .298$. High internal self-relevance elicited more benign envy, $M = 5.47$, $SD = 1.34$, than low internal self-relevance, $M = 2.54$, $SD = 1.59$. The predicted main effect of external self-relevance did not reach significance, $F(1,388) = 0.28$, $p = .594$, $\eta_p^2 = .001$. The ANOVA for malicious envy revealed a significant effect of internal self-relevance, $F(1,388) = 11.52$, $p < .001$, $\eta_p^2 = .029$. As predicted, low internal self-relevance elicited more malicious envy, $M = 2.24$, $SD = 1.38$, than high internal self-relevance, $M = 1.60$, $SD = 1.12$. Neither the predicted main effect of external self-relevance, $F(1,388) = 2.53$, $p = .112$, $\eta_p^2 = .001$, nor the predicted interaction between internal and external self-relevance on malicious envy, $F(1,388) = 0.02$, $p = .899$, $\eta_p^2 < .001$, were significant. An exploratory ANOVA on pain in envy revealed no significant effects (internal self-relevance: $F(1,388) = 0.52$, $p = .820$, $\eta_p^2 < .001$; external self-relevance: $F(1,388) = 0.04$, $p = .846$, $\eta_p^2 < .001$; interaction: $F(1,388) = 1.83$, $p = .176$, $\eta_p^2 < .001$).

Discussion

Study 4 confirmed the effect of internal self-relevance on benign and malicious envy. Whereas high internal self-relevance increased benign envy, high internal self-relevance decreased malicious envy. Seeing someone who excels in a domain that is important to a person elicits benign envy. Seeing someone who excels in a domain that is not important to a person elicits malicious envy.

Study 4 did not reveal effects of external self-relevance. As noted above, all upward comparison standards portrayed people embodying a certain value. Values are desired attributes per se. It may be difficult to manipulate external self-relevance beyond the relevance that these values already have. Besides, as shown in the manipulation check, the effect of the external self-relevance manipulation was only small. These methodological reasons may have caused the non-significant effects of external self-relevance.

There was also no interaction between internal and external self-relevance in the MANOVA and on malicious envy. For this study, I chose a design that should increase the chance to also find an interaction between internal and external self-relevance. In the internal self-relevance condition, I confronted participants with a value that was of high vs. low importance to them. Then, they should write about reasons why this value was or was not important to their social group. By using this design, I thought to amplify differences between internal and external self-relevance. However, data did not reveal an interaction between internal and external self-relevance in the MANOVA and in particular on malicious envy. However, this interaction represents a riskier prediction that requires more power than the tests of my main predictions concerning main effects of internal and external self-relevance on benign and malicious envy. If there is an interaction effect it was at least not strong enough to influence malicious envy in this study.

Besides the interaction effect on malicious envy, I preregistered an interaction effect on the MANOVA predicting all envy measures (benign envy, malicious envy, and pain) by internal and external self-relevance. Conventional statistical procedure suggests to test this interaction in a MANOVA to see whether there are differences on at least one of these emotions to justify to then disentangle results per emotion. However, the crucial hypotheses concerned specific effects for each emotion. I therefore also preregistered detailed predictions per emotion. The MANOVA was thus not an informative analysis for the detailed predictions per emotion.

The absence of effects on pain is somewhat surprising because a general effect of self-relevance on emotions can be expected. However, internal and external self-relevance did not differentially affect pain in this study.

The current design may not have been ideal to test my hypotheses for several reasons. I selected values that were either very important or not at all important to the participants for the subsequent tasks. I did so to amplify differences between internal and external self-relevance to increase chances to find an interaction effect. However, it might have been more difficult to imagine how a value that is highly important to a person cannot be important to others and the other way around. Additionally, this design might have introduced confounds. Maybe only certain values are very important or not important to people. However, the data show that the whole range of values was selected. Also, which values were selected in this study did not differ extensively from selected values in Studies 5 to 7. Overall, selected values were about equally distributed. Still, this design might have introduced other confounds. I addressed these limitations in Study 5 by choosing a value of average importance to participants which is then used in the value affirmation task to manipulate internal and external self-relevance.

Study 5

Study 5 sought to overcome limitations of Study 4. To avoid confounds because of the selection of values that were initially ranked as very or not important to participants, I selected values that participants indicated to have average importance to them. This should further disentangle internal and external self-relevance and facilitate the writing task. I further assumed that the relevance of values of average importance could be more easily increased or decreased than the relevance of values of extremely high or low importance.

In attempt to increase the strength of the manipulation of external self-relevance, I changed instructions of the writing task (value affirmation task) by emphasizing the *ideal* and *ought to* character of the values. More precisely, to increase internal self-relevance, I chose vocabulary used in studies on self-discrepancy theory to address the ideal self (Higgins, 1987). To increase external self-relevance, I chose vocabulary to address the ought self as this is more defined by external sources of motivation (e.g., Hong, Triyono, & Ong, 2013). I preregistered all hypotheses and analyses (see Figure 12).

Methods

Sample. Previous research showed a small to medium effect of the value affirmation task on emotion ratings (Tamir et al., 2016). A-priori power calculations revealed that approximately 300 participants are needed to find a significant effect in a *t*-Tests for independent samples (one-sided, $d = 0.3$, $\alpha = .05$, $1-\beta = .80$). I collected data from 300 participants via Amazon MTurk. I preregistered to include only participants who agreed that I could use their data after an attention check (excluded $n = 3$; Meade & Craig, 2012) and who wrote about the importance or non-importance of a value to them or their social group according to the condition they were assigned to (excluded $n = 32$). This second exclusion criterion was introduced to ensure the quality of the data by excluding participants who did not

properly read the instructions. The final sample consisted of $N = 265$ participants ($M_{\text{age}} = 36.06$, $SD = 11.44$, 132 female, 133 male).

Materials and procedure. Participants saw a list of the ten basic values and ranked these values according to their importance via drag and drop. Each value was described more specifically by keywords to help in understanding (see Table 21). From participants' value ranking, I chose the value of average importance. I assumed that values of average importance could be more easily increased or decreased in their relevance than values of extremely high or low importance. Then, I asked participants to write about the importance versus non-importance of the chosen value to them and their social group in a 2 (internal self-relevance: low vs. high) x 2 (external self-relevance: low vs. high) between-subjects design using an adapted version of the value affirmation task (adapted from Tamir et al., 2016). Detailed descriptions of instructions can be found in Table 19. For example, participants in the low internal and high external self-relevance condition read the following instructions: *Think about the meaning of [value X] for your life. Why could [value X] NOT be important for YOU? Please explain why it would NOT be ideal and important to YOU to behave according to [value X]. Write it down below in a few sentences. (...) Now, think about the meaning of [value X] for your social group. Why should [value X] be important for your SOCIAL GROUP? Please explain why it should be important to the people around you to behave according to [value X]. Write it down below in a few sentences.*

Next, I used the same manipulation check as in Study 4. Then, people were confronted with a vignette describing a person that perfectly embodied a certain value. The person represented the value that participants wrote about in the value affirmation task (i.e., a value that was of average importance to them.). I used the same vignettes as in Study 4 describing a virtuous person by adapting and combining items from the PVQ (Schwartz et al., 2001; see

Table 22 for a list of all vignettes). I measured participants' reaction of benign and malicious envy and pain in envy towards this person (adapted from Lange, Weidman, et al., 2018).

Results

Manipulation check. An ANOVA on how important the value participants wrote about was to themselves revealed a main effect of internal self-relevance, $F(1,261) = 21.07$, $p < .001$, $\eta_p^2 = .075$. As predicted, high internally self-relevant values were rated as more important, $M = 5.50$, $SD = 1.27$, than values of low internal self-relevance, $M = 4.50$, $SD = 1.72$. The second manipulation check revealed the predicted main effect of external self-relevance on the question how important the value was to participants' social group, $F(1,261) = 24.28$, $p < .001$, $\eta_p^2 = .085$. As predicted, high externally self-relevant values were rated as more important to others, $M = 5.27$, $SD = 1.23$, than values of low external self-relevance, $M = 4.02$, $SD = 1.68$.

Effect on envy. I predicted that a MANOVA on all envy ratings would reveal an interaction between internal and external self-relevance. The MANOVA revealed a main effect of internal self-relevance, Pillais' trace = 0.023, $F(2,260) = 3.09$, $p = .047$, but no main effect of external self-relevance, Pillais' trace = 0.011, $F(2,260) = 1.49$, $p = .227$, or interaction between internal and external self-relevance, Pillais' trace = 0.006, $F(2,260) = 0.84$, $p = .434$.

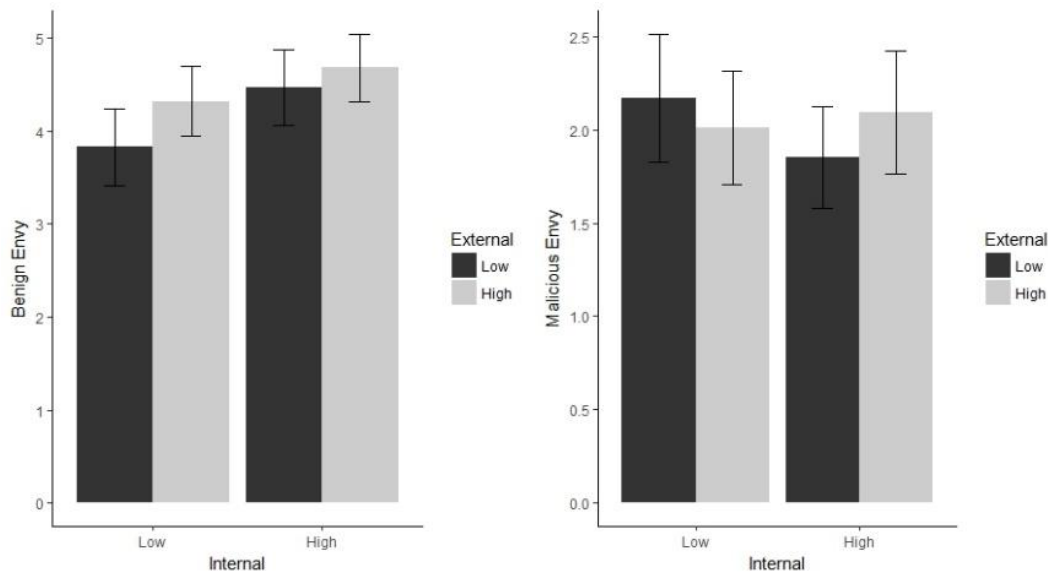


Figure 6. Means and SEM of benign envy and malicious envy by internal self-relevance (high, low) and external self-relevance (high, low) in Study 5. Y-Axes were zoomed in to illustrate the differences between conditions.

As in Study 4, my crucial predictions concerned effects of internal and external self-relevance on the specific emotions of benign and malicious envy. I therefore preregistered to run separate 2 (internal self-relevance: low, high) x 2 (external self-relevance: low, high) ANOVAs for benign envy and malicious envy (see Figure 6 and Table 7 for descriptive statistics).

The ANOVA on benign envy revealed the predicted effect of internal self-relevance, $F(1,261) = 4.76, p = .030, \eta_p^2 = .018$. As depicted in Figure 6, high internal self-relevance elicited more benign envy, $M = 4.58, SD = 1.63$, than low internal self-relevance, $M = 4.09, SD = 1.62$. The predicted main effect of external self-relevance did not reach significance, $F(1,261) = 2.82, p = .094, \eta_p^2 = .011$. I predicted that malicious envy would be stronger for values of low internal self-relevance, and for values of high external self-relevance. In line with my theoretical reasoning, I predicted that malicious envy would be strongest when internal self-relevance was low and external self-relevance was high. However, the ANOVA for malicious envy revealed no significant effect of internal self-relevance, $F(1,261) = 1.88, p = .171, \eta_p^2 = .007$, nor external self-relevance, $F(1,261) = 0.47, p = .495, \eta_p^2 = .002$, and no interaction,

$F(1,261) = 1.58, p = .209, \eta_p^2 = .006$. An exploratory ANOVA on pain in envy revealed no significant effects of internal and external self-relevance (internal self-relevance: $F(1,261) = 0.82, p = .365, \eta_p^2 = .003$, external self-relevance: $F(1,261) = 0.32, p = .571, \eta_p^2 = .001$, interaction: $F(1,261) = 1.03, p = .312, \eta_p^2 = .004$).

Discussion

Study 5 confirmed that benign envy was stronger when a value was of high internal self-relevance. Seeing someone excel in a domain that is internally self-relevance elicits benign envy towards that person increasing the motivation to excel in this domain as well. However, data did not reveal the predicted main effect of internal self-relevance on malicious envy. This contradicts previous findings and might be because of methodological limitations that will be outlined below. Furthermore, there was no significant main effect of external self-relevance on benign and malicious envy nor an interaction effect on malicious envy. An exploratory analysis did also not reveal any effects on pain.

Several reasons may have made it difficult to find these effects. Because of the exclusion criteria, my final sample was smaller than it should have been based on power calculations. Additionally, it might have been too difficult to make a connection between the essays participants wrote in the value affirmation task and the subsequent vignettes. This may have hindered the transfer of effects of the manipulation to the emotional reactions to the vignette. In addition, the person descriptions were very abstract and without concrete details, for example about the circumstances of meeting the person. This may have prevented a vivid imagination of the described stories and weakened the manipulation. Additionally, when presenting the vignettes, there was no external social group present which may not have made external self-relevance salient enough to show an effect on emotion. I sought to address these methodological issues in Study 6.

Study 6

To overcome limitations of Study 5, I changed vignettes to facilitate imagining the situation and introduced a social group to make external self-relevance more salient. I included a more detailed description of the situation, including the circumstances under which participants would meet this person. I also added more concrete examples of how a behavior according to a certain value would look like. Likewise, I introduced a significant social group to increase the external self-relevance of the comparison. Also, I aimed for higher a-priori power compared to Study 5 ($1-\beta = .90$). I preregistered all measures, hypotheses, and analyses (see Figure 13).

Methods

Sample. A-priori power calculations indicated that 382 participants would be needed to find significant effects in a *t*-test for independent samples assuming small to medium effect size (one-sided, $d = 0.3$, $\alpha = .05$, $1-\beta = .90$). To allow for some drop outs, I preregistered to collect data from 400 participants via Amazon MTurk. As preregistered, I included only participants who agreed that I could use their data ($N = 398$). Furthermore, I preregistered to exclude participants who did not follow the instructions of the writing task according to the condition they were assigned to ($n = 54$). Data exclusion was handled by a research assistant blind to conditions and hypotheses. The final sample consisted of 344 participants ($M_{\text{age}} = 36.15$, $SD = 10.81$, 176 female, 168 male).

Materials and procedure. As in Study 5, participants first saw a list of the ten basic values and ranked these values according to their importance as guiding principles in their life via drag and drop. Each value was described more specifically by keywords to help in

understanding (see Table 21). From each participant's value ranking, I chose a value of average importance. I used the same value affirmation task as in Study 5. Participants had to write about the importance or non-importance of the chosen value to them and their social group in a 2 (internal self-relevance: low vs. high) x 2 (external self-relevance: low vs. high) between-subjects design. Detailed descriptions of instructions can be found in Table 19. I used the same manipulation check as in Study 4 and 5, assessing whether the value they wrote about in the value affirmation task was important to themselves or their social group.

Then, participants were confronted with a vignette describing a person who perfectly embodied a certain value. The described person represented the value that participants wrote about in the value affirmation task (i.e., a value that was of average importance to them.). Before describing the person, I introduced the situation by explaining the circumstances of meeting the person. They should imagine meeting this person at a garden party with many new neighbors. I introduced other neighbors to make the social context and thus external self-relevance more salient. The person was described in more detail by using the person descriptions of the PVQ together with more concrete behaviors to facilitate social comparison (example vignette for the value stimulation: [...] *She talks about a safari trip she recently took. You realize that Anna has a very exciting life. In general, she is always looking for adventures, takes risks, and does lots of different things in her life. She enjoys surprises and doing new things.*). I also presented a picture of the person to make it easier to imagine the interaction. On this picture, the person displayed an ambivalent pride gesture as this was found to fuel envy in the perceiver (Lange & Crusius, 2015b). I used pictures from the University of California, Davis, Set of Emotion Expressions (Tracy, Robins, & Schriber, 2009). I then reminded participants of what they wrote about in the value affirmation task, and gave a summary of the vignettes, saying which value the person embodied and whether this value was important or not important to them and their social group. All vignettes can be found in Table 23. After

reading the vignette, participants rated their emotional reaction of benign envy, malicious envy, and pain towards this person (Lange, Weidman, et al., 2018).

Results

Manipulation check. An ANOVA on how important the value participants wrote about was to themselves revealed a main effect of internal self-relevance, $F(1,340) = 18.04$, $p < .001$, $\eta_p^2 = .050$. As predicted, high internal self-relevant values were rated as more important, $M = 5.43$, $SD = 1.52$, than values of low internal self-relevance, $M = 4.41$, $SD = 1.56$. Data confirmed a predicted main effect of external self-relevance on the question how important the value was to participants' social group, $F(1,340) = 13.59$, $p < .001$, $\eta_p^2 = .038$. As predicted, high external self-relevant values were rated as more important to others, $M = 5.21$, $SD = 1.37$, than values of low self-relevance, $M = 4.21$, $SD = 1.51$.

Effect on envy. As in the preceding studies, the main predictions were that internal self-relevance would increase benign envy and decrease malicious envy, that external self-relevance would decrease benign envy and increase malicious envy. I also preregistered the more secondary prediction of an interaction effect on malicious envy.

To test these predictions I preregistered to first run a MANOVA on all envy ratings. The MANOVA revealed a main effect of internal self-relevance, Pillais' trace = 0.248, $F(2,340) = 56.04$, $p < .001$, a main effect of external self-relevance, Pillais' trace = 0.028, $F(2,340) = 4.89$, $p = .008$, but not the predicted interaction between internal and external self-relevance, Pillais' trace = 0.014, $F(2,340) = 2.48$, $p = .085$.

To test my main predictions, I further preregistered to run separate 2 (internal self-relevance: low, high) x 2 (external self-relevance: low, high) ANOVAs for benign envy and

malicious envy (see Figure 7 for results for benign and malicious envy, see Table 8 for descriptive statistics of all envy measures).

As predicted, the ANOVA on benign envy ratings revealed a significant effect of internal self-relevance, $F(1,340) = 65.52, p < .001, \eta_p^2 = .162$. High internal self-relevance elicited more benign envy, $M = 4.22, SD = 1.73$, than low internal self-relevance, $M = 2.50, SD = 1.41$. I predicted an effect of external self-relevance on benign envy, $F(1,340) = 5.30, p = .022, \eta_p^2 = .015$. However, this effect showed a reversed pattern than predicted with more benign envy when external self-relevance was high, $M = 2.52, SD = 1.80$, than when external self-relevance was low, $M = 3.27, SD = 1.80$. There was no significant interaction effect of internal and external self-relevance on benign envy, $F(1,340) = 2.40, p = .122, \eta_p^2 = .007$. I predicted that the ANOVA on malicious envy ratings would reveal effects of internal and external self-relevance and an interaction effect. However, neither the effect of internal self-relevance, $F(1,340) = 0.95, p = .757, \eta_p^2 < .001$, nor the effect of external self-relevance, $F(1,340) = 0.17, p = .676, \eta_p^2 < .001$, nor their interaction, $F(1,340) = 0.02, p = .899, \eta_p^2 < .001$, on malicious envy were significant. I explored the effect of internal and external self-relevance on pain ratings. Pain was higher when internal self-relevance was high, $M = 2.11, SD = 1.41$, than when it was low, $M = 1.98, SD = 1.25, F(1,340) = 4.51, p = .034, \eta_p^2 = .013$. There was also a significant interaction between internal and external self-relevance, $F(1,340) = 7.68, p = .037, \eta_p^2 = .013$. Post hoc *t*-tests revealed that when internal self-relevance was high, participants experienced more pain when external self-relevance was low, $M = 2.38, SD = 1.57$, than when it was high, $M = 2.85, SD = 1.19, t(178) = 2.56, p = .045$ (Bonferroni corrected). All other post hoc pairwise comparisons on pain ratings were not significant.

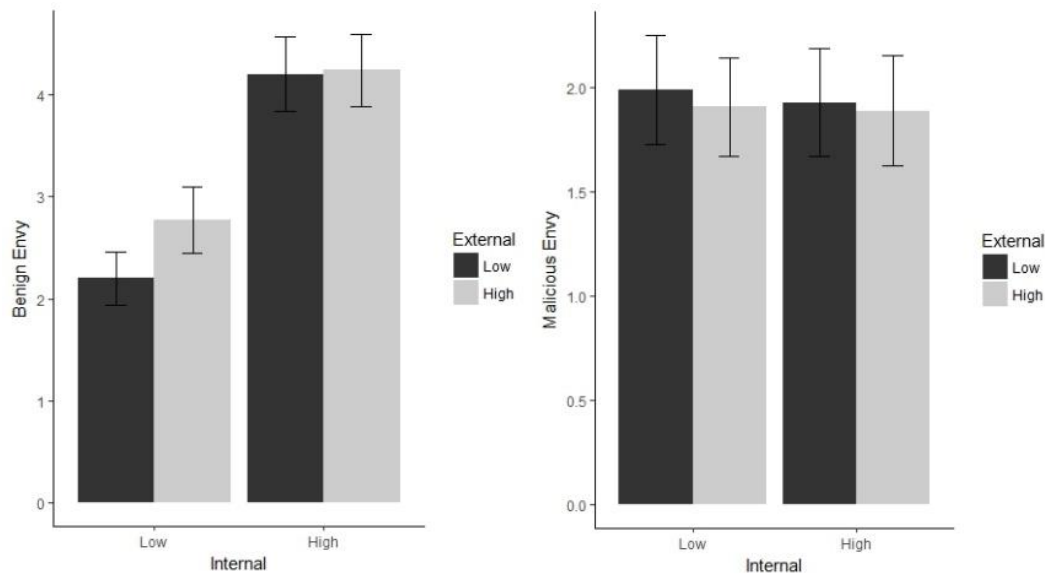


Figure 7. Means and SEM of benign envy and malicious envy by internal self-relevance (high, low) and external self-relevance (high, low) in Study 6. Y-Axes were zoomed in to illustrate the differences between conditions.

Discussion

Study 6 confirmed that internal self-relevance increased benign envy. However, contrary to my predictions, I found that benign envy was higher when external self-relevance was high. This might be interpreted as a general relevance effect: Benign envy was higher when self-relevance was high without distinguishing between internal and external self-relevance. However, this contradicts my previous findings and should be interpreted with caution unless the pattern is replicated in future studies.

The expected main effects and interaction on malicious envy did not emerge. Again, there might be methodological reasons for the absence of this effect. First, the items for malicious envy were very negative (e.g., *I feel hatred.*), and potentially less socially appropriate to admit (e.g., *I feel hostile towards her.*). This may explain low ratings on the malicious envy scale across conditions which may hinder to find effects on that scale. The situation would need to elicit strong emotions in order to make people report high levels of malicious envy. Maybe, the joyful context described in the vignettes (i.e., a garden party) was not appropriate for this.

Furthermore, the neighborhood context might not be as prone to elicit strong emotions. Additionally, vignettes described virtuous people which supposedly made it more unlikely to admit harmful intentions towards that person. Finally, the hypothetical framing of sentences in the value affirmation task may have been confusing and potentially weakened the manipulation.

Again, there was no significant interaction between internal and external self-relevance on malicious envy. This interaction represents a riskier prediction that requires more power than the tests of my main predictions concerning main effects of internal and external self-relevance on benign and malicious envy. If there is an interaction effect it was at least not strong enough to influence malicious envy in this study.

As in Study 4 and 5, the predicted interaction effect in the MANOVA did not emerge. I included this test because conventional statistical procedure would suggest to run a MANOVA to see whether there are differences on at least one of these emotions to justify to then disentangle results per emotion. However, the crucial hypotheses concerned specific effects for each emotion. The MANOVA was thus not an informative analysis for the detailed predictions per emotion.

I further explored effects of internal and external self-relevance on pain. Pain was increased by high internal self-relevance. This contradicts meta-analytical findings from the first part of this research. Additionally, there was an interaction effect on pain. When internal self-relevance was high, low external self-relevance elicited more pain than high external self-relevance. This finding is surprising as it did not emerge in previous studies. I will explore effects on pain in the next study to see whether these effects will be replicated.

Study 7

Study 7 sought to address the limitations of my previous studies. First, I altered the context of the vignettes to the workplace. Indeed, the workplace is especially prone for envious feelings to occur (cf. Duffy, Shaw, & Schaubroeck, 2008). Second, I simplified manipulation instructions, for example by changing the conjunctive statements to indicatives. I also increased statistical power to allow for an adequate test of my predictions. I preregistered all measures, hypotheses and analyses (see Figure 14). Taken together, Study 7 should reveal the strongest causal evidence for the effect of internal and external self-relevance on benign and malicious envy in this line of research.

Methods

Sample. A-priori power calculations indicated that 470 participants would be needed to find significant effects in the *t*-Tests for independent samples (two-sided, $d = 0.3$, $\alpha = .05$, $1-\beta = .90$). For this study, I based power calculations on a two-sided *t*-test to aim for enough power in the exploratory *t*-tests on pain in envy. To allow for some drop outs, I preregistered to collect data from 500 participants via Amazon mTurk. As preregistered, I included only participants who agreed that I could use their data ($N = 504$, excluded $n = 8$; Meade & Craig, 2012). Sample sizes as indicated on MTurk can differ from the sample size in the survey software because of technical reasons. This is why the data contained four participants more than expected. Furthermore, I preregistered to exclude participants who did not complete the writing task according to the condition they were assigned to (excluded $n = 97$). Data exclusion was handled by a research assistant blind to condition and hypotheses. Potential reasons for this number of exclusions will be outlined in the discussion. The final sample consisted of 407 participants ($M_{\text{age}} = 37.07$, $SD = 11.25$, 242 female, 165 male).

Materials and procedure. As in Studies 5 and 6, participants first saw a list of the ten basic values and ranked these values according to their importance as guiding principles in their life via drag and drop. Each value was described more specifically by keywords to help in understanding (see Table 21). From each participant's value ranking, I chose a value of average importance. I assumed that a value of average importance can be easily increased or decreased in its relevance. I used a similar value affirmation task as in Studies 5 and 6. I asked participants to write about the importance versus non-importance of the chosen value to them and their social group in a 2 (internal self-relevance: low vs. high) x 2 (external self-relevance: low vs. high) design. Compared to Studies 5 and 6, I changed the hypothetical nature of the questions and instead asked participants why a certain value *is* or *is not* important to them and their social group (e.g., instruction for high internal and high external self-relevance: *Think about the meaning of [value X] for your life. Why is [value X] important for YOU? Please explain why it is important to YOU to behave according to [value X]. Write it down below in a few sentences. [...] Now, think about the meaning of [value X] for other people. Why is [value X] important for OTHER PEOPLE? Imagine that you work in a company. Why is [value X] important for the OTHER PEOPLE in your COMPANY? Please explain why it is important to the people in your company to behave according to [value X]. Write it down below in a few sentences.*). Furthermore, I specified the social group as their colleagues to facilitate the transfer of this task to the vignettes they read later. Detailed descriptions of instructions can be found in Table 20. I again used the same manipulation check as in Studies 4 - 6, assessing whether the value was important to the participants and their colleagues.

As in Studies 4 - 6, participants then read a vignette describing a person that perfectly embodied a certain value. The described person represented the value that participants wrote about in the value affirmation task (i.e., a value that was of average importance to them according to the initial value ranking). Person descriptions were created by matching items of

the PVQ. Before describing the person, I described the circumstances of meeting the person. Compared to Study 6, I changed the setting to a professional company setting. All vignettes can be found in Table 24. After reading the vignette, participants rated their emotional reaction of benign envy, malicious envy, and pain towards this person (Lange, Weidman, et al., 2018)

Results

Manipulation check. An ANOVA on how important the value participants wrote about was to themselves revealed a main effect of internal self-relevance, $F(1,403) = 59.15, p < .001, \eta_p^2 = .138$. As predicted, high internally self-relevant values were rated as more important, $M = 5.79, SD = 1.21$, than values of low internal self-relevance, $M = 4.21, SD = 1.61$. Data confirmed the predicted main effect of external self-relevance on the question how important the value was to the participants' social group, $F(1,403) = 30.20, p < .001, \eta_p^2 = .070$. As predicted, high externally self-relevant values were rated as more important to others, $M = 5.72, SD = 1.12$, than values of low external self-relevance, $M = 4.57, SD = 1.33$.

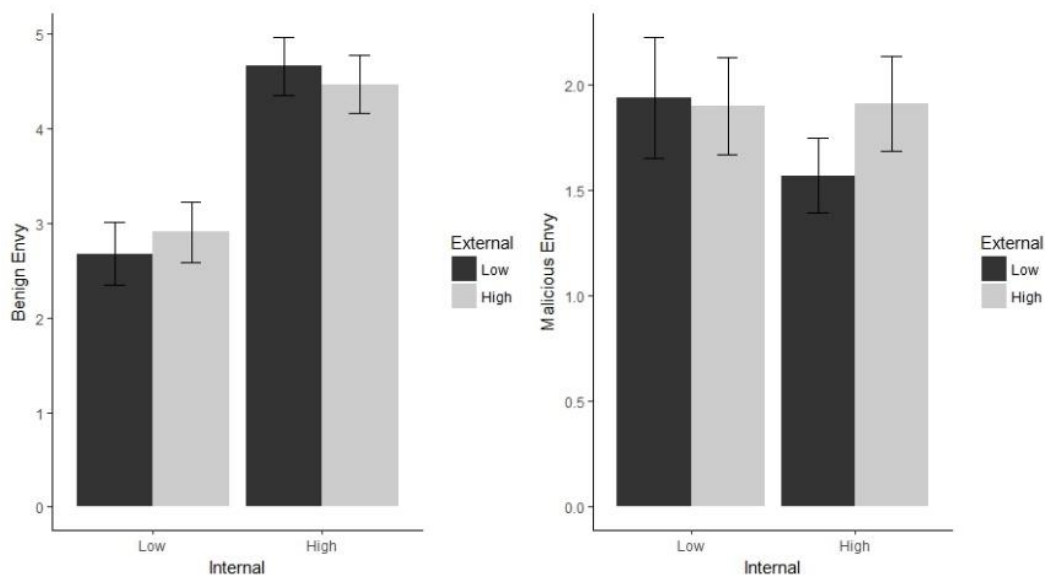


Figure 8. Means and SEM of benign envy and malicious envy by internal self-relevance (high, low) and external self-relevance (high, low) in Study 7. Y-Axes were zoomed in to illustrate the differences between conditions.

Effect on envy. As in the previous studies, my main predictions concerned differential effects of internal and external self-relevance on benign and malicious envy. I expected internal self-relevance to increase benign envy and external self-relevance to decrease benign envy. Additionally, I expected internal self-relevance to decrease malicious envy and external self-relevance to increase malicious envy. I also predicted the more secondary hypothesis of an interaction effect on malicious envy.

I first preregistered that a MANOVA on envy ratings would reveal an interaction between internal and external self-relevance. The MANOVA revealed a main effect of internal self-relevance, Pillais' trace = 0.259, $F(2,402) = 70.23$, $p < .001$, no main effect of external self-relevance, Pillais' trace = 0.003, $F(2,402) = 0.66$, $p = .519$, but an interaction between internal and external self-relevance, Pillais' trace = 0.024, $F(2,402) = 4.90$, $p = .008$.

Crucially, I further preregistered to run separate 2 (internal self-relevance: low, high) x 2 (external self-relevance: low, high) ANOVAs for benign envy and malicious envy to test the main predictions (see Figure 8 for descriptive statistics for benign and malicious envy, see Table 9 for descriptive statistics of envy measures).

The ANOVA on benign envy ratings revealed an effect of internal self-relevance, $F(1,403) = 68.17$, $p < .001$, $\eta_p^2 = .144$. As predicted, high internal self-relevance elicited more benign envy, $M = 4.56$, $SD = 1.70$, than low internal self-relevance, $M = 2.81$, $SD = 1.55$. The predicted effect of external self-relevance on benign envy was not significant, $F(1,403) = 0.84$, $p = .359$, $\eta_p^2 = .002$. There was no significant interaction effect of internal and external self-relevance on benign envy, $F(1,403) = 1.63$, $p = .202$, $\eta_p^2 = .004$. I predicted that the ANOVA on malicious envy would reveal effects of internal and external self-relevance and an interaction effect. As predicted, low internal self-relevance elicited more malicious envy, $M = 1.92$, $SD = 1.22$, than high internal self-relevance, $M = 1.75$, $SD = 1.12$, $F(1,403) = 68.17$, $p < .001$, $\eta_p^2 = .011$. There was no significant effect of external self-relevance, $F(1,403) = 0.07$, p

= .785, $\eta_p^2 < .001$, nor an interaction effect, $F(1,403) = 2.74$, $p = .099$, $\eta_p^2 = .007$. I explored the effect of internal and external self-relevance on pain. There were no significant effects of internal, $F(1,403) = 3.25$, $p = .072$, $\eta_p^2 = .008$, and external self-relevance on pain in envy, $F(1,403) = 0.86$, $p = .354$, $\eta_p^2 = .002$. Yet, there was a significant interaction between internal and external self-relevance, $F(1,403) = 4.49$, $p = .035$, $\eta_p^2 = .011$. However, post hoc t -tests (Bonferroni corrected) revealed no significant differences in the pairwise comparisons of all four conditions for pain.

Discussion

Study 7 again confirmed the effect that internal self-relevance of a value increased benign envy and decreased malicious envy. Seeing someone excel in a domain that is important to a person elicited benign tendencies fostering the motivation to excel in this domain as well. Seeing someone excel in a domain that was not important to a person elicited malicious envy fostering the motivation to harm the superior person. Although predicted, there was no effect of external self-relevance on benign and malicious envy. Manipulating external self-relevance beyond the relevance that values intrinsically have may be difficult. This is also suggested by the small effect size of the effect of external self-relevance on the manipulation check. Another reason why manipulating external self-relevance may be more difficult is, that it requires that participants can easily assess the importance of a certain value to their social group. This importance may be not as accessible to them as the importance for internally self-relevant values. Other reasons why manipulating external self-relevance may have been more difficult than manipulating internal self-relevance will be discussed in the General Discussion.

Another difficulty in Study 7 was that I had to exclude more participants than in my previous studies based on predefined exclusion criteria. I excluded participants who did not complete the value affirmation task according to the instructions. For example, some

participants wrote about why the value was important to them, although they were instructed to write why the value was *not* important to them. Other participants were reluctant to speak for their social group, etc. One reason why participants failed to follow the instructions might be that participants had to write why a certain value *is* or *is not* important to them. However, the presented value was actually of average importance. Maybe this was more difficult to imagine than e.g., instructions in Study 6 that were more hypothetically framed ([...] why *could* it [not] be important [...]). Additionally, this may have prevented them from judging why a value *is* or *is not* important to their social group. Nevertheless, this exclusion criterion was important to ensure the quality of the data.

The interaction effect between internal and external self-relevance on pain that was found in Study 6 did not replicate in Study 7. It seems that effects of internal and external self-relevance on pain are not very consistent in the present studies. A meta-analysis will reveal whether there is an overall effect of internal and external self-relevance on pain across the studies.

Meta-Analysis of Studies 4 – 7

I integrated data from this second part of the current research in a meta-analysis in order to provide a comprehensive overview of effects. As for Studies 1 – 3, I integrated data from Studies 4 – 7 in a multilevel meta-analytical regression. I chose the multilevel approach to report findings consistently and facilitate comparison to results of the first three studies. A multilevel meta-analysis is an adequate procedure to integrate the present findings because it allows to control for variance of effects across studies. Additionally, this approach is a similar procedure as classical random-effects meta-analysis (Pastor & Lazowski, 2018).

Methods

Analysis strategy. I integrated findings from Studies 4 – 7. First, I merged data from all four studies into one dataset. Then, I ran a multilevel analysis on the merged data set for every dependent variable. The sample consisted of $N = 1408$ participants measured in four studies. I specified by-study random intercepts. Random intercepts allow intercepts (i.e., means) of the dependent variable to differ between studies. Introducing these random effects for study, models variations between studies. I consider this approach adequate because of differences in the design of each study. I further specified fixed effects for internal self-relevance, external self-relevance and their interaction. Contrasts were effect coded to be able to interpret main effects independent from each other, as it would be the case in an ANOVA. I ran separate models to predict benign envy and malicious envy ratings. I further explored effects on pain ratings. As in the meta-analysis for Studies 1 – 3, I analyzed the data using packages *lme4* (Bates et al., 2014) and *lmerTest* (Kuznetsova et al., 2017) in *R* (R Core Team, 2017). Plots depicting the effects on benign and malicious envy as estimated by the models were generated using the package *jtools* (Long, 2018; see Figure 9).

Results

Benign envy. I predicted that internal self-relevance would increase feelings of benign envy and external self-relevance would decrease feelings of benign envy. Multilevel meta-regression results revealed that internal self-relevance had a positive effect on benign envy across studies, $B = 0.92$, $SE B = 0.04$, $p < .001$ (see Table 10 for detailed multilevel regression results of every measure). There was a positive effect of external self-relevance on benign envy across studies, $B = 0.09$, $SE B = 0.04$, $p = .041$. There was no interaction effect on benign envy across studies, $B = -0.05$, $SE B = 0.04$, $p = .217$.

Malicious envy. I predicted that internal self-relevance would decrease malicious envy and external self-relevance would increase malicious envy. Additionally, I predicted the more secondary hypothesis of an interaction effect on malicious envy. I expected the effect of external self-relevance to be especially strong when internal self-relevance was low. Multilevel meta-regression results revealed that internal self-relevance had a negative effect on malicious envy across studies, $B = -0.13$, $SE B = 0.03$, $p < .001$. There was no effect of external self-relevance on malicious envy across studies, $B = -0.03$, $SE B = .03$, $p = .430$. There was also no interaction effect on malicious envy across studies, $B = 0.05$, $SE B = .03$, $p = .113$.

Pain. I explored effects of internal and external self-relevance on pain. Multilevel meta-regression results revealed no effects of internal self-relevance, $B = -0.01$, $SE B = 0.03$, $p = .729$, external self-relevance, $B = -0.03$, $SE B = 0.03$, $p = .319$, and no interaction on pain across studies, $B = -0.00$, $SE B = 0.03$, $p = .976$.

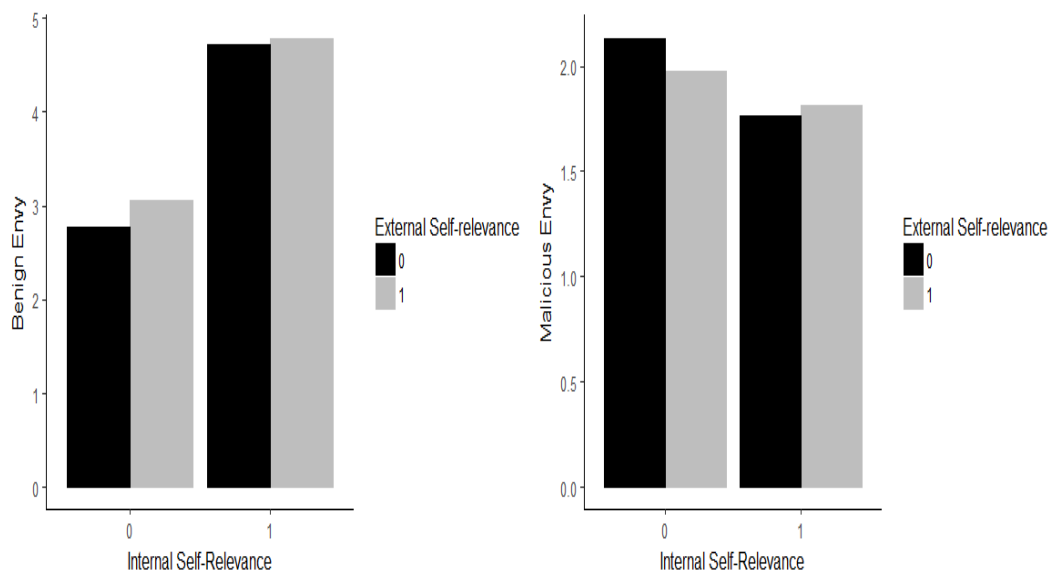


Figure 9. Estimates of benign envy and malicious envy by internal self-relevance (high, low) and external self-relevance (high, low) as predicted by the multilevel meta-analyses. Y-Axes were zoomed in to illustrate the differences between conditions.

Discussion

Meta-analytical findings revealed the expected effect of internal self-relevance on benign envy and on malicious envy. This replicated findings from the first part of the current research. Seeing someone excel in a domain that is internally important to a person elicits more benign envy. Seeing someone excel in a domain that is not internally important to a person elicits more malicious envy. An advantage of classical meta-analysis is that it provides effect sizes across studies. Measures for effect sizes are difficult to calculate and interpret for multilevel analyses (Hox et al., 2017; Kreft & Leeuw, 1998; Nezlek, 2008). However, we can still compare estimates of each predictor in the different models to each other and infer their relative size. The effect of internal self-relevance on benign envy seems to be in absolute terms seven times as large as the effect of internal self-relevance on malicious envy.

Meta-analytical findings did not show the expected effects of external self-relevance on benign envy and on malicious envy. I predicted that external self-relevance would decrease benign envy, and increase malicious envy. This predicted relationship emerged in the meta-analysis of Studies 1 – 3, where more external self-relevance was associated with more malicious envy, and more external self-relevance was associated with less benign envy. In the meta-analyses of Studies 4 – 7, there was no significant effect on malicious envy. Contrarily, there was a positive effect of external self-relevance on benign envy. More external self-relevance increased benign envy. However, this result did not emerge in any other study and contradicts previous findings. It is therefore to interpret with caution. The inconsistent and mostly non-significant effects of external self-relevance across Studies 4 – 7 might be because of difficulties in manipulating external self-relevance. Other potential reasons will be outlined in the General Discussion.

Additionally, the meta-analysis on malicious envy did not reveal an interaction effect of internal and external-self-relevance. Thus, in this set of studies, there was no empirical evidence for an interaction effect on malicious envy.

There were no consistent effects of internal and external self-relevance on pain. It seems that the interaction effect found in Studies 6 and 7 was not reliable across studies and should therefore be interpreted with caution. Across studies, the different forms of self-relevance did not seem to influence painful feelings when seeing someone excel. The effect of internal self-relevance or external self-relevance on pain was at least not strong enough to emerge in Studies 4 – 7. The non-significant effects on pain might question whether I measured envy at all. However, the data replicated previous findings on the relationships between the envy components (Lange, Weidman, et al., 2018). Pain was positively correlated with malicious envy, $r = .640$, $p < .001$, and benign envy, $r = .207$, $p < .001$, indicating that all envy components showed the expected relationships. Taken together, the results indicate that internal and external self-relevance influence benign and malicious envy, those forms of envy that are related to action tendencies, but not the form of envy that represents painful feelings.

General Discussion

The current research asked the question: what do we envy? According to the literature, we envy what is important, i.e., what is relevant to us (Smith, 2004). Envy arises in upward social comparisons. Upward social comparisons are stronger when comparing in a domain that is self-relevant (Tesser & Smith, 1980). Additionally, every emotion supposedly only arises when a situation activates our goals, beliefs, values or concerns, i.e. when a situation is self-relevant (Ellsworth & Scherer, 2003; Frijda, 1988; Lazarus, 1991; Smith & Kirby, 2009). However, the definition of self-relevance is underspecified (Scherer, 2013) and empirical, particularly experimental, research on the impact of self-relevance on emotions is scarce (De Leersnyder, Koval, Kuppens, & Mesquita, 2017; Olteanu, Golani, Eitam, & Kron, 2018). I argued that self-relevance can be defined by different sources: internal self-relevance, i.e., what is important to an individual person, and external self-relevance, i.e., what is important to others (Baldwin & Baccus, 2004; Deci & Ryan, 2000; Khapsova & Schwartz, 2016; Leary et al., 2015; Lu, 2006; Manstead & Fischer, 2001). Further, I claimed that the different sources of self-relevance should have distinct influences on envy. Envy as a comparison-based emotion should be more intense when a comparison domain is more relevant to a person. Envy as a status-related emotion can also be elicited when a comparison domain is not important to a person as long as attaining the object of envy signals status (Crusius & Lange, 2017; Lange, et al., 2018). I argued that in order to disentangle these different sources of self-relevance on envy we need to consider the difference between benign and malicious envy. I predicted that self-relevance differentially influences benign and malicious envy. High internal self-relevance should increase benign envy, while external self-relevance should attenuate benign envy. Low internal self-relevance should increase malicious envy, while high external self-relevance should increase malicious envy. As a secondary hypothesis, I also predicted that the effect of

external self-relevance on malicious envy should be more pronounced for low internal self-relevance.

The results partially confirmed these predictions. People reacted with more benign envy when seeing someone who achieved something that was internally important to them. People reacted with more malicious envy when seeing someone who achieved something that was not internally important to them. Cumulative evidence from the first three studies supported the prediction that external self-relevance was associated with less benign envy and more malicious envy. Data from Studies 4 – 7, applying a different methodological approach, did not confirm the effect of external self-relevance. The interaction effect of internal and external self-relevance on malicious envy lacked empirical support.

What do these results imply for our research question? What do we envy? The current investigation supports the idea that internal as well as external self-relevance predict envious responding. More specifically, the different forms of self-relevance can have different effects on benign and malicious envy. Data suggests when we envy what we desire, a more benign form of envy arises. When we envy what we do not really desire, a more malicious form of envy arises. The effect of external self-relevance was less consistent. Data from a within-subjects design supported the idea that when we envy what is important to others, malicious envy arises and benign envy is attenuated. However, this effect was not confirmed in a between-subjects design by manipulating internal and external self-relevance. This is probably because of methodological constraints (potential reasons will be outlined below). Most importantly, the effect of internal self-relevance was consistent across studies. People envy what is important to them in a way that increases upward motivation, and, at the same time, people envy what is not important to them in a way that causes harmful intentions towards the envied person.

The current research shows that different sources of self-relevance can have differential effects on emotions, such as envy. The current research also shows that in order to understand differential effects of internal and external self-relevance, the differentiation between benign and malicious envy needs to be taken into account. The data thereby suggests that a detailed understanding of appraisals such as self-relevance is important for concise predictions of emotional reactions in specific situations.

I chose to study values as an operationalization of what is self-relevant to a person. More precisely, I asked participants about the importance of certain values to themselves and to their social group. Then, participants were confronted with descriptions of others who perfectly embodied certain values. Interestingly, the current research shows that envy can be experienced towards highly virtuous people. Apparently, being good and righteous does not protect one from being envied as even those qualities can become the object of envy. Additionally, the effect of internal self-relevance on benign and malicious envy emerged across different values. Previous research has focused on specific value-emotion-relationships (De Leersnyder et al., 2017). The current research shows that different concerns can be triggered regardless of the actual content of the value indicating that the source of self-relevance of a specific value has an impact beyond the content of a value. Thus, the current research extends previous research by providing a more detailed understanding of how values influence emotions beyond their specific content.

In addition to the effect of internal and external self-relevance on benign and malicious envy, I explored the effects of internal and external self-relevance on pain. Pain is characterized by preoccupation with the event and a painful feeling of inferiority (Lange, Weidman, et al., 2018). There was the tendency that internal self-relevance reduces pain and external self-relevance increases pain (see Study 3). This finding is rather surprising because I would have expected unidirectional effects of internal and external self-relevance on pain. Pain, as the core

affective component of envy portraying negative affect, should be stronger the more self-relevant a situation is irrespective if a situation is internally or externally self-relevant. However, the effect from Study 3 was not consistent across studies. Furthermore, meta-analyses did not reveal an effect of internal and external self-relevance on pain. Although, data replicated the expected correlations between the envy components (Lange, Weidman, et al., 2018). The mostly non-significant differential effect of internal and external self-relevance on pain may indicate that the effect of self-relevance on envy only shapes those envy components that are more strongly related to motivational consequences. Pain may only be induced by upward comparison and may not differentiate between internal and external self-relevance. Thus, the present research underlines that in order to fully understand envious reactions to upward comparisons, envy cannot only be conceptualized as pain, as suggested by others (Tai, Narayanan, & McAllister, 2012). The present data indicates that for a detailed understanding of the psychological processes of envy, the differentiation between benign and malicious envy is necessary.

Explanations of Main Findings

The effect of internal self-relevance on benign envy. The first main finding of the present research showed that a comparison domain that is internally important to a person increases benign envy. This has implications for research on envy in particular and emotions in general.

When deriving hypotheses for the current investigation, I proposed several mechanisms that could explain this effect of internal self-relevance on benign envy. I expected internal self-relevance to increase benign envy because internal self-relevance increases achievement and approach motivation, self-efficacy, deservingness and perceived control which should be related to increased levels of benign envy (see p. 21). The current data speak in favor of the

proposed mechanisms. However, I did not yet test these mechanisms directly. Future research should study why exactly internal self-relevance is linked to increased benign envy.

Additionally, the present data are in line with the common conception that more self-relevance causes more intense emotions (e.g., Smith & Kirby, 2009). On top of that, research on social comparison shows that comparisons are stronger the more self-relevant a comparison domain is (Tesser & Smith, 1980). Accordingly, comparison-based emotions, such as benign envy, should be more intense when a social comparison is self-relevant (Salovey & Rodin, 1984). This prediction is confirmed by the present data. Taken together, the effect of internal self-relevance on benign envy confirms the proposed mechanisms and is in line with theoretical concepts of envy and emotions.

The effect of internal self-relevance on malicious envy. The second main finding of the present research was that a comparison domain that is not internally important, increases feelings of malicious envy. This, too, has implications for research on envy and more generally for emotions.

Based on the literature, I proposed several mechanisms that could explain the effect of internal self-relevance on malicious envy. I suggested that low internal self-relevance is associated with avoidance motivation, low perceived control, low deservingness, other-focus and low self-efficacy. These factors were also associated with malicious envy. Low internal-self-relevance should therefore elicit more malicious envy (see p. 23). The present data are in line with the proposed mechanisms. However, I did not empirically test this prediction. Future research should study in more detail why low internal self-relevance is associated with more malicious envy.

Beyond these proposed mechanisms, the current data have several implications for emotion research. First, how could something that is not important to a person elicit an

emotional reaction? Let's illustrate this with an example from the hypothetical point of view of one of the participants: The participant first rates the importance of the value of security as not important to him. Then, the participant is confronted with someone who is very successful in living a very secure life, she even gets praised by others for this lifestyle. Based on the present findings, the participant is likely to feel malicious envy towards this person. The participant rates that he feels hatred towards that person and does not want her to be secure anymore. Why does seeing someone excel in a domain that is not internally important cause an emotional reaction at all?

At first, it seems that this effect on malicious envy contradicts a core assumption of emotion theory stating that the primary appraisal needs to recognize the relevance of a situation to a person's needs before an emotion can arise (Lazarus, 1991). Contrarily, the current research may suggest that even non-important stimuli can cause an emotional reaction. However, I argue that this interpretation should be made with caution. I argue that a value that is not internally self-relevant can transport relevance on a different dimension.

First, seeing someone excel in a value domain that is not internally self-relevant might be interpreted as an obstacle for the pursuit of one's own goals. The described person is obviously successful in living according to a value that is not important to the envier. In contrast, the envier is trying to be successful in living completely different values. Thus, seeing this other person is likely to question the envier's lifestyle. It might even hinder the envier in living according to his important life goals. This could be especially prevalent in the context of values. First, values are claimed to be universal (Schwartz, 1994). The person thinks that it is best if everyone pursued his important values. Someone who endorses different values can therefore not pursue the same values. Second, values are supposed to form a circumplex (e.g., Schwartz, 2012). This means that values are organized in a circular model with competing values opposing each other. Values that oppose each other guide incompatible motivations,

and values that are close to each other guide compatible motivations (e.g., Schwartz, 2012). That means that, for example, the value of self-direction is important to a person, and therefore the value of security is not important to a person. Opposing values have been found to cause opposing motivation and even opposing emotions (Maio et al., 2009; Tamir et al., 2016). The circumplex model has also been demonstrated to apply intra-individually (Gollan & Witte, 2014), which implies that seeing someone excel in a value that is not internally relevant, means that this person endorses a value opposite of what is important to the person.. Thus, seeing someone excel in a value that is not important causes malicious envy probably because the superior person endorses opposing values and thereby symbolizes an obstacle in the envier's goal pursuit.

The claim that a situation must be self-relevant is important because it allows people to selectively react to situations that have implications for a person's well-being (Smith & Kirby, 2009). The present study seems to contradict this claim by indicating that even not important situations can cause an emotional reaction. However, I argue that this is unlikely as a general claim. My methodological procedure was designed in a way that it gives every described person in the vignette relevance by confronting the participant with this other person. Thus, the methodological procedure made the described person salient simply by mentioning her. On top of that, the other person was successful and therefore attracted participants' attention because success signals status and status is a desired goal in itself (Anderson et al., 2015). Additionally, the person descriptions in my vignettes made clear that the portrayed value was at least important to one other person – the described person itself. The importance of that particular value to at least one other person was therefore obvious based on my methods. In a more natural setting, stimuli that have no self-relevance might not have received any attention and would therefore also not have elicited any emotion. However, also in a natural setting, stimuli are made salient because others pay attention to it (Tomasello, 1995). Like in my vignettes, it

happens regularly that we are confronted with people who endorse values opposing our own value system. This is relevant to us because it first may trigger an obstacle in our own goal pursuit. Second, this person can get attention and praise from others, which makes it also salient to us because we care about attention from others. Summarizing, whilst at first sight this study might indicate that unimportant situations can also cause an emotional reaction, the used vignettes might have actually been self-relevant to the participants causing the examined emotional reaction. This self-relevance was however on a different dimension than internal self-relevance caused by my methodological procedure.

Another explanation for the effect of internal self-relevance on malicious envy could be that the object of comparison in our studies, namely a value, was always inherently relevant on a social dimension. As argued in the introduction, values are prototypes of what is self-relevant. I chose to study values as an operationalization of self-relevance. I did so because values reflect, on the one hand, what is important to a person and, on the other hand, socially shared guiding principles (e.g., Vauclair et al., 2015). They therefore have the power to transport personal and social meaning. That is also why I aimed to manipulate the internal and external self-relevance of values. However, despite the manipulation, I may not have been able to make a value totally unimportant on the respective dimension. Values may always represent important dimensions because people have learned throughout their lives that this is a value that can be important to others. Even if a value is of low internal self-relevance, it keeps some kind of self-relevance on a social level. That is why I argue that in the case that a value was of low internal self-relevance people may still have felt relevance of this value on a social dimension. I suppose this is the reason why people reacted with malicious envy towards that person. It would still be interesting to know what happens if a person achieved something that is not important on any possible dimension. Future research should address this question.

In sum, what do the present research findings imply about the appraisal of self-relevance? The concept of self-relevance is not a simple construct. I showed that there is more to self-relevance than simply the importance of a value to a person. My results indicate that emotions can be elicited even when a value is not internally important to a person. The simple conceptualization of self-relevance cannot hold here. In more complex social situations, values can become relevant on several dimensions. They can at least be both internally and externally relevant. It is therefore important to study the different sources of self-relevance.

Implications for the status-hypothesis. What do these effects mean for the status-hypothesis of envy? Previous research supports the idea that people envy others for having a superior status position (see Crusius & Lange, 2017, for a similar argumentation). This implies that envy is about what is valued highly by members of a person's social group. Translated into the context of my research design, it means that external self-relevance should have increased envious reactions towards a superior other. However, there was no consistent effect of external self-relevance on benign and malicious envy. Meta-analytical findings of the first part of this research indicate that external self-relevance was associated with more malicious envy and less benign envy. It seems that only malicious envy is more intense when seeing a superior other in a status position. Accordingly, the present results partially question the conceptualisation of envy as a status-related emotion. However, as we measured envious reactions towards a person who excelled in the domain of values, the comparison domain inherently possessed some external self-relevance. So, the person in my vignettes excelled in a value domain of external self-relevance, even if it was said not to be internally or externally self-relevant in the manipulation. Thus, my research cannot falsify the status-hypothesis of envy because I could not fully disentangle internal and external self-relevance. Nonetheless, when there was an effect of external self-relevance it was always weaker than the effect of internal self-relevance

on benign and malicious envy. If a strong interpretation of the status-approach to envy were true this should not have been the case. I conclude that status cannot be the only source for envious reactions towards superior others. At the very least, envy domains that have little external importance, but strong internal self-relevance, are also capable of inducing envious reactions.

Alternative Explanations

I assume that internal and external self-relevance account for the reported effects on benign and malicious envy. Nevertheless, there are some alternative explanations that could account for the effects as well. First, *similarity* might explain the effects found in the present study. It might be that people perceived others who seem to endorse similar values as more similar to them. Undeniably, similarity is an important factor in driving social comparisons (Festinger, 1954; Tesser, 1991; Tesser & Smith, 1980) and envy (Salovey & Rodin, 1984; Schaubroeck & Lam, 2004). This literature indicates that people are more envious towards people who are similar to them. However, similarity has so far been related to increase both, benign and malicious envy (see Van de Ven & Zeelenberg, 2018, for a review; Van de Ven et al., 2009). Thus, I would not expect differential effects on benign and malicious envy. Similarity is therefore unlikely to explain the differential effects of self-relevance on benign and malicious envy.

Second, *liking* might explain the effects. It might be that people reacted with more benign envy when internal self-relevance was high because they liked this person more and therefore did not want to express harmful intentions towards this person. However, this does not explain why we also find a negative association between external self-relevance and benign envy, at least in the first part of this research. Why would someone who endorses a value that is important to others not be liked? After all, this person is similar to members of a person's

social group and should thus also be liked (e.g., Amodio & Showers, 2005). This should then elicit the tendency to emulate that person and, thus, benign envy. However, I found a different pattern of results, and therefore do not think that liking accounts for the described effects.

Third, the effects could be explained by the envier's *sense of control*. Maybe values that are internally important are values that participants feel competent to pursue because they have tried to live according to these important values before. This would then be related to more benign envy, fostering the motivation to improve. Values that are not internally important may also be values people have no knowledge on how to pursue them. Therefore, low internal self-relevance could be associated with malicious envy, fostering the motivation to take away the other's advantage. I outlined in the introduction that control is a potential mechanism driving the effects of internal and external self-relevance on benign and malicious envy. Future research should test this prediction.

Another alternative explanation concerns the *definition of external self-relevance*: Does external self-relevance really reflect people's desire for status? One could counter that what is important to others is important to a person because the person wants to establish bonds with their social group. External self-relevance might rather reflect the need to belong (Deci & Ryan, 2002). However, looking at the content of what people are most envious about, such as material possessions, attractiveness, success, and popularity (Poelker et al., 2016), it seems most likely that envy is about what brings status in a social group (see introduction of this dissertation for a longer argumentation). However, this does not rule out the alternative explanation that external self-relevance is more about the need to belong than about the desire for status. I started studying the effects of external self-relevance, i.e., self-relevance that is defined by other people. What really drives external self-relevance is not clear yet and should be addressed in future research.

Another alternative explanation could be that *status* can be something that is *internally important* to a person. Thus, it might not be possible to differentiate between internal and external self-relevance. This idea is partially supported by my data in the first three studies: Measures of internal and external self-relevance were on average moderately correlated. However, this correlation was not perfect, indicating that people can differentiate between what is important to them and what is important to others. Additionally, I argued above that the negative association between internal self-relevance and malicious envy might have emerged because something that is not internally important is potentially externally important. In order for this mechanism to lead to opposing effects, internal and external self-relevance needed to be disentangled. However, there may nevertheless be some overlap between internal self-relevance and external self-relevance, an argument that is partially supported by self-determination theory. Self-determination theory argues that extrinsic motivation can be internalized (Ryan & Deci, 2000). However, the effects that are caused by internal and external motivation can still be disentangled and lead to different effects (Deci et al., 1999; Ryan & Connell, 1989; Ryan & Deci, 2000; Vansteenkiste et al., 2006). Therefore, I argue that also internal and external self-relevance can be differentiated and lead to different effects on emotions such as envy.

Another critical point might be that effects could be *driven by only a few values*. Accordingly, I might not have studied the effects of self-relevance but only of certain values. To address this question, I examined effects of internal and external self-relevance per value in every study. Tables 26 to 32 show effects of internal and external self-relevance per value in each study. The direction of the effects is very consistent for the effect of internal self-relevance on benign envy (60 out of 70 regression coefficients or mean differences were in the direction of the main effect). The effect of internal self-relevance on malicious envy was somewhat less consistent (41 out of 70 regression coefficients or mean differences were in the direction of the

main effect). Still, there does not seem to be a consistent pattern for specific values. I argued that the association between low internal self-relevance with more malicious envy emerges because low internal self-relevance implies extrinsic relevance. Extrinsic self-relevance might be more strongly supported by certain values, such as power or achievement, so called “social values” (Schwartz, 2012). However, the pattern does not seem to be consistent in the current investigation. Nevertheless, future research should study whether certain values elicit different effects of internal or external self-relevance.

Limitations and Future Directions

Manipulation of external self-relevance. In addition to the effect of internal self-relevance on benign and malicious envy, I also predicted that external self-relevance would decrease benign envy and increase malicious envy. However, empirical data on this effect were not consistent across studies. Data confirmed this prediction in the first three studies, and data from Studies 4 – 7 did not. Several methodological reasons could account for the non-significance of an effect in Studies 4 – 7. First, Studies 4 – 7 had a between-subjects design which has less statistical power compared to the within-subjects design in Studies 1 – 3. However, I considered this design as appropriate to show the causal relationship between self-relevance and benign and malicious envy. Nevertheless, this might have made it difficult to find an effect of external self-relevance. In particular, since effects of external self-relevance may be weaker than effects of internal self-relevance as indicated by the manipulation check. It seems that the effect of external self-relevance, if it exists, was too weak to show an effect with the methodological approach used in Studies 4 – 7.

Second, it may have been more difficult to manipulate external self-relevance beyond the inherent relevance of values. As outlined above, the negative effect of internal self-relevance on malicious envy could emerge because low internal self-relevance triggers external

self-relevance because of the inherent social relevance of values. People may know that values are per se relevant domains even if they themselves do not endorse them. Thus, it could have been too difficult to manipulate external self-relevance beyond the relevance that values already have themselves.

Third, the value affirmation task may have been more difficult for participants to create externally self-relevant values used in the procedure. Participants had to write about the importance or non-importance of a certain value for their social group. This requires knowledge about what is important to others, which may be less accessible to participants than knowledge about what is important or non-important to themselves. This effect may have been amplified by the order in which the manipulation of internal and external self-relevance was presented. The manipulation of internal self-relevance was always presented before the manipulation of external self-relevance. My reasoning was that it might be easier for participants to first think about the importance or non-importance of a value for them personally, and then contrast what they think is important for their social group from their own opinion. However, this may have made the task even more difficult because it required a further cognitive step that was not necessary for the manipulation of internal self-relevance. Taken together, the non-significant effect of external self-relevance in the second part of the current findings may have been caused by methodological constraints. Future research should find a more effective operationalization of external self-relevance, for example by using more concrete objects of comparison whose internal or external self-relevance can be easier manipulated.

Effect size. Another limitation concerns the rather small effect size that internal self-relevance had on malicious envy compared to the larger effect it had on benign envy. Meta-analytical findings revealed that the negative effect of internal self-relevance on malicious envy is rather small (meta-analysis part 1: $B = -0.078$, $SE B = 0.01$, $p < .001$, meta-analysis part 2:

$B = 1.846$, $SE B = 0.89$, $p = .009$), compared to the positive effect of internal self-relevance on benign envy (meta-analysis part 1: $B = 0.548$, $SE B = 0.017$, $p < .001$, meta-analysis part 2: $B = -0.348$, $SE B = 0.118$, $p = .026$). This might be due to the manner in which malicious envy items were phrased (e.g., *I feel hostile towards this person*, *I feel hatred*), which may have sounded rather harsh, making it difficult for participants to rate high on these items. Furthermore, previous research has found correlations of malicious envy with social desirability (Lange et al., 2016; Lange, Paulhus, et al., 2018). This may explain why means of malicious envy are on the lower end of the scale throughout all studies ($M_{overall} = 1.93$, $SD_{overall} = 0.22$). Presumably, there was a bottom effect making it less likely to find significant effects on the malicious envy scale, which makes it even more remarkable that the data consistently showed significant differences of internal self-relevance on malicious envy. However, given the methodological limitations of the scale, I cannot comment on how strong the effect of self-relevance on envy actually is. Presumably, the effect size is larger than indicated in the current research.

Values operationalizing self-relevance. In the present set of studies, I operationalized self-relevance by values. More precisely, I based my research on the theory of basic values (Schwartz, 1992). According to literature, this theory has been supported by numerous studies, and it also provides measures of adequate psychometric properties (Schwartz & Butenko, 2014). However, even the well-established theory of basic values is subject to changes and revisions. For example, there does not seem to be a definitive set of basic values. A refined theory of basic values proposes that there are 19 values to best describe what is important to people across different cultures (Schwartz et al., 2012). To make a concrete statement on how the content of a single value affects envious responding to an upward comparison, one should use the best and most refined set of values available. For the present research, I chose the set

of values that seemed the most established and is being used in current research (Tamir et al., 2016). Even if the set of values I used could have been an even more precise description of what is important to people, I was not particularly interested in the content of the values. Instead, I used values to induce self-relevance in participants. Furthermore, it has not been questioned that the 10 basic values reflect important value dimensions, and they are also part of more refined theories (Schwartz et al., 2016). I suppose that the results would not change when choosing a different set of values since my predictions are not based on the specific content of a value.

Still, values present only part of what is self-relevant to a person. Self-relevance has been defined by a person's needs, attachments, values, current goals, and beliefs (Frijda, 1993; Lazarus, 1991; Scherer, 2005; Smith & Kirby, 2009). I chose to study values as a prototype of what is relevant to a person because they reflect guiding principles in a person's life (Schwartz, 2006b) and reflect what is important to others (Vauclair et al., 2015). Furthermore, effects of values on emotions have been shown to reflect effects of self-relevance on emotions (e.g., De Leersnyder et al., 2017). However, values only constitute part of what is self-relevant to a person. Future research should address whether internal and external needs, attachments, current goals, or beliefs have different effects on benign and malicious envy. Although I do not see potential reasons why that would lead to differences to the present findings, it would be interesting to study how internal and external facets of other self-relevant domains influence emotions.

Likewise, future research should reveal whether effects are consistent across different objects of comparison. Values represent very abstract objects of comparison. The question arises whether effects would be similar for more concrete objects of comparison, such as cars, attractiveness, or results in a performance test. I predict effects to be similar, but stronger, for more concrete objects of comparison. The described persons in my vignettes achieved

something virtuous. Maybe, this made it less likely for participants to admit feeling envious towards this person. This problem may be absolved for more concrete objects of comparisons. Future research should address this question.

Introducing a new terminology. The present research introduced a new terminology in emotion research: internal and external self-relevance. As outlined in the introduction and supported by data, I argue that it is important to disentangle effects of internal and external self-relevance. I thereby draw upon other theories that also distinguish internal and external factors on psychological processes (e.g., Baldwin & Baccus, 2004; Leary et al., 2015; Ryan & Deci, 2000). I closely followed the differentiation between intrapsychic and interpersonal motives introduced by Leary et al. (2015). I think it was adequate to use that definition as I studied self-relevance which is partially defined by values. Values are defined as trans-situational motives (Schwartz, 1992), and the resulting motivations are intertwined with emotions (De Leersnyder et al., 2017; Nelissen et al., 2007). It is however not parsimonious to introduce a new terminology to the literature instead of using established concepts. I do so because the theory by Leary et al. (2015) is rooted in the area of motivation research. Thus, it is unclear whether we can entirely translate this to emotion research. However, future research should study how established phenomena and theories of motivation research also explain findings in emotion research, and vice versa. The current investigation is an example for why a closer communication between different fields of research can be fruitful.

The current investigation is also an example for why it is very important to choose precise definitions. This can be illustrated with an example from self-determination theory. They introduced the concepts of intrinsic and extrinsic motivation as well as autonomous and controlled motives in goal pursuit (Ryan & Deci, 2000). These concepts seem very close to each other, and the question arises whether they denote the same constructs. However, this

“why” and “what” of goal pursuit can be disentangled, and it has been shown to be important in order to predict behavior more precisely (Deci & Ryan, 2000; Sheldon et al., 2004). Accordingly, potential differences between concepts of internal and external self-relevance, and other differentiations such as intrapsychic and interpersonal motives, should be addressed in future research.

Generalizability. A critical point of the current research concerns the generalizability of the present results. All my studies were conducted online via Amazon MTurk in the US. Accordingly, I cannot guarantee generalizability beyond this population. In the context of values, this could be an issue since cultures differ in which values they prioritize (Inglehart & Baker, 2000; Schwartz, 2006a). However, the present data use values to show a general principle of how self-relevance affects emotions making the specific content of the value not important for my theoretical and methodological approach. There is also little reason to believe that the influence of self-relevance on emotions differs between cultures. Furthermore, MTurk samples were shown to be more similar to the general population (Buhrmester, Kwang, & Gosling, 2011; Levay, Freese, & Druckman, 2016) than samples of undergraduate psychology students in a laboratory (Henrich, Heine, & Norenzayan, 2010). Additionally, findings rarely seem to differ between laboratory and MTurk samples (Casler, Bickel, & Hackett, 2013). I propose that the present results can be replicated with other samples and other cultures. Nevertheless, future research should address this question.

Another methodological limitation concerns the reliance on self-report measures. Participants rated their envious reactions towards a vignette on items of the PaDE Scale (Lange, Weidman, et al., 2018). This scale has been developed in a bottom-up approach and has adequate psychometric properties (Lange, Weidman, et al., 2018). I am convinced that this measure captures the concepts of benign and malicious envy and is therefore the best measure

currently available. Crucially, the items of the PaDE scale also measure action tendencies (e.g., *I want to work harder to also obtain this quality*). However, I do not know whether the measured responses would translate into behavior. Although, previous research has shown various effects of envy on behavioral outcomes, such as money burning (Zizzo & Oswald, 2001), gossiping about the envied person (Wert & Salovey, 2004), perseverance when working at a task (Van de Ven et al., 2011) and higher performance (Lange & Crusius, 2015a). I would therefore expect the effects of internal and external self-relevance to also affect behavioral outcomes of benign and malicious envy. Future research should test this prediction.

Implications for Other Research Areas

The current investigation opens several interesting directions for other research areas beyond research on appraisal processes and envy. First of all, the question arises how internal and external self-relevance shape other distinct emotions. I proposed that the influence of self-relevance is particularly interesting for comparison-based emotions because social comparisons are also influenced by the self-relevance of a comparison domain. I therefore set out to study how self-relevance affects envious responding to upward social comparisons. A similar investigation has been conducted for experiences of pride (Osch et al., 2018). Pride seems to be influenced by internal rather than external factors. However, Osch et al. (2018) did not study the appraisal of self-relevance specifically. Additionally, the differentiation between authentic (about effortful achievements) and hubristic pride (about stable qualities) was not examined (Tracy & Robins, 2007). It may be that hubristic pride is more prone to influences from others than authentic pride. If a situation is not perceived as internally relevant, success might be attributed to external and uncontrollable causes which is more likely to elicit hubristic pride (Tracy & Robins, 2007). Future research should test how internal and external self-relevance influence authentic and hubristic pride.

Other emotions can be influenced by internal and external factors as well. It has been argued that social factors in appraisal processes should be studied because they can be an important factor in shaping emotions (Manstead & Fischer, 2001). Thus, the differentiation in internal and external factors provides interesting new research question that could potentially influence every emotion. This distinction in internal and external factors of appraisal processes could be particularly fruitful for certain emotions, such as guilt and shame. The differentiation between experiences of guilt and shame has been discussed extensively (Tangney & Dearing, 2002). One difference between guilt and shame can be explained by different causal attributions of a situation (Tracy & Robins, 2006). This could partially be explained by how internally or externally self-relevant a situation was. Future research should test this prediction.

It has also been discussed that research on emotion regulation should take into account research on appraisal processes (Yih, Uusberg, Taxer, & Gross, 2018). As I provide a more detailed understanding of the appraisal of self-relevance, it will be interesting to study how internal and external self-relevance drive emotion regulation strategies. Emotion regulation theory proposes different emotion regulation strategies, such as cognitive reappraisal and suppression (see Gross, 2007, for a comprehensive overview). When doing cognitive reappraisal, people change their cognitive representation of an emotion-eliciting situation and thereby change the emotional experience (e.g., Gross & John, 2003). Suppression involves modulating the emotional response by inhibiting emotion expression (e.g., Gross, 2007). I argue that internally relevant situations would elicit more reappraisal because the person has more knowledge and perceived control in such a situation. Situations that are more externally self-relevant would elicit more suppression strategies because the person is not motivated enough to change the situation and will rather try to avoid it. Together, the distinction between internal and external factors in the elicitation of emotions opens interesting directions for future research on emotions and emotion regulation.

The current findings offer interesting insights for research beyond emotions, such as moral cognition or economic decision making. I studied how people react emotionally towards a person who embodies a certain value. Data revealed that participants felt envy, which is supposedly one of the “deadly sins”, even towards these highly virtuous persons. This finding could explain a prominent finding in morality research – the *do-gooder derogation* (Cramwinckel, van Dijk, Scheepers, & van den Bos, 2013; Minson & Monin, 2012; Monin, 2007). People who “do good” out of moral reasons are associated with a negative valence, and are rated negatively (Minson & Monin, 2012) supposedly because they indicate a threatening social comparison (Monin, 2007). Cramwinckel et al. (2013) found that moral refusers are disliked by participants because their moral behavior presented a moral threat to participants. Moral refusers were bogus participants who refused to eat a sausage out of moral reasons, after participants had already eaten a sausage. They disliked the moral refuser more than non-moral refusers. This research shows how displaying high moral standards can lead to negative evaluations by the perceiver. This is similar to the present research. I also confronted participants with a virtuous person. If that value was not important to the participant, people reacted with increased harmful intentions towards that person. This is comparable to the condition in Cramwinckel et al. (2013) where participants had to eat the sausage, thereby contradicting the behavior of the moral refuser. However, my research goes beyond that finding because I also find productive intentions in the form of benign envy. Future research should address under which condition “do-gooders” elicit emulation rather than devaluation.

The present results also relate to findings on economic behavior. High achievers in the workplace can be the target of harmful behaviors from their colleagues, such as aggression, bullying or harassment (Jensen, Patel, & Raver, 2014; Lam, Van der Vegt, Walter, & Huang, 2011). In economic decision making a similar effect is referred to as antisocial punishment (Herrmann, Thöni, & Gächter, 2008). Antisocial punishment refers to the finding that people

punish those who contribute generously in a public goods game (Irwin & Horne, 2013). This effect supposedly arises because these generous people violate a descriptive norm of how much one should contribute, even when their contribution is actually better for the group (Irwin & Horne, 2013). I argue that such an effect emerges when norms are externally defined. In contrast, high performers can also motivate the inferior persons to work harder (see Sterling et al., 2016, for a review). I argue that such an effect emerges when norms are internally defined. Thus, the differentiation between internal and external self-relevance can have different effects on economic decision making and job performance. Furthermore, this effect could be driven by benign and malicious envy: High achievers can cause benign envy which causes higher performance by the envier when the task is internally important. High achievers can also cause malicious envy which causes aggressive behavior towards the superior other when the task is externally important. Future research should test whether this prediction can be confirmed in an economic context.

This could also apply in a classroom setting. Effects of intrinsic and extrinsic motivation on academic achievements show that higher intrinsic motivation is associated with deeper engagement in learning activities, better conceptual learning, and higher persistence than extrinsic motivation (Vansteenkiste et al., 2006). Envy is likely to arise in an academic context (Pekrun, 2009; Rentzsch et al., 2015). It would therefore be interesting to see whether envy could account for effects of intrinsic and extrinsic motivation on academic performance.

The presented research also provides insights for how upward social comparisons could be used strategically to promote progress. I argue that the present findings can be helpful to understand how envious reactions towards a superior others can be productive. Focusing on what is important for the person instead of focusing on what is important to others can prevent harmful reactions towards the other and rather help to use envy's productive forces.

Taken together, the present research connects to research on emotions, emotion regulation, morality, economic behavior, and school psychology. Based on my findings, I outlined several future directions for basic and applied research. Studying the effects of internal and external self-relevance on benign and malicious envy, as well as other emotions, could help explain behavior in various settings.

Conclusion

The present research sought to answer the question what people are envious about. Across seven studies, empirical evidence indicates that seeing someone excel in a domain that is internally self-relevant will intensify feelings of benign envy, fostering the motivation to improve. Seeing someone excel in a domain that is not internally self-relevant will intensify feelings of malicious envy, fostering the motivation to harm the envied person. The role of external self-relevance was less clear in the present research. Still, there was the tendency that external self-relevance attenuates feelings of benign envy and strengthens feelings of malicious envy.

The data suggested that even comparison domains that are not important to a person can elicit an emotional reaction, namely malicious envy. This seemed to contradict theories on emotions that argue that the primary appraisal of self-relevance is a necessary precondition for emotions. I argued that the effect of internal self-relevance on malicious envy could emerge because domains that are not internally self-relevant are considered relevant on an external dimension. To conclude, the present research indicates that a more detailed understanding of appraisal processes is necessary for a comprehensive understanding what people are envious about.

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Appendix

Appendix A: Preregistrations



AS PREDICTED **CONFIDENTIAL - FOR PEER-REVIEW ONLY**

Internal/external self-relevance_benign/malicious envy_Study3 (#7376)

Created: 12/12/2017 05:56 AM (PT)

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1) Have any data been collected for this study already?

No, no data have been collected for this study yet.

2) What's the main question being asked or hypothesis being tested in this study?

How do internal and external values predict benign and malicious envy in an upward comparison? (for more detailed hypotheses see analysis plan)

3) Describe the key dependent variable(s) specifying how they will be measured.

Participants will rate how the ten basic values according to Schwartz (2003) serve as "a guiding principle in their life" (Schwarz Value Survey, Schwarz, 1992, 2006). An adapted version of the Schwarz Value Survey will ask participants to rate how much the same values serve as "guiding principles in their community".

Next, participants will read descriptions of 10 characters that seem to perfectly endorse the ten basic values. We'll measure how much participants react with benign envy, malicious envy and pain to these characters (scale adapted from Lange, Weidman, & Crusius, in press)

4) How many and which conditions will participants be assigned to?

We use a correlational design. Therefore, there are no conditions.

5) Specify exactly which analyses you will conduct to examine the main question/hypothesis.

We will conduct separate mixed regression models for each dependent variable (i.e., benign envy, malicious envy, pain in envy). Dependent variables will be predicted by the importance of internal values (as measured by the Schwartz Value Survey) and external values (as measured by the adapted version of the Schwartz value survey as described above) and their interaction. As values are crossed with participants we will run mixed models with random intercepts and slopes for participants and random intercepts and slopes for values. In case models do not converge we will reduce the models by removing covariances from the random part of the model.

We predict the following fixed effects:

- a) Benign envy: Importance of internal values will positively predict benign envy. Importance of external values will negatively predict benign envy.
- b) Malicious envy: Importance of internal values will negatively predict malicious envy. Importance of external values will positively predict malicious envy. We expect an interaction effect of internal and external values in malicious envy. The interaction will reveal that high importance of external values leads to more malicious envy especially if internal value importance is low.
- b) Pain in envy: Importance of internal values will negatively predict pain in envy. Importance of external values will positively predict pain in envy.

6) Describe exactly how outliers will be defined and handled, and your precise rule(s) for excluding observations.

Data exclusion: Only participants who answer "Yes" to the question "In your honest opinion, should we use your data in our analyses in this study?" will be included for analyses. This question serves as an attention check.

7) How many observations will be collected or what will determine sample size? No need to justify decision, but be precise about exactly how the number will be determined.

We will collect data from 400 participants via Turk Prime.

8) Anything else you would like to pre-register? (e.g., secondary analyses, variables collected for exploratory purposes, unusual analyses planned?)

Secondary analyses:

We will run mixed models with random intercepts for participants and random intercepts for values for each DV. Comparisons between the random intercept and the above described random slope models as indicated by Chi² model comparison tests will reveal which models best describe the data. We will report those models that best describe the data.

Demographic data will be collected for exploratory purposes.

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Version of ASPredicted Questions: 2.00

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Figure 10. Preregistration of Study 3 as preregistered on aspredicted.org.

This registration is a frozen, non-editable version of [this project \(/aam2c/\)](#)

This registration is currently embargoed. It will remain private until its embargo end date, Thursday, Dec 10, 2020.

Register

Preregistration Template from AsPredicted.org

Have any data been collected for this study already?

Please choose

No, no data have been collected for this study yet

What's the main question being asked or hypothesis being tested in this study?

How do personal and societal values influence benign and malicious envy in an upward comparison? (for more detailed hypotheses see analysis plan)

Describe the key dependent variable(s) specifying how they will be measured.

Participants will first complete a questionnaire about their personal values (PVQ, Schwartz, 2003). This questionnaire is used to choose the value about which they will write in the manipulation of low vs. high personal and societal value importance.
 Manipulation check: Participants will be asked to indicate how much they agree with the following items on a 7-point-scale (1-not at all important, 7- very important):
 Item1: "value xyz' is important to me"
 Item2: "value xyz' is important to my social group"
 After the manipulation of personal and societal value importance, participants will read about a person that perfectly fulfills the value that was either of no importance to them or of high importance to them (according to the condition they were assigned to). We'll measure how much participants react with benign envy, malicious envy and pain to that standard (scale adapted from Lange, Weidman, & Crusius, in prep.)

How many and which conditions will participants be assigned to?

Participants will first complete a questionnaire about their personal values (PVQ, Schwartz, 2003). This questionnaire will reveal the rank order of ten personal values. Participants in one condition get feedback about their most important value, participants in the other condition get feedback about their least important value. To intensify the importance of the most important value, participants in the high personal value condition describe why this value is important to them. To intensify the non-importance of the least important value, participants in the low personal value condition describe why this value is not important to them. The writing procedure was used in previous research to manipulate value affirmation (see e.g. McQueen & Klein, 2006; Tamir et al., 2016).
 The second factor is the importance of the value to the social group. Participants in one condition write about why this value is important to their social group. Participants in the other condition write about why this value is not important to their social group.
 Participants will be randomly assigned to one of the four (high personal value & high societal value; high personal & low societal value; low personal & high societal value; low personal & low societal value) conditions.

Specify exactly which analyses you will conduct to examine the main question/hypothesis.

Manipulation Check:

- a) Item 1: 2 (personal value low vs. high) x 2 (societal value low vs. high) ANOVA: main effect of personal value with higher ratings in high personal value condition than in low personal value condition.
- b) Item 2: 2 (personal value low vs. high) x 2 (societal value low vs. high) ANOVA: main effect of societal value with higher ratings in high societal value condition than in low societal value condition.

Hypothesis tests:

- 1) 2 (personal value: low vs. high) x 2 (societal value: low vs. high) MANOVA (between subjects) for the three dependent variables (benign envy, malicious envy, pain) should reveal a two-way interaction between personal and societal value.
- 2) Follow Up tests per emotion:
- a. 2 (personal value: low vs. high) x 2 (societal value: low vs. high) ANOVA (between subjects) on benign envy ratings: we expect two main effects of personal and societal value with higher ratings in the high than in low personal value condition and higher ratings in the low than in the high societal value condition
- b. 2 (personal value: low vs. high) x 2 (societal value: low vs. high) ANOVA (between subjects) on malicious envy ratings: we expect a main effect of societal value with higher ratings in high than in low societal value condition and an interaction between societal and personal value. T-tests (two-sided) will disentangle the interaction effect. We expect differences to be in the following directions: When personal value is low malicious envy is higher in the high societal value condition than in the low societal value condition. When societal value is high malicious envy is higher in the low personal value condition than in the high personal value condition.

Any secondary analyses?

The influence of personal and societal value on pain-Ratings will be explored.

How many observations will be collected or what will determine sample size? No need to justify decision, but be precise about exactly how the number will be determined.

Previous research showed a small to medium effect of the writing manipulation on emotion ratings (Tamir et al., 2016). Power calculations revealed that we will need 350 participants to find significant effects in the post-hoc Tests of the interaction terms ($d = 0.3$, $\alpha = .05$, $1 - \beta = .80$). To make sure to have enough power even after some drop-outs, we'll collect data from 400 participants.

Anything else you would like to pre-register? (e.g., data exclusions, variables collected for exploratory purposes, unusual analyses planned?)

Data exclusion: Participants who answer "Yes" to the question "In your honest opinion, should we use your data in our analyses in this study?" will be included for analyses. This question serves as an attention check.

Demographic data will be collected for exploratory purposes.

Figure 11. Preregistration of Study 4 as preregistered on osf.io. Internal self-relevance is referred to as *personal value*. External self-relevance is referred to as *societal value*.



Internal/external self-relevance_benign/malicious envy_Study5 (#3787)

Created: 04/20/2017 01:34 AM (PT)

Shared: 01/03/2019 08:11 AM (PT)

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1) Have any data been collected for this study already?

No, no data have been collected for this study yet

2) What's the main question being asked or hypothesis being tested in this study?

How do internal and external values influence benign and malicious envy in an upward comparison? (for more detailed hypotheses see analysis plan)

3) Describe the key dependent variable(s) specifying how they will be measured.

Participants will first rank ten basic values (Schwartz, 2003) according to their importance as guiding principles in their life. This ranking is used to choose the value about which participants will write in the manipulation of internal vs. external value importance.

Manipulation check: Participants will be asked to indicate how much they agree with the following items on a 7-point-scale (1-not at all important, 7-very important):

Item1: "value x' is important to me"

Item2: "value x' is important to my social group"

After the manipulation of personal and societal value importance, participants will read about a person that perfectly fulfills the value that was of an average importance to them. We'll measure how much participants react with benign envy, malicious envy and pain to that standard (scale adapted from Lange, Weidman, & Crusius, in prep.)

4) How many and which conditions will participants be assigned to?

Participants will be randomly assigned to one condition of a 2 (low internal value, high internal value) x 2 (low external value, high external value) between subjects design.

From the value ranking of each participant, we will choose the value that was of average importance. According to the condition participants were assigned to, they will write about why this value is of low or high personal importance (internal value). Additionally, participants will write about why this value is of low or high importance to their social group (external value).

5) Specify exactly which analyses you will conduct to examine the main question/hypothesis.

Manipulation Check:

a) Item1: 2 (low internal value, high internal value) x 2 (low external value, high external value) ANOVA: main effect of internal value with higher ratings in high internal value condition than in low internal value condition.

b) Item 2: 2 (low internal value, high internal value) x 2 (low external value, high external value) ANOVA: main effect of external value with higher ratings in high external value condition than in low external value condition.

Hypothesis tests:

1) 2 (low internal value, high internal value) x 2 (low external value, high external value) MANOVA (between subjects) for the three dependent variables (benign envy, malicious envy, pain) should reveal a two-way interaction between internal and external value.

2) Follow Up tests per emotion:

a. 2 (low internal value, high internal value) x 2 (low external value, high external value) ANOVA (between subjects) on benign envy ratings: we expect two main effects of internal and external value with higher ratings in the high than in low internal value condition and higher ratings in the low than in the high external value condition

b. 2 (low internal value, high internal value) x 2 (low external value, high external value) ANOVA (between subjects) on malicious envy ratings: we expect a main effect of external value with higher ratings in high than in low external value condition and an interaction between external and internal value. T-tests (one-sided) will disentangle the interaction effect. We expect differences to be in the following directions: When internal value is low malicious envy is higher in the high external value condition than in the low external value condition. When external value is high malicious envy is higher in the low internal value condition than in the high internal value condition.

6) Any secondary analyses?

7) How many observations will be collected or what will determine sample size? No need to justify decision, but be precise about exactly how the number will be determined.

Previous research showed a small to medium effect of the writing manipulation on emotion ratings (Tamir u. a., 2016). Power calculations revealed that approx. 300 participants are needed to find significant effects in the follow up t-Tests (one-sided, $d = 0.3$, $\alpha = .05$, $1-\beta = .80$). We will collect 300

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Figure 12. Preregistration of Study 5 as preregistered on aspredicted.org.



Internal/external self-relevance_benign/malicious envy_Study6 (#5985)

Created: 10/06/2017 06:25 AM (PT)

Shared: 01/04/2019 04:24 AM (PT)

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1) Have any data been collected for this study already?

No, no data have been collected for this study yet.

2) What's the main question being asked or hypothesis being tested in this study?

How do internal and external values influence benign and malicious envy towards an upward comparison standard? (for more detailed hypotheses see analysis plan)

3) Describe the key dependent variable(s) specifying how they will be measured.

Participants will first rank ten basic values (Schwartz, 2003) according to their importance as guiding principles in their life. This ranking is used to choose the value about which participants will write in the manipulation of internal vs. external value importance.

Manipulation check: Participants will be asked to indicate how much they agree with the following items on a 7-point scale (1-not at all important, 7-very important):

Item1: "value x' is important to me"

Item2: "value x' is important to my social group"

After the manipulation of personal and societal value importance, participants will read about a person that perfectly fulfills the value that was of an average importance to them. We'll measure how much participants react with benign envy, malicious envy and pain to that standard (scale adapted from Lange, Weidman, & Crusius, in prep.)

4) How many and which conditions will participants be assigned to?

Participants will be randomly assigned to one condition of a 2 (low internal value, high internal value) x 2 (low external value, high external value) between subjects design.

From the value ranking of each participant, we will choose the value that was of average importance. According to the condition participants were assigned to, they will write about why this value is of low or high personal importance (internal value). Additionally, participants will write about why this value is of low or high importance to their social group (external value). Then, participants will read a vignette about a person that serves as a role model for living a life according to this value. Depending on the condition participants will be assigned to, they will be reminded of the (non-) importance of living according to this value for the person and their social group.

5) Specify exactly which analyses you will conduct to examine the main question/hypothesis.

Manipulation Check:

a) Item1: 2 (low internal value, high internal value) x 2 (low external value, high external value) ANOVA: main effect of internal value with higher ratings in high internal value condition than in low internal value condition.

b) Item 2: 2 (low internal value, high internal value) x 2 (low external value, high external value) ANOVA: main effect of external value with higher ratings in high external value condition than in the low external value condition.

Hypothesis tests:

1) 2 (low internal value, high internal value) x 2 (low external value, high external value) MANOVA (between subjects) for the three dependent variables (benign envy, malicious envy, pain) should reveal a two-way interaction between internal and external value.

2) Follow Up tests per emotion:

a. 2 (low internal value, high internal value) x 2 (low external value, high external value) ANOVA (between subjects) on benign envy ratings: we expect two main effects of internal and external value with higher ratings in the high than in low internal value condition and higher ratings in the low than in the high external value condition

b. 2 (low internal value, high internal value) x 2 (low external value, high external value) ANOVA (between subjects) on malicious envy ratings: we expect a main effect of external value with higher ratings in high than in low external value condition and an interaction between external and internal value. T-tests (one-sided) will disentangle the interaction effect. We expect differences to be in the following directions: When internal value is low malicious envy is higher in the high external value condition than in the low external value condition. When external value is high malicious envy is higher in the low internal value condition than in the high internal value condition.

6) Any secondary analyses?

7) How many observations will be collected or what will determine sample size? No need to justify decision, but be precise about exactly how the

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Figure 13. Preregistration of Study 6 as preregistered on aspredicted.org.



Internal/external self-relevance_benign/malicious envy_Study7 (#7379)

Created: 12/12/2017 07:39 AM (PT)

Shared: 01/04/2019 04:26 AM (PT)

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1) Have any data been collected for this study already?

No, no data have been collected for this study yet.

2) What's the main question being asked or hypothesis being tested in this study?

How do internal and external values influence benign and malicious envy towards an upward comparison standard? (for more detailed hypotheses see analysis plan)

3) Describe the key dependent variable(s) specifying how they will be measured.

Participants will first rank ten basic values (Schwartz, 2003) according to their importance as guiding principles in their life. This ranking is used to choose the value about which participants will write in the manipulation of internal vs. external value importance.

Manipulation check: Participants will be asked to indicate how much they agree with the following items on a 7-point-scale (1-not at all important, 7-very important):

Item1: "value x' is important to me"

Item2: "value x' is important to other people"

After the manipulation of internal and external value importance, participants will read about a person that perfectly fulfills the value that was of average importance to them. We'll measure how much participants react with benign envy, malicious envy and pain of envy to that standard (scale adapted from Lange, Weidman, & Crusius, in press)

4) How many and which conditions will participants be assigned to?

Participants will be randomly assigned to one condition of a 2 (low internal value, high internal value) x 2 (low external value, high external value) between subjects design.

From the value ranking of each participant, we will choose the value that was of average importance. According to the condition participants were assigned to, they will write about why this value is of low or high importance to them (internal value). Additionally, participants will write about why this value is of low or high importance to other people (external value). Then, participants will read a vignette about a person that serves as a role model for living according to this value. Depending on the condition participants were assigned to, they will be reminded of the (non-) importance of living according to this value for the person and other people.

5) Specify exactly which analyses you will conduct to examine the main question/hypothesis.

Manipulation Check:

a) Item1 "Value X is important to me": 2 (low internal value, high internal value) x 2 (low external value, high external value) ANOVA: main effect of internal value with higher ratings in high internal value condition than in low internal value condition.

b) Item 2 "Value X is important to other people": 2 (low internal value, high internal value) x 2 (low external value, high external value) ANOVA: main effect of external value with higher ratings in high external value condition than in the low external value condition.

Hypothesis tests:

1) 2 (low internal value, high internal value) x 2 (low external value, high external value) MANOVA (between subjects) for the three dependent variables (benign envy, malicious envy, pain) should reveal a two-way interaction between internal and external value.

2) Follow Up tests per emotion:

a. 2 (low internal value, high internal value) x 2 (low external value, high external value) ANOVA (between subjects) on benign envy ratings: we expect two main effects of internal and external value with higher ratings in the high than in low internal value condition and higher ratings in the low than in the high external value condition

b. 2 (low internal value, high internal value) x 2 (low external value, high external value) ANOVA (between subjects) on malicious envy ratings: we expect a main effect of external value with higher ratings in high than in low external value condition and an interaction between external and internal value. T-tests (one-sided) will disentangle the interaction effect. We expect differences to be in the following directions: When internal value is low malicious envy is higher in the high external value condition than in the low external value condition. When external value is high malicious envy is higher in the low internal value condition than in the high internal value condition.

6) Describe exactly how outliers will be defined and handled, and your precise rule(s) for excluding observations.

Data exclusion:

- Only participants who answer "Yes" to the question "In your honest opinion, should we use your data in our analyses in this study?" will be included for analyses. This question serves as an attention check.

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Figure 14. Preregistration of Study 7 as preregistered on aspredicted.org.

Appendix B: Descriptive Statistics and Multilevel Regressions

Table 1

Correlations Between Internal and External Self-Relevance, Studies 1, 2, and 3

| Value | Correlation internal and external self-relevance, Study 1 | Correlation internal and external self-relevance, Study 2 | Correlation internal and external self-relevance, Study 3 |
|----------------|---|---|---|
| Power | $r = .079, p = .516$ | $r = .223, p = .001$ | $r = .500, p < .001$ |
| Achievement | $r = .286, p = .017$ | $r = .407, p < .001$ | $r = .536, p < .001$ |
| Self-Direction | $r = .236, p = .050$ | $r = .359, p < .001$ | $r = .434, p < .001$ |
| Stimulation | $r = -.065, p = .595$ | $r = .198, p = .005$ | $r = .515, p < .001$ |
| Benevolence | $r = .429, p < .001$ | $r = .392, p < .001$ | $r = .523, p < .001$ |
| Universalism | $r = .251, p = .037$ | $r = .405, p < .001$ | $r = .489, p < .001$ |
| Tradition | $r = .191, p = .116$ | $r = .486, p < .001$ | $r = .545, p < .001$ |
| Conformity | $r = .121, p = .322$ | $r = .407, p < .001$ | $r = .547, p < .001$ |
| Security | $r = .416, p < .001$ | $r = .568, p < .001$ | $r = .660, p < .001$ |
| Hedonism | $r = .191, p = .115$ | $r = .420, p < .001$ | $r = .519, p < .001$ |

Table 2

Multilevel Regression Results, Study 1

| Benign Envy | | | |
|-------------------------|----------|---------------|----------|
| <i>Fixed effects</i> | <i>B</i> | <i>SE B</i> | <i>p</i> |
| Intercept | 4.22 | 0.30 | < .001 |
| Internal self-relevance | 0.58 | 0.06 | < .001 |
| External self-relevance | -0.07 | 0.08 | .389 |
| Interaction | 0.00 | 0.09 | .981 |
| <i>Random effects</i> | Variance | St. deviation | |
| Intercept (participant) | 0.88 | 0.94 | |
| Intercept (value) | 0.69 | 0.83 | |
| Residual | 2.00 | 1.42 | |
| Malicious Envy | | | |
| <i>Fixed effects</i> | <i>B</i> | <i>SE B</i> | <i>p</i> |
| Intercept | 1.86 | 0.19 | < .001 |
| Internal self-relevance | -0.21 | 0.05 | < .001 |
| External self-relevance | 0.12 | 0.06 | .034 |
| Interaction | -0.03 | 0.07 | .705 |
| <i>Random effects</i> | Variance | St. deviation | |
| Intercept (participant) | 0.86 | 0.93 | |
| Intercept (value) | 0.18 | 0.42 | |
| Residual | 1.00 | 1.00 | |
| Pain | | | |
| <i>Fixed effects</i> | <i>B</i> | <i>SE B</i> | <i>p</i> |

| | | | | |
|-----------------------|-------------------------|----------|---------------|----------|
| | Intercept | 2.07 | 0.17 | < .001 |
| | Internal self-relevance | -0.15 | 0.05 | .001 |
| | External self-relevance | 0.03 | 0.06 | 0.623 |
| | Interaction | 0.06 | 0.07 | .394 |
| <i>Random effects</i> | | Variance | St. deviation | |
| | Intercept (participant) | 1.11 | 1.05 | |
| | Intercept (value) | 0.07 | 0.26 | |
| | Residual | 1.11 | 1.05 | |
| Envy | | | | |
| <i>Fixed effects</i> | | <i>B</i> | <i>SE B</i> | <i>p</i> |
| | Intercept | 3.04 | 0.26 | < .001 |
| | Internal self-relevance | 0.31 | 0.06 | < .001 |
| | External self-relevance | 0.04 | 0.08 | .623 |
| | Interaction | 0.14 | 0.08 | .087 |
| <i>Random effects</i> | | Variance | St. deviation | |
| | Intercept (participant) | 1.55 | 1.24 | |
| | Intercept (value) | 0.35 | 0.59 | |
| | Residual | 1.64 | 1.28 | |
| Admiration | | | | |
| <i>Fixed effects</i> | | <i>B</i> | <i>SE B</i> | <i>p</i> |
| | Intercept | 4.38 | 0.32 | < .001 |
| | Internal self-relevance | 0.50 | 0.06 | < .001 |
| | External self-relevance | -0.08 | 0.07 | .299 |
| | Interaction | 0.06 | 0.08 | .467 |
| <i>Random effects</i> | | Variance | St. deviation | |
| | Intercept (participant) | 1.04 | 1.02 | |
| | Intercept (value) | 0.84 | 0.92 | |
| | Residual | 1.60 | 1.26 | |

Table 3

Multilevel Regression Results, Study 2

| | | | | |
|-----------------------|-------------------------|----------|---------------|----------|
| Benign Envy | | | | |
| <i>Fixed effects</i> | | <i>B</i> | <i>SE B</i> | <i>p</i> |
| | Intercept | 4.33 | 0.23 | < .001 |
| | Internal self-relevance | 0.48 | 0.03 | < .001 |
| | External self-relevance | -0.14 | 0.03 | < .001 |
| | Interaction | 0.02 | 0.03 | .630 |
| <i>Random effects</i> | | Variance | St. deviation | |
| | Intercept (participant) | 1.06 | 1.03 | |
| | Intercept (value) | 0.44 | 0.66 | |
| | Residual | 1.99 | 1.41 | |
| Malicious Envy | | | | |
| <i>Fixed effects</i> | | <i>B</i> | <i>SE B</i> | <i>p</i> |
| | Intercept | 1.75 | 0.12 | < .001 |
| | Internal self-relevance | -0.09 | 0.02 | < .001 |
| | External self-relevance | 0.09 | 0.02 | < .001 |

| | | | | |
|-----------------------|-------------------------|-------|---------------|----------|
| | Interaction | 0.02 | 0.02 | .279 |
| <i>Random effects</i> | | | | |
| | Variance | | St. deviation | |
| | Intercept (participant) | 0.95 | 0.98 | |
| | Intercept (value) | 0.08 | 0.28 | |
| | Residual | 0.83 | 0.91 | |
| Pain | | | | |
| <i>Fixed effects</i> | | | | |
| | <i>B</i> | | <i>SE B</i> | <i>p</i> |
| | Intercept | 1.78 | 0.10 | < .001 |
| | Internal self-relevance | -0.01 | 0.02 | .560 |
| | External self-relevance | 0.02 | 0.02 | .269 |
| | Interaction | 0.01 | 0.02 | .728 |
| <i>Random effects</i> | | | | |
| | Variance | | St. deviation | |
| | Intercept (participant) | 1.04 | 1.02 | |
| | Intercept (value) | 0.05 | 0.22 | |
| | Residual | 0.79 | 0.89 | |
| Admiration | | | | |
| <i>Fixed effects</i> | | | | |
| | <i>B</i> | | <i>SE B</i> | <i>p</i> |
| | Intercept | 4.67 | 0.26 | < .001 |
| | Internal self-relevance | 0.43 | 0.03 | < .001 |
| | External self-relevance | -0.17 | 0.03 | < .001 |
| | Interaction | -0.02 | 0.03 | .484 |
| <i>Random effects</i> | | | | |
| | Variance | | St. deviation | |
| | Intercept (participant) | 0.93 | 0.96 | |
| | Intercept (value) | 0.60 | 0.78 | |
| | Residual | 1.73 | 1.32 | |

Table 4

Multilevel Regression Results, Study 3

| | | | | |
|-----------------------|-------------------------|-------|---------------|----------|
| Benign Envy | | | | |
| <i>Fixed effects</i> | | | | |
| | <i>B</i> | | <i>SE B</i> | <i>p</i> |
| | Intercept | 4.26 | 0.18 | < .001 |
| | Internal self-relevance | 0.59 | 0.02 | < .001 |
| | External self-relevance | -0.03 | 0.02 | .157 |
| | Interaction | -0.03 | 0.02 | .137 |
| <i>Random effects</i> | | | | |
| | Variance | | St. deviation | |
| | Intercept (participant) | 1.14 | 1.07 | |
| | Intercept (value) | 0.30 | 0.55 | |
| | Residual | 1.64 | 1.28 | |
| Malicious Envy | | | | |
| <i>Fixed effects</i> | | | | |
| | <i>B</i> | | <i>SE B</i> | <i>p</i> |
| | Intercept | 1.73 | 0.07 | < .001 |
| | Internal self-relevance | -0.05 | 0.01 | < .001 |
| | External self-relevance | 0.01 | 0.01 | .495 |
| | Interaction | 0.00 | 0.01 | .710 |
| <i>Random effects</i> | | | | |
| | Variance | | St. deviation | |

| Intercept (participant) | 1.25 | 1.12 | |
|-------------------------|----------|---------------|----------|
| Intercept (value) | 0.02 | 0.15 | |
| Residual | 0.39 | 0.63 | |
| Pain in Envy | | | |
| <i>Fixed effects</i> | <i>B</i> | <i>SE B</i> | <i>p</i> |
| Intercept | 1.64 | 0.06 | < .001 |
| Internal self-relevance | 0.01 | 0.01 | .293 |
| External self-relevance | -0.01 | 0.01 | .461 |
| Interaction | 0.00 | 0.01 | .905 |
| <i>Random effects</i> | Variance | St. deviation | |
| Intercept (participant) | 1.20 | 1.09 | |
| Intercept (value) | 0.01 | 0.10 | |
| Residual | 0.30 | 0.55 | |

Table 5

Meta-Analytical Multilevel Regression Results, Studies 1, 2, and 3

| Benign Envy | | | |
|-------------------------|----------|---------------|----------|
| <i>Fixed effects</i> | <i>B</i> | <i>SE B</i> | <i>p</i> |
| Intercept | 4.28 | 0.19 | < .001 |
| Internal self-relevance | 0.55 | 0.02 | < .001 |
| External self-relevance | -0.07 | 0.18 | < .001 |
| Interaction | -0.03 | 0.02 | 0.06 |
| <i>Random effects</i> | Variance | St. deviation | |
| Intercept (participant) | 1.09 | 1.04 | |
| Intercept (value) | 0.36 | 0.60 | |
| Intercept (study) | 0.00 | 0.00 | |
| Residual | 1.79 | 1.34 | |
| Malicious Envy | | | |
| <i>Fixed effects</i> | <i>B</i> | <i>SE B</i> | <i>p</i> |
| Intercept | 1.75 | 0.08 | < .001 |
| Internal self-relevance | -0.08 | 0.01 | < .001 |
| External self-relevance | 0.05 | 0.01 | < .001 |
| Interaction | 0.00 | 0.01 | 0.648 |
| <i>Random effects</i> | Variance | St. deviation | |
| Intercept (participant) | 1.14 | 1.07 | |
| Intercept (value) | 0.04 | 0.20 | |
| Intercept (study) | 0.00 | 0.00 | |
| Residual | 0.58 | 0.76 | |
| Pain | | | |
| <i>Fixed effects</i> | <i>B</i> | <i>SE B</i> | <i>p</i> |
| Intercept | 1.78 | 0.10 | < .001 |
| Internal self-relevance | -0.02 | 0.01 | 0.092 |
| External self-relevance | 0.02 | 0.01 | 0.086 |
| Interaction | 0.01 | 0.01 | 0.497 |
| <i>Random effects</i> | Variance | St. deviation | |

| | | |
|-------------------------|------|------|
| Intercept (participant) | 1.15 | 1.07 |
| Intercept (value) | 0.02 | 0.14 |
| Intercept (study) | 0.02 | 0.13 |
| Residual | 0.52 | 0.72 |

Table 6

Descriptive Statistics, Study 4

| Variable | $M_{\text{low internal, low external (SD)}}$ | $M_{\text{low internal, high external (SD)}}$ | $M_{\text{high internal, low external (SD)}}$ | $M_{\text{high internal, high external (SD)}}$ |
|----------------|--|---|---|--|
| Benign envy | 2.60 (1.62) | 2.48 (1.57) | 5.33 (1.40) | 5.60 (1.28) |
| Malicious envy | 2.38 (1.49) | 2.10 (1.24) | 1.77 (1.27) | 1.45 (0.95) |
| Pain | 1.73 (1.17) | 1.70 (1.05) | 1.77 (1.31) | 1.44 (0.78) |

Note. Answers were given on a scale from 1 (*not at all*) to 7 (*very much*).

Table 7

Descriptive Statistics, Study 5

| Variable | $M_{\text{low internal, low external (SD)}}$ | $M_{\text{low internal, high external (SD)}}$ | $M_{\text{high internal, low external (SD)}}$ | $M_{\text{high internal, high external (SD)}}$ |
|----------------|--|---|---|--|
| Benign envy | 3.83 (1.62) | 4.32 (1.60) | 4.47 (1.71) | 4.68 (1.56) |
| Malicious envy | 2.17 (1.34) | 2.01 (1.29) | 1.85 (1.13) | 2.09 (1.41) |
| Pain | 1.96 (1.23) | 1.83 (1.25) | 1.76 (1.17) | 1.94 (1.37) |

Note. Answers were given on a scale from 1 (*not at all*) to 7 (*very much*).

Table 8

Descriptive Statistics, Study 6

| Variable | $M_{\text{low internal, low external (SD)}}$ | $M_{\text{low internal, high external (SD)}}$ | $M_{\text{high internal, low external (SD)}}$ | $M_{\text{high internal, high external (SD)}}$ |
|----------------|--|---|---|--|
| Benign envy | 2.20 (1.15) | 2.77 (1.56) | 4.20 (1.75) | 4.24 (1.73) |
| Malicious envy | 1.99 (1.18) | 1.91 (1.12) | 1.93 (1.23) | 1.89 (1.29) |
| Pain | 1.77 (1.94) | 2.01 (1.32) | 2.38 (1.57) | 1.85 (1.19) |

Note. Answers were given on a scale from 1 (*not at all*) to 7 (*very much*).

Table 9

Descriptive Statistics, Study 7

| Variable | $M_{\text{low internal, low external}}$ (SD) | $M_{\text{low internal, high external}}$ (SD) | $M_{\text{high internal, low external}}$ (SD) | $M_{\text{high internal, high external}}$ (SD) |
|----------------|--|---|---|--|
| Benign envy | 2.68 (1.51) | 2.91 (1.59) | 4.66 (1.68) | 4.47 (1.72) |
| Malicious envy | 1.94 (1.31) | 1.90 (1.15) | 1.57 (0.96) | 1.91 (1.24) |
| Pain | 2.17 (1.39) | 1.99 (1.28) | 1.83 (1.07) | 2.19 (1.40) |

Note. Answers were given on a scale from 1 (*not at all*) to 7 (*very much*).

Table 10

Meta-Analytical Multilevel Regression Results of Studies 4 - 7

| Benign Envy | | | |
|-------------------------|----------|---------------|----------|
| <i>Fixed effects</i> | <i>B</i> | <i>SE B</i> | <i>p</i> |
| Intercept | 3.83 | 0.17 | < .001 |
| Internal self-relevance | 0.92 | 0.04 | < .001 |
| External self-relevance | 0.09 | 0.04 | 0.041 |
| Interaction | -0.05 | 0.04 | 0.217 |
| <i>Random effects</i> | Variance | St. deviation | |
| Intercept (study) | 0.12 | 0.34 | |
| Residual | 2.62 | 1.63 | |
| Malicious Envy | | | |
| <i>Fixed effects</i> | <i>B</i> | <i>SE B</i> | <i>p</i> |
| Intercept | 1.92 | 0.03 | < .001 |
| Internal self-relevance | -0.13 | 0.03 | < .05 |
| External self-relevance | -0.02 | 0.03 | 0.430 |
| Interaction | 0.05 | 0.03 | 0.113 |
| <i>Random effects</i> | Variance | St. deviation | |
| Intercept (study) | 0.00 | 0.00 | |
| Residual | 1.51 | 1.23 | |
| Pain in Envy | | | |
| <i>Fixed effects</i> | <i>B</i> | <i>SE B</i> | <i>p</i> |
| Intercept | 1.95 | 0.03 | < .001 |
| Internal self-relevance | -0.01 | 0.03 | 0.729 |
| External self-relevance | -0.03 | 0.03 | 0.319 |
| Interaction | -0.00 | 0.03 | 0.976 |
| <i>Random effects</i> | Variance | St. deviation | |
| Intercept (study) | 0.02 | 0.15 | |
| Residual | 1.54 | 1.24 | |

Appendix C: Materials for Studies 1 – 3

Table 11

Items of the PVQ (Schwartz, 2003) Measuring Internal Self-Relevance and External Self-Relevance in Study 1

Instructions for internal self-relevance: *Here we briefly describe some people. Please read each description and think about how much each person is or is not like you. Tick the box to the right that shows how much the person in the description is like you.*

How much is this person like you?

Instructions for external self-relevance: *The next part is about the values in your society. What do you expect the average member of your society to value?*

We again briefly describe some people. Please read each description and think about how much each person is or is not like the average member of your society. Tick the box to the right that shows how much the person in the description is like the average member of your society.

How much is this person like the average member of your society?

| Subscale | Item |
|----------------|---|
| Self-Direction | 1. Thinking up new ideas and being creative is important to her ⁵ . She likes to do things in her own original way. 11. It is important to her to make her own decisions about what she does. She likes to be free and not dependent on others. |
| Stimulation | 6. She likes surprises and is always looking for new things to do. She thinks it is important to do lots of different things in life. 15. She looks for adventures and likes to take risks. She wants to have an exciting life |
| Hedonism | 10. Having a good time is important to her. She likes to “spoil” herself. |

⁵ Gender matched. Male participants read about male persons.

| | |
|-------------|--|
| | 21. She seeks every chance she can to have fun. It is important to her to do things that give her pleasure. |
| Achievement | 4. It is important to her to show her abilities. She wants people to admire what she does. 13. Being very successful is important to her. She hopes people will recognize her achievements. |
| Power | 2. It is important to her to be rich. She wants to have a lot of money and expensive things. 17. It is important to her to get respect from others. She wants people to do what she says. |
| Security | 5. It's important to her to live in secure surroundings. She avoids anything that might endanger her safety. 14. It is important to her that the government ensures her safety against all threats. She wants the state to be strong so it can defend its citizens. |
| Conformity | 7. She believes that people should do what they are told. She thinks people should follow rules at all times, even when no-one is watching. 16. It is important to her always to behave properly. She wants to avoid doing anything people would say is wrong. |
| Tradition | 9. It is important to her to be humble and modest. She tries not to draw attention to herself. 20. Tradition is important to her. She tries to follow the customs handed down by her religion or her family. |
| Benevolence | 12. It's very important to her to help the people around her. She wants to care for their well-being. |

18. It is important to her to be loyal to her friends. She wants to devote herself to people close to her.

Universalism 3. She thinks it is important that every person in the world should be treated equally. She believes everyone should have equal opportunities in life.

8. It is important to her to listen to people who are different from her. Even when she disagrees with them, she still wants to understand them.

19. She strongly believes that people should care for nature. Looking after the environment is important to her.

Note. For internal self-relevance, answers were given on a scale from 1 (*very much like me*) to 6 (*not like me at all*). For external self-relevance, answers were given on a scale from 1 (*very much like her*) to 6 (*not like her at all*). Scale was reverse coded for analyses.

Table 12

Items of the SVS (Schwartz, 1992) Measuring Internal Self-Relevance and External Self-Relevance in Study 2

Instructions for internal self-relevance: *Below you find a list of values. Please rate the importance of the following values as a guiding principle in your life. Please use a scale from 1 (opposed to my values), 2 (not important), ..., 8 (very important), to 9 (of supreme importance). Please use the "opposed to my values" to indicate if the described value is opposed to your values.*

Instructions for external self-relevance: *Below you find again the list of values. This time we want you to rate the importance of the following values as a guiding principle in your society. Please indicate to what extent each value represents the values of the people in your society. In other words: What do you expect an average member of your society to value? Please use a scale from 1 (opposed to my values), 2 (not important), ..., 8 (very important), to 9 (of supreme*

importance). Please use the "opposed to society's values" to indicate if the described value is opposed to society's values.

| Subscale | Item |
|----------------|---|
| Self-Direction | Creativity, Curious, Freedom, Choosing own goals, Independent |
| Stimulation | Daring, A varied life, An exciting life |
| Hedonism | Enjoying life, Pleasure |
| Achievement | Successful, Capable, Ambitious, Influential, Intelligent, Self-respect |
| Power | Social power, Authority, Wealth, Preserving my public image, Social recognition |
| Security | National security, clean, social order, family security, reciprocation of favors, Healthy, Sense of Belonging |
| Conformity | Politeness, Honoring parents and elders, Obedient, Self-discipline |
| Tradition | Devout, Accepting portion in life, Humble, Moderate, Respect for tradition, Detachment |
| Benevolence | Helpful, Honest, Forgiving, Loyal, Responsible, A spiritual life, Mature love, Meaning in life, True friendship |
| Universalism | Protecting the environment, A world of beauty, Unity with nature, Broad-minded, Social justice, Wisdom, Equality, A world at peace, Inner harmony |

Note. For internal self-relevance, answers were given on a scale from 1 (*very much like me*) to 6 (*not like me at all*). For external self-relevance, answers were given on a scale from 1 (*very much like her*) to 6 (*not like her at all*). Scale was reverse coded for analyses.

Table 13

Items of the SVS (Schwartz, 1992) Measuring Internal Self-Relevance and External Self-Relevance in Study 3

Instructions for internal self-relevance: *Below you find a list of values. Please rate the importance of the following values as a guiding principle in YOUR life. Some of the values are phrased as ways of acting that may be more or less important for you. Please indicate to what extent each value represents the YOUR values. Please use a scale from 0 (not important) to 7 (of supreme importance). Please use the "opposed to my values" to indicate if the described value is opposed to your values.*

Instructions for external self-relevance: *Below you find a list of values. Please rate the importance of the following values as a guiding principle in your COMMUNITY. Some of the values are phrased as ways of acting that may be more or less important for people in your community. Please indicate to what extent each value represents the values of the people in your COMMUNITY. In other words: What do you expect an average member of your COMMUNITY to value? Please use a scale from 0 (not important) to 7 (of supreme importance). Please use the "opposed to my community's values" to indicate if the described value is opposed to your community's values.*

| Subscale | Item |
|----------------|--|
| Self-Direction | Creativity (uniqueness, imagination), Curious (interested in everything, exploring), Freedom (freedom of action and thought), Choosing own goals (selecting own purposes), Independent (self-reliant, self-sufficient) |
| Stimulation | Daring (seeking adventure, risk), A varied life (filled with challenge, novelty and change), An exciting life (stimulating experiences) |
| Hedonism | Enjoying life (enjoying food, sex, leisure, etc.), Pleasure (gratification of desires) |

| | |
|-------------|--|
| Achievement | Successful (achieving goals), Capable (competent, effective, efficient), Ambitious (hard-working, aspiring), Influential (having an impact on people and events), Intelligent (logical, thinking), Self-respect (belief in one's own worth) |
| Power | Social power (control over others, dominance), Authority (the right to lead or command), Wealth (material possessions, money), Preserving my public image (protecting my "face"), Social recognition (respect, approval by others) |
| Security | National security (protection of my nation from enemies), clean (neat, tidy), social order (stability of society), family security (safety for loved ones), reciprocation of favors (avoidance of indebtedness), Healthy (not being sick physically or mentally), Sense of Belonging (feeling that others care about me) |
| Conformity | Politeness (courtesy, good manners), Honoring parents and elders (showing respect), Obedient (dutiful, meeting obligations), Self-discipline (self-restraint, resistance to temptation) |
| Tradition | Devout (holding to religious faith & belief), Accepting portion in life (submitting to life's circumstances), Humble (modest, self-effacing), Moderate (avoiding extremes of feeling & action), Respect for tradition (preservation of time-honored customs) |
| Benevolence | Helpful (working for the welfare of others), Honest (genuine, sincere), Forgiving (willing to pardon others), Loyal (faithful to my friends, group), Responsible (dependable, reliable), A spiritual life (emphasis on spiritual not material matters), Mature love (deep emotional & spiritual intimacy), |

| | |
|--------------|--|
| | Meaning in life (a purpose in life), True friendship (close, supportive friends) |
| Universalism | Protecting the environment (preserving nature), A world of beauty (beauty of nature and the arts), Unity with nature (fitting into nature), Broad-minded (tolerant of different ideas and beliefs), Social justice (correcting injustice, care for the weak), Wisdom (a mature understanding of life), Equality (equal opportunity for all), A world at peace (free of war and conflict), Inner harmony (at peace with myself) |

Note. For internal self-relevance, answers were given on a scale from 1 (*very much like me*) to 6 (*not like me at all*). For external self-relevance, answers were given on a scale from 1 (*very much like her*) to 6 (*not like her at all*). Scale was reverse coded for analyses.

Table 14

Vignettes Based on PVQ (Schwartz, 2003) in Study 1, 2, and 3

Instruction: In the following we'll describe a person to you. This person has a special quality that distinguishes this person from yourself and others. Please try to imagine this person as vividly as possible. Imagine how it would feel to meet this person. After you have imagined this person, we'll ask you several questions about your feelings towards this person.

[next page] This person has a special quality that distinguishes this person from yourself and others. Please try to imagine this person as vividly as possible! Imagine how it would feel to meet this person:

| Value | Vignette |
|----------------|--|
| Self-Direction | He/She thinks up new ideas and is very creative. He/She does things in his/her own original way. He/She makes his/her own decision about what he/she does. He/She is free and not dependent on others. |

| | |
|--------------|--|
| Stimulation | He/She likes surprises and always does new things. He/She does lots of different things in life. He/She has adventures and takes risks. He/She has an exciting life. |
| Hedonism | He/She has a good time. He/She “spoils” him-/herself. He/She takes every chance he/she can to have fun. He/She does things that give him/her pleasure. |
| Achievement | He/She shows his/her abilities. People admire him/her for what he/she does. He/She is very successful. People recognize his/her achievements. |
| Power | He/She is very rich. He/She has a lot of money and expensive things. He/She gets respect from others. People do what he/she says. |
| Security | He/She lives in secure surroundings. He/She is successful in avoiding everything that might endanger his/her safety. His/Her local authorities ensure his/her safety against all threats. His/Her community is strong so it can defend its citizens. |
| Conformity | He/She is successful in avoiding everything people would say is wrong. He/She follows rules at all times, even when no-one is watching. He/She always behaves properly. He/She does what he/she is told to do. |
| Tradition | He/She is humble and modest. He/She doesn't draw attention to him-/herself. He/She is traditional. He/She follows the customs handed down by his/her religion or his/her family. |
| Benevolence | He/She helps the people around him/her. He/She cares for their well-being. He/She is loyal to his/her friends. He/She devotes him-/herself to people close to him/her. |
| Universalism | He/She treats every person in the world equally. He/She acts in a way that gives everyone equal opportunities in life. He/She listens to people who are |

different from him/her. Even when he/she disagrees with them, he/she still understands them. He/She strongly believes that people should care for nature. He/She looks after the environment.

Table 15

Items of Dependent Variables in Study 1

| Subscale | Item |
|----------------|--|
| Benign envy | The person inspires me to get this quality myself. |
| Malicious envy | I want this person not to have this quality anymore. |
| Pain | Imagining this person feels painful. |
| General envy | I feel envy towards this person. |
| Admiration | I feel admiration towards this person. |

Note. Answers were given on a scale from 1 (*not at all*) to 7 (*very much*).

Table 16

Items of Dependent Variables in Study 2

| Subscale | Item |
|----------------|--|
| Benign envy | I feel deep longing for this person's quality and want to work harder to also obtain exactly the same quality. I feel motivated by this person and devise a plan to obtain this quality as well. |
| Malicious envy | I feel hatred and hostile towards this person and secretly wish that he/she would lose this quality. I would like to complain to someone else about this person. |
| Pain | I feel tormented, inadequate and depressed. |

| | |
|------------|---|
| Admiration | His/her quality impresses and elates me. I admire him/her for his/her quality. I am continually impressed by what he/she does and I feel that his/her quality is admirable. |
|------------|---|

Note. Answers were given on a scale from 1 (*not at all*) to 7 (*very much*).

Table 17

Items of Dependent Variables in Study 3 (adapted from Lange, Weidman, et al., 2018)

Instruction: Please answer the following questions about your thoughts and feelings when confronted with the described person. Read the following statements carefully! Indicate how much you agree with each statement on a scale from 1 'not at all' to 7 'very much'.

| Subscale | Item |
|----------------|---|
| Benign envy | I feel deep longing for this quality. I want to work harder to also obtain exactly the same quality. I would like to devise a plan to obtain this quality as well. This person motivates me to become just like him/her. |
| Malicious envy | I would like to complain to someone else about this person. I feel hostile towards this person. I secretly wish that this person would lose his/her quality. I feel hatred. |
| Pain | I feel tormented. I feel inadequate. I feel depressed. |

Note. Answers were given on a scale from 1 (*not at all*) to 7 (*very much*).

Appendix D: Materials for Studies 4 – 7

Table 18

Manipulation of Internal and External Self-Relevance of Values: Instructions for Value Affirmation Task in Study 4

| Factor | Instruction |
|-------------------------|---|
| Internal self-relevance | <p>You indicated that [value X] has NO special importance to YOU. Please explain why it is not at all important to you to behave according to [value X].</p> <p>low Write it down below in a few sentences. To remind you, [value X] can be described by these keywords: [keywords value X]. They should help you to answer this question.</p> |
| | <p>You indicated that [value X] is of special IMPORTANCE to YOU. Why is [value X] of special importance to you? Please explain why you think that it</p> <p>high is important to behave according to this value. Write it down below in a few sentences. The [value X] can be described by these keywords: [keywords for value X]. They should help you to answer this question.</p> |
| External self-relevance | <p>Now, think about why [value X] could have NO importance in your social group! Please explain why it could be not at all important to the people around</p> <p>low you to behave according to [value X]. Write it down below in a few sentences. To remind you, [value X] can be described by these keywords: [keywords value X]. They should help you to answer this question.</p> |
| | <p>Now, think about why [value X] could be of special IMPORTANCE in your SOCIAL GROUP! Please explain why it could be important to the people</p> <p>high around you to behave according to [value X]. Write it down below in a few sentences. To remind you, the value [value X] can be described by these</p> |

keywords: [keywords describing value X]. They should help you to answer this question.

Note. Factors were combined in a 2 (internal self-relevance: low, high) x 2 (external self-relevance: low, high) design. Every instruction was followed by a writing block.

Table 19

Manipulation of Internal and External Self-Relevance of Values: Instructions for Value Affirmation Task in Study 5 and 6

| Factor | Instruction |
|-------------------------|---|
| Internal self-relevance | low Think about the meaning of [value X] for your life. Why could [value X] NOT be important for YOU? Please explain why it would NOT be ideal and important to YOU to behave according to [value X]. Write it down below in a few sentences. |
| | high Think about the meaning of [value X] for your life. Why could [value X] be important for YOU? Please explain why it would be ideal and important to YOU to behave according to [value X]. Write it down below in a few sentences. |
| External self-relevance | low Now, think about the meaning of [value X] for your social group. Why should [value X] NOT be important for your SOCIAL GROUP? Please explain why it should NOT be important to the people around you to behave according to [value X]. Write it down below in a few sentences. |
| | high Now, think about the meaning of [value X] for your social group. Why should [value X] be important for your SOCIAL GROUP? Please explain why it should be important to the people around you to behave according to [value X]. Write it down below in a few sentences. |

Note. Factors were combined in a 2 (internal self-relevance: low, high) x 2 (external self-relevance: low, high) design. Every instruction was followed by a writing block.

Table 20

Manipulation of Internal and External Self-Relevance of Values: Instructions for Value Affirmation Task in Study 7

| Factor | Instruction |
|-------------------------|--|
| Internal self-relevance | low Think about the meaning of [value X] for your life. Why is [value X] NOT important for YOU? Please explain why it is NOT important to YOU to behave according to [value X]. Write it down below in a few sentences. |
| | high Think about the meaning of [value X] for your life. Why is [value X] important for YOU? Please explain why it is important to YOU to behave according to [value X]. Write it down below in a few sentences. |
| External self-relevance | low Now, think about the meaning of [value X] for other people. Why is [value X] NOT important for OTHER PEOPLE? Imagine that you work in a company. Why is [value X] NOT important for the OTHER PEOPLE in your COMPANY? Please explain why it is NOT important to the people in your company to behave according to [value X]. Write it down below in a few sentences. |
| | high Now, think about the meaning of [value X] for other people. Why is [value X] important for OTHER PEOPLE? Imagine that you work in a company. Why is [value X] important for the OTHER PEOPLE in your COMPANY? Please explain why it is important to the people in your company to behave according to [value X]. Write it down below in a few sentences. |

Note. Factors were combined in a 2 (internal self-relevance: low, high) x 2 (external self-relevance: low, high) design. Every instruction was followed by a writing block.

Table 21

Values and Keywords Used for Value Ranking in Study 5, 6, and 7

| Item |
|--|
| Self-Direction: creativity, freedom, choosing own goals, curious, independent |
| Stimulation: a varied life, an exciting life, daring |
| Hedonism: pleasure, enjoying life, self-indulgent |
| Achievement: ambitious, successful, capable, influential |
| Power: authority, wealth, social power |
| Security: social order, family security, national security, clean, reciprocation of favors |
| Conformity: obedient, self-discipline, politeness, honouring parents and elders |
| Tradition: respect for tradition, humble, devout, accepting my portion in life |
| Benevolence: helpful, honest, forgiving, responsible, loyal, true friendship, mature love |
| Universalism: broadminded, social justice, equality, world at peace, world of beauty, unity with nature, wisdom, protecting the environment |

Note. Participants had to rank the values according to their importance via drag and drop.

Table 22

Vignettes Based on PVQ (Schwartz, 2003) in Study 4 and 5

Instruction: In the following we'll describe a person to you. This person has a special quality that distinguishes this person from yourself and others. Please try to imagine this person as vividly as possible. Imagine how it would feel to meet this person. After you have imagined this person, we'll ask you several question about your feelings towards this person.

This person has a special quality that distinguishes this person from yourself and others. Please try to imagine this person as vividly as possible! Imagine how it would feel to meet this person:

| Value | Vignette |
|----------------|--|
| Self-Direction | He/She thinks up new ideas and is very creative. He/She does things in his/her own original way. He/She makes his/her own decision about what he/she does. He/She is free and not dependent on others. |
| Stimulation | He/She likes surprises and always does new things. He/She does lots of different things in life. He/She has adventures and takes risks. He/She has an exciting life. |
| Hedonism | He/She has a good time. He/She “spoils” him-/herself. He/She takes every chance he/she can to have fun. He/She does things that give him/her pleasure. |
| Achievement | He/She shows his/her abilities. People admire him/her for what he/she does. He/She is very successful. People recognize his/her achievements. |
| Power | He/She is very rich. He/She has a lot of money and expensive things. He/She gets respect from others. People do what he/she says. |
| Security | He/She lives in secure surroundings. He/She is successful in avoiding everything that might endanger his/her safety. His/Her local authorities ensure his/her safety against all threats. His/Her community is strong so it can defend its citizens. |
| Conformity | He/She is successful in avoiding everything people would say is wrong. He/She follows rules at all times, even when no-one is watching. He/She always behaves properly. He/She does what he/she is told to do. |

| | |
|--------------|---|
| Tradition | He/She is humble and modest. He/She doesn't draw attention to him-/herself. He/She is traditional. He/She follows the customs handed down by his/her religion or his/her family. |
| Benevolence | He/She helps the people around him/her. He/She cares for their well-being. He/She is loyal to his/her friends. He/She devotes him-/herself to people close to him/her. |
| Universalism | He/She treats every person in the world equally. He/She acts in a way that gives everyone equal opportunities in life. He/She listens to people who are different from him/her. Even when he/she disagrees with them, he/she still understands them. He/She strongly believes that people should care for nature. He/She looks after the environment. |

Table 23

Vignettes in Study 6

Instruction before every vignette: *Imagine the following situation as vividly as possible: Imagine that you just moved to a new neighborhood. You are very happy to have moved there because you like your new house and the surroundings. Your neighbor Peter invited some friends and people from the neighborhood to a summer party. You are very happy about the invitation because now you can finally meet the people from your neighborhood. You would very much like to establish your place within the group. It is a nice evening. You and your neighbors are having a good time. You are having a conversation with some people in the*

garden. Anna⁶, who is well known in all of the neighborhood (see picture below)⁷, is one of them.

| Value | Vignette |
|----------------|--|
| Self-Direction | <p>She talks about a new design project idea she recently developed. You realize that Anna is making her own decisions about what she does. In general she is creative, good at thinking up new ideas, and she does things in her own original way. She enjoys being free to plan and to choose her activities for herself. You start thinking about how independent you really are. [picture of Anna] Remember the essay you just wrote about self-direction. As reminder, you can read it here again: [essay on internal self-relevance of self-direction value] [essay on external self-relevance of self-direction value] Remind yourself that it is NOT/ VERY IMPORTANT to YOU to be as self-directed as Anna. Also remind yourself that it is NOT/ VERY IMPORTANT to your NEIGHBORS to be as self-directed as Anna. [next page] This is a summary of the situation we just asked you to imagine: You met Anna. Anna's quality is that she is very self-directed. Remind yourself that it is NOT/ VERY IMPORTANT to YOU to be as self-directed as Anna. Also remind yourself that it is NOT/ VERY IMPORTANT to your NEIGHBORS to be as self-directed as Anna.</p> |
| Stimulati on | <p>She talks about a safari trip she recently took. You realize that Anna has a very exciting life. In general, she is always looking for adventures, takes risks, and does lots of different things in her life. She enjoys surprises and doing new things. You start thinking about when was the last time you had an exciting experience.</p> |

⁶ Vignettes were matched to participant gender. Male participants read about a person called Tom and saw a male picture expressing pride from the University of California, Davis, Set of Emotion Expressions (Tracy, Robins, & Schriber, 2009).

⁷ In every vignette, participants saw a female picture expressing pride from the University of California, Davis, Set of Emotion Expressions (Tracy et al., 2009).

[picture of Anna] Remember the essay you just wrote about stimulation. As reminder, you can read it here again: [essay on internal self-relevance of stimulation value] [essay on external self-relevance of stimulation value] Remind yourself that it is NOT/ VERY IMPORTANT to YOU to be as adventurous as Anna. Also remind yourself that it is NOT/ VERY IMPORTANT to your NEIGHBORS to be as adventurous as Anna. [next page] This is a summary of the situation we just asked you to imagine: You met Anna. Anna's quality is that she is very adventurous. Remind yourself that it is NOT/ VERY IMPORTANT to YOU to be as adventurous as Anna. Also remind yourself that it is NOT/ VERY IMPORTANT to your NEIGHBORS to be as adventurous as Anna.

Hedonis m She talks about her last beach holiday, which she really enjoyed. You realize that Anna seeks every chance she can to have fun. In general she likes to “spoil” herself and having a good time is important to her. She enjoys doing things that give her pleasure. You start thinking about when was the last time you really enjoyed yourself. [picture of Anna] Remember the essay you just wrote about hedonism. As reminder, you can read it here again: [essay on internal self-relevance of hedonism value] [essay on external self-relevance of hedonism value] Remind yourself that it is NOT/ VERY IMPORTANT to YOU to be as hedonistic as Anna. Also remind yourself that it is NOT/ VERY IMPORTANT to your NEIGHBORS to be as hedonistic as Anna. [next page] This is a summary of the situation we just asked you to imagine: You met Anna. Anna's quality is that she is very hedonistic. Remind yourself that it is NOT/ VERY IMPORTANT to YOU to be as hedonistic as Anna. Also remind yourself that it is NOT/ VERY IMPORTANT to your NEIGHBORS to be as hedonistic as Anna.

Achieve ment She talks about how she recently finished a really hard project at her management job. You realize that Anna is very achieving. In general everything she does seems to be successful, and she likes to impress others with her many abilities. She enjoys being admired for what she does. You start thinking about what were your latest achievements. [picture of Anna] Remember the essay you just wrote about achievement. As reminder, you can read it here again: [essay on internal self-relevance of achievement value] [essay on external self-relevance of achievement value] Remind yourself that it is NOT/ VERY IMPORTANT to YOU to be as achieving as Anna. Also remind yourself that it is NOT/ VERY IMPORTANT to your NEIGHBORS to be as achieving as Anna. [next page] This is a summary of the situation we just asked you to imagine: You met Anna. Anna's quality is that she is very achieving. Remind yourself that it is NOT/ VERY IMPORTANT to YOU to be as achieving as Anna. Also remind yourself that it is NOT/ VERY IMPORTANT to your NEIGHBORS to be as achieving as Anna.

Power She talks about her employees that work for her in her consulting company and at home. You realize that people do what Anna says. In general she is very rich and she has a lot of expensive things. She enjoys being in charge and telling others what to do. You start thinking about your position at your job. [picture of Anna] Remember the essay you just wrote about power. As reminder, you can read it here again: [essay on internal self-relevance of power value] [essay on external self-relevance of power value] Remind yourself that it is NOT/ VERY IMPORTANT to YOU to be as powerful as Anna. Also remind yourself that it is NOT/ VERY IMPORTANT to your NEIGHBORS to be as powerful as Anna. [next page] This is a summary of the situation we just asked you to imagine: You

met Anna. Anna's quality is that she is very powerful. Remind yourself that it is NOT/ VERY IMPORTANT to YOU to be as powerful as Anna. Also remind yourself that it is NOT/ VERY IMPORTANT to your NEIGHBORS to be as powerful as Anna.

Security She talks about the new alarm system that secures her house. You realize that Anna avoids anything that might endanger her safety. In general, she is concerned that social order be protected and that her community be safe from threats. She enjoys living in secure surroundings. You start thinking about what you do to stay safe nowadays. [picture of Anna] Remember the essay you just wrote about security. As reminder, you can read it here again: [essay on internal self-relevance of security value] [essay on external self-relevance of security value] Remind yourself that it is NOT/ VERY IMPORTANT to YOU to be as secure as Anna. Also remind yourself that it is NOT/ VERY IMPORTANT to your NEIGHBORS to be as secure as Anna. [next page] This is a summary of the situation we just asked you to imagine: You met Anna. Anna's quality is that she is very secure. Remind yourself that it is NOT/ VERY IMPORTANT to YOU to be as secure as Anna. Also remind yourself that it is NOT/ VERY IMPORTANT to your NEIGHBORS to be as secure as Anna.

Conformity She mentions that this year no-one in her company can allow themselves a day off and that's why she cancelled a vacation that she planned to do. You realize that Anna is someone who behaves very properly. In general she avoids doing anything people would say is wrong and she follows rules at all times, even when no-one is watching. She enjoys doing what she is told. You start thinking about when was the last time you held your own wishes back. [insert picture of Anna] Remember the essay you just wrote about conformity. As reminder, you can read

it here again: [essay on internal self-relevance of conformity value] [essay on external self-relevance of conformity value] Remind yourself that it is NOT/ VERY IMPORTANT to YOU to be as adapted as Anna. Also remind yourself that it is NOT/ VERY IMPORTANT to your NEIGHBORS to be as adapted as Anna. [next page] This is a summary of the situation we just asked you to imagine: You met Anna. Anna's quality is that she is very adapted. Remind yourself that it is NOT/ VERY IMPORTANT to YOU to be as adapted as Anna. Also remind yourself that it is NOT/ VERY IMPORTANT to your NEIGHBORS to be as adapted as Anna.

Tradition She talks about how she decided to stay abstinent until marriage. You realize that Anna is very religious. In general she believes that people should be satisfied with what they have and that one should not ask for more than that. She enjoys doing what her religion requires. You start thinking about what you actually do to uphold the traditions of your family. [picture of Anna] Remember the essay you just wrote about tradition. As reminder, you can read it here again: [essay on internal self-relevance of tradition value] [essay on external self-relevance of tradition value] Remind yourself that it is NOT/ VERY IMPORTANT to YOU to be as traditional as Anna. Also remind yourself that it is NOT/ VERY IMPORTANT to your NEIGHBORS to be as traditional as Anna. [next page] This is a summary of the situation we just asked you to imagine: You met Anna. Anna's quality is that she is very traditional. Remind yourself that it is NOT/ VERY IMPORTANT to YOU to be as traditional as Anna. Also remind yourself that it is NOT/ VERY IMPORTANT to your NEIGHBORS to be as traditional as Anna.

Benevolence She recently helped your neighbor through a difficult period of his life. You realize that Anna is very caring. In general she always helps the people around her and she is loyal to her friends. She enjoys devoting herself to people close to her. You start thinking about what were your latest good deeds. [picture of Anna] Remember the essay you just wrote about benevolence. As reminder, you can read it here again: [essay on internal self-relevance of benevolence value] [essay on external self-relevance of benevolence value] Remind yourself that it is NOT/ VERY IMPORTANT to YOU to be as benevolent as Anna. Also remind yourself that it is NOT/ VERY IMPORTANT to your NEIGHBORS to be as benevolent as Anna. [next page] This is a summary of the situation we just asked you to imagine: You met Anna. Anna's quality is that she is very benevolent. Remind yourself that it is NOT/ VERY IMPORTANT to YOU to be as benevolent as Anna. Also remind yourself that it is NOT/ VERY IMPORTANT to your NEIGHBORS to be as benevolent as Anna.

Universalism She talks about her last urban greening project for an environmental organization. You realize that Anna strongly believes that people should care for nature and look after the environment. Nevertheless she tries her best to understand people who disagree with her. In general she treats every person she meets equally and wants justice for everybody, even for people she does not know. She enjoys listening to people who are different from her. You start thinking about what you actually do to make the world a better place. [picture of Anna] Remember the essay you just wrote about universalism. As reminder, you can read it here again: [essay on internal self-relevance of universalism value] [essay on external self-relevance of universalism value] Remind yourself that it is NOT/ VERY IMPORTANT to YOU to be as universal as Anna. Also remind yourself that it

is NOT/ VERY IMPORTANT to your NEIGHBORS to be as universal as Anna.

[next page] This is a summary of the situation we just asked you to imagine: You met Anna. Anna's quality is that she is very universal. Remind yourself that it is NOT/ VERY IMPORTANT to YOU to be as universal as Anna. Also remind yourself that it is NOT/ VERY IMPORTANT to your NEIGHBORS to be as universal as Anna.

Note. Vignettes were matched to participant gender. Pictures of pride expressions were taken from the University of California, Davis, Set of Emotion Expressions (Tracy et al., 2009). Whether a value was framed as not or very important to the participant or the participant's neighbors depended on the condition the participants was assigned to.

Table 24

Vignettes in Study 7

Instruction before every vignette: *Imagine the following situation as vividly as possible: Imagine that you just started working in a new company. You are very happy that you got the job because this is the position you have always wanted and it gives you great opportunities to succeed. After an important meeting there is a little get-together with your colleagues. You were looking forward to this because you can finally meet all your new colleagues to help you to establish your position in the company. It is a nice evening. You and your colleagues are having a good time. You're having a conversation with some people. Anna⁸, who is well known in all of the company (see picture below)⁹, is one of them.*

| Value | Vignette |
|-------|----------|
|-------|----------|

⁸ Vignettes were matched to participant gender. Male participants read about a person called Tom and saw a male picture expressing pride from the University of California, Davis, Set of Emotion Expressions (Tracy et al., 2009).

⁹ In every vignette, participants saw a female picture expressing pride from the University of California, Davis, Set of Emotion Expressions (Tracy et al., 2009).

Self-Direction She talks about a new project idea she recently developed. You realize that Anna is making her own decisions about what she does. In general she is creative, good at thinking up new ideas, and she does things in her own original way. She enjoys being free to plan and to choose her activities for herself. You start thinking about how independent you really are. [picture of Anna] Remember the essay you just wrote about self-direction. As a reminder, you can read it here again: [essay on internal self-relevance of self-direction value] [essay on external self-relevance of self-direction value] Remind yourself that it is NOT/ VERY IMPORTANT to YOU to be as self-directed as Anna. Also remind yourself that it is NOT/ VERY IMPORTANT to your COLLEAGUES to be as self-directed as Anna. [new page] You met Anna. Anna's quality is that she is very self-directed. Remind yourself that it is NOT/ VERY IMPORTANT to YOU to be as self-directed as Anna. Also remind yourself that it is NOT/ VERY IMPORTANT to your COLLEAGUES to be as self-directed as Anna.

Stimulati on She talks about a safari trip she recently took. You realize that Anna has a very exciting life. In general, she is always looking for adventures, takes risks, and does lots of different things in her life. She enjoys surprises and doing new things. You start thinking about when was the last time you had an exciting experience. [picture of Anna] Remember the essay you just wrote about stimulation. As a reminder, you can read it here again: [essay on internal self-relevance of stimulation value] [essay on external self-relevance of stimulation value] Remind yourself that it is NOT/ VERY IMPORTANT to YOU to be as adventurous as Anna. Also remind yourself that it is NOT/ VERY IMPORTANT to your COLLEAGUES to be as adventurous as Anna. [new page] You met Anna. Anna's quality is that she is very adventurous. Remind yourself that it is NOT/ VERY

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Hedonism She talks about her last holiday, which she really enjoyed. You realize that Anna seeks every chance she can to have fun. In general she likes to “spoil” herself and having a good time is important to her. She enjoys doing things that give her pleasure. You start thinking about when was the last time you really enjoyed yourself. [picture of Anna] Remember the essay you just wrote about hedonism. As a reminder, you can read it here again: [essay on internal self-relevance of hedonism value] [essay on external self-relevance of hedonism value] Remind yourself that it is NOT/ VERY IMPORTANT to YOU to be as hedonistic as Anna. Also remind yourself that it is NOT/ VERY IMPORTANT to your COLLEAGUES to be as hedonistic as Anna. [new page] You met Anna. Anna's quality is that she is very hedonistic. Remind yourself that it is NOT/ VERY IMPORTANT to YOU to be as hedonistic as Anna. Also remind yourself that it is NOT/ VERY IMPORTANT to your COLLEAGUES to be as hedonistic as Anna.

Achievement She talks about a recent success at her job. You realize that Anna is very achieving. In general everything she does seems to be successful, and she likes to impress others with her many abilities. She enjoys being admired for what she does. You start thinking about what were your latest achievements. [picture of Anna] Remember the essay you just wrote about achievement. As a reminder, you can read it here again: [essay on internal self-relevance of achievement value] [essay on external self-relevance of achievement value] Remind yourself that it is NOT/ VERY IMPORTANT to YOU to be as achieving as Anna. Also remind

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Security She talks about the new alarm system that secures her house. You realize that Anna avoids anything that might endanger her safety. In general, she is concerned that social order be protected and that her community be safe from threats. She enjoys living in secure surroundings. You start thinking about what you do to stay safe nowadays. [picture of Anna] Remember the essay you just wrote about security. As a reminder, you can read it here again: [essay on internal self-relevance of security value] [essay on external self-relevance of security value]

Remind yourself that it is NOT/ VERY IMPORTANT to YOU to be as secure as Anna. Also remind yourself that it is NOT/ VERY IMPORTANT to your COLLEAGUES to be as secure as Anna. [new page] You met Anna. Anna's quality is that she is very secure. Remind yourself that it is NOT/ VERY IMPORTANT to YOU to be as secure as Anna. Also remind yourself that it is NOT/ VERY IMPORTANT to your COLLEAGUES to be as secure as Anna.

Conformity She mentions how she recently cancelled a vacation because her boss told her she cannot go this year. You realize that Anna is someone who behaves very properly. In general she avoids doing anything people would say is wrong and she follows rules at all times, even when no-one is watching. She enjoys doing what she is told. You start thinking about when was the last time you held your own wishes back. [picture of Anna] Remember the essay you just wrote about conformity. As a reminder, you can read it here again: [essay on internal self-relevance of conformity value] [essay on external self-relevance of conformity value] Remind yourself that it is NOT/ VERY IMPORTANT to YOU to be as adapted as Anna. Also remind yourself that it is NOT/ VERY IMPORTANT to your COLLEAGUES to be as adapted as Anna. [new page] You met Anna. Anna's quality is that she is very adapted. Remind yourself that it is NOT/ VERY IMPORTANT to YOU to be as adapted as Anna. Also remind yourself that it is NOT/ VERY IMPORTANT to your COLLEAGUES to be as adapted as Anna.

Tradition She talks about how she recently decided to stay abstinent until marriage. You realize that Anna is very religious. In general she believes that people should be satisfied with what they have and that one should not ask for more than that. She enjoys doing what her religion requires. You start thinking about what you

actually do to uphold the traditions of your family. [picture of Anna] Remember the essay you just wrote about tradition. As a reminder, you can read it here again: [essay on internal self-relevance of tradition value] [essay on external self-relevance of tradition value] Remind yourself that it is NOT/ VERY IMPORTANT to YOU to be as traditional as Anna. Also remind yourself that it is NOT/ VERY IMPORTANT to your COLLEAGUES to be as traditional as Anna. [new page] You met Anna. Anna's quality is that she is very traditional. Remind yourself that it is NOT/ VERY IMPORTANT to YOU to be as traditional as Anna. Also remind yourself that it is NOT/ VERY IMPORTANT to your COLLEAGUES to be as traditional as Anna.

Benevolence She recently helped your colleague through a difficult period of his life. You realize that Anna is very caring. In general she always helps the people around her and she is loyal to her friends. She enjoys devoting herself to people close to her. You start thinking about what were your latest good deeds. [picture of Anna] Remember the essay you just wrote about benevolence. As a reminder, you can read it here again: [essay on internal self-relevance of benevolence value] [essay on external self-relevance of benevolence value] Remind yourself that it is NOT/ VERY IMPORTANT to YOU to be as benevolent as Anna. Also remind yourself that it is NOT/ VERY IMPORTANT to your COLLEAGUES to be as benevolent as Anna. [new page] You met Anna. Anna's quality is that she is very benevolent. Remind yourself that it is NOT/ VERY IMPORTANT to YOU to be as benevolent as Anna. Also remind yourself that it is NOT/ VERY IMPORTANT to your COLLEAGUES to be as benevolent as Anna.

Universalism She talks about her projects at an environmental organization. You realize that Anna strongly believes that people should care for nature and look after the

environment. Nevertheless she tries her best to understand people who disagree with her. In general she treats every person she meets equally and wants justice for everybody, even for people she does not know. She enjoys listening to people who are different from her. You start thinking about what you actually do to make the world a better place. [picture of Anna] Remember the essay you just wrote about universalism. As a reminder, you can read it here again: [essay on internal self-relevance of universalism value] [essay on external self-relevance of universalism value] Remind yourself that it is NOT/ VERY IMPORTANT to YOU to be as universal as Anna. Also remind yourself that it is NOT/ VERY IMPORTANT to your COLLEAGUES to be as universal as Anna. [new page] You met Anna. Anna's quality is that she is very universal. Remind yourself that it is NOT/ VERY IMPORTANT to YOU to be as universal as Anna. Also remind yourself that it is NOT/ VERY IMPORTANT to your COLLEAGUES to be as universal as Anna.

Note. Male participants read vignettes about a fictional person named Tom. Pictures were the same as in Study 6. Whether a value was framed as not or very important to the participant or the participant's colleagues depended on the condition the participants was assigned to.

Table 25

Items of Dependent Variables in Study 4 - 7 (adapted from Lange, Weidman, et al., 2018)

Instruction: Please answer the following questions about your thoughts and feelings when confronted with the described person. Read the following statements carefully! Indicate how much you agree with each statement on a scale from 1 'not at all' to 7 'very much'.

| Subscale | Item |
|----------|------|
|----------|------|

| | |
|----------------|---|
| Benign envy | I feel deep longing for this quality. I want to work harder to also obtain exactly the same quality. I would like to devise a plan to obtain this quality as well. This person motivates me to become just like him/her. |
| Malicious envy | I would like to complain to someone else about this person. I feel hostile towards this person. I secretly wish that this person would lose his/her quality. I feel hatred. |
| Pain | I feel tormented. I feel inadequate. I feel depressed. |

Note. Answers were given on a scale from 1 (*not at all*) to 7 (*very much*). In Study 6 and Study 7, *this person* was replaced by *Anna* or *Tom* depending on participant gender.

Appendix E: Results per Value in Studies 1 – 7

Table 26

Regression Results per Value, Study 1

| | Benign envy | | |
|-------------------------|-------------|-------------|----------|
| <i>Self-direction</i> | <i>B</i> | <i>SE B</i> | <i>p</i> |
| Intercept | 8.395 | 4.813 | 0.087 |
| Internal self-relevance | -0.947 | 0.992 | 0.344 |
| External self-relevance | -1.052 | 1.096 | 0.342 |
| Interaction | 0.286 | 0.223 | 0.204 |
| <i>Tradition</i> | <i>B</i> | <i>SE B</i> | <i>p</i> |
| Intercept | 7.865 | 4.280 | 0.072 |
| Internal self-relevance | -0.470 | 1.034 | 0.652 |
| External self-relevance | -1.875 | 1.128 | 0.102 |
| Interaction | 0.311 | 0.268 | 0.251 |
| <i>Power</i> | <i>B</i> | <i>SE B</i> | <i>p</i> |
| Intercept | 1.333 | 3.156 | 0.675 |
| Internal self-relevance | 0.371 | 0.911 | 0.686 |
| External self-relevance | -0.087 | 0.670 | 0.897 |
| Interaction | 0.087 | 0.189 | 0.649 |
| <i>Security</i> | <i>B</i> | <i>SE B</i> | <i>p</i> |
| Intercept | 2.652 | 4.340 | 0.549 |
| Internal self-relevance | 0.794 | 1.121 | 0.482 |
| External self-relevance | -0.413 | 0.948 | 0.665 |
| Interaction | -0.046 | 0.231 | 0.843 |
| <i>Benevolence</i> | <i>B</i> | <i>SE B</i> | <i>p</i> |
| Intercept | 3.026 | 4.749 | 0.527 |
| Internal self-relevance | 0.370 | 0.996 | 0.712 |
| External self-relevance | -0.184 | 1.201 | 0.879 |
| Interaction | 0.069 | 0.241 | 0.777 |
| <i>Universalism</i> | <i>B</i> | <i>SE B</i> | <i>p</i> |
| Intercept | -3.914 | 3.768 | 0.304 |
| Internal self-relevance | 1.817 | 0.786 | 0.025 |
| External self-relevance | 0.991 | 1.047 | 0.348 |
| Interaction | -0.178 | 0.213 | 0.406 |
| <i>Conformity</i> | <i>B</i> | <i>SE B</i> | <i>p</i> |
| Intercept | 1.970 | 3.544 | 0.581 |
| Internal self-relevance | 0.068 | 0.994 | 0.946 |
| External self-relevance | -0.367 | 0.922 | 0.692 |
| Interaction | 0.179 | 0.264 | 0.500 |
| <i>Stimulation</i> | <i>B</i> | <i>SE B</i> | <i>p</i> |
| Intercept | -1.611 | 3.066 | 0.601 |
| Internal self-relevance | 1.376 | 0.738 | 0.068 |
| External self-relevance | 1.111 | 0.753 | 0.146 |
| Interaction | -0.230 | 0.185 | 0.220 |
| <i>Hedonism</i> | <i>B</i> | <i>SE B</i> | <i>p</i> |
| Intercept | 12.722 | 4.677 | 0.009 |

| | | | | |
|-----------------------|-------------------------|--------|----------------|----------|
| | Internal self-relevance | -2.657 | 1.352 | 0.055 |
| | External self-relevance | -2.176 | 0.958 | 0.027 |
| | Interaction | 0.612 | 0.274 | 0.030 |
| <i>Achievement</i> | <i>B</i> | | <i>SE B</i> | <i>p</i> |
| | Intercept | -0.464 | 3.948 | 0.907 |
| | Internal self-relevance | 1.353 | 1.018 | 0.189 |
| | External self-relevance | 0.564 | 0.796 | 0.482 |
| | Interaction | -0.143 | 0.200 | 0.477 |
| | | | Malicious envy | |
| <i>Self-direction</i> | <i>B</i> | | <i>SE B</i> | <i>p</i> |
| | Intercept | 13.798 | 1.937 | <0.001 |
| | Internal self-relevance | -2.412 | 0.399 | <0.001 |
| | External self-relevance | -2.453 | 0.441 | <0.001 |
| | Interaction | 0.466 | 0.090 | <0.001 |
| <i>Tradition</i> | <i>B</i> | | <i>SE B</i> | <i>p</i> |
| | Intercept | 1.589 | 3.424 | 0.654 |
| | Internal self-relevance | 0.235 | 0.827 | 0.777 |
| | External self-relevance | 0.708 | 0.902 | 0.436 |
| | Interaction | -0.209 | 0.214 | 0.333 |
| <i>Power</i> | <i>B</i> | | <i>SE B</i> | <i>p</i> |
| | Intercept | 4.052 | 3.436 | 0.244 |
| | Internal self-relevance | -0.598 | 0.991 | 0.549 |
| | External self-relevance | -0.008 | 0.729 | 0.991 |
| | Interaction | 0.054 | 0.206 | 0.796 |
| <i>Security</i> | <i>B</i> | | <i>SE B</i> | <i>p</i> |
| | Intercept | -0.130 | 3.299 | 0.969 |
| | Internal self-relevance | 0.943 | 0.841 | 0.267 |
| | External self-relevance | 0.486 | 0.711 | 0.497 |
| | Interaction | -0.214 | 0.174 | 0.223 |
| <i>Benevolence</i> | <i>B</i> | | <i>SE B</i> | <i>p</i> |
| | Intercept | 2.861 | 3.593 | 0.429 |
| | Internal self-relevance | -0.169 | 0.753 | 0.824 |
| | External self-relevance | -0.114 | 0.909 | 0.901 |
| | Interaction | -0.010 | 0.182 | 0.955 |
| <i>Universalism</i> | <i>B</i> | | <i>SE B</i> | <i>p</i> |
| | Intercept | 3.749 | 3.257 | 0.255 |
| | Internal self-relevance | -0.379 | 0.680 | 0.580 |
| | External self-relevance | -0.080 | 0.905 | 0.930 |
| | Interaction | -0.006 | 0.184 | 0.973 |
| <i>Conformity</i> | <i>B</i> | | <i>SE B</i> | <i>p</i> |
| | Intercept | 4.960 | 3.351 | 0.145 |
| | Internal self-relevance | -0.804 | 0.940 | 0.396 |
| | External self-relevance | -0.414 | 0.872 | 0.637 |
| | Interaction | 0.138 | 0.249 | 0.581 |
| <i>Stimulation</i> | <i>B</i> | | <i>SE B</i> | <i>p</i> |
| | Intercept | 4.938 | 1.746 | 0.007 |
| | Internal self-relevance | -0.640 | 0.420 | 0.134 |
| | External self-relevance | -0.731 | 0.429 | 0.094 |
| | Interaction | 0.121 | 0.105 | 0.254 |

| <i>Hedonism</i> | <i>B</i> | <i>SE B</i> | <i>p</i> |
|-------------------------|----------|-------------|----------|
| Intercept | 4.940 | 3.685 | 0.186 |
| Internal self-relevance | -0.866 | 1.065 | 0.420 |
| External self-relevance | -0.436 | 0.755 | 0.566 |
| Interaction | 0.138 | 0.216 | 0.525 |
| <i>Achievement</i> | <i>B</i> | <i>SE B</i> | <i>P</i> |
| Intercept | 0.904 | 3.597 | 0.802 |
| Internal self-relevance | 0.362 | 0.927 | 0.698 |
| External self-relevance | 0.293 | 0.725 | 0.688 |
| Interaction | -0.107 | 0.182 | 0.557 |

Table 27

Regression Results per Value, Study 2

| | <i>Benign envy</i> | | |
|-------------------------|--------------------|-------------|----------|
| <i>Self-direction</i> | <i>B</i> | <i>SE B</i> | <i>p</i> |
| Intercept | -1.840 | 3.752 | 0.625 |
| Internal self-relevance | 0.944 | 0.506 | 0.064 |
| External self-relevance | 0.679 | 0.619 | 0.275 |
| Interaction | -0.087 | 0.082 | 0.287 |
| <i>Tradition</i> | <i>B</i> | <i>SE B</i> | <i>p</i> |
| Intercept | -1.829 | 1.841 | 0.322 |
| Internal self-relevance | 1.215 | 0.324 | <0.001 |
| External self-relevance | 0.296 | 0.363 | 0.416 |
| Interaction | -0.080 | 0.059 | 0.176 |
| <i>Power</i> | <i>B</i> | <i>SE B</i> | <i>p</i> |
| Intercept | 3.550 | 1.607 | 0.029 |
| Internal self-relevance | 0.095 | 0.370 | 0.797 |
| External self-relevance | -0.304 | 0.232 | 0.192 |
| Interaction | 0.061 | 0.052 | 0.242 |
| <i>Security</i> | <i>B</i> | <i>SE B</i> | <i>p</i> |
| Intercept | 2.895 | 3.990 | 0.469 |
| Internal self-relevance | 0.279 | 0.629 | 0.658 |
| External self-relevance | -0.639 | 0.615 | 0.300 |
| Interaction | 0.079 | 0.093 | 0.393 |
| <i>Benevolence</i> | <i>B</i> | <i>SE B</i> | <i>p</i> |
| Intercept | 2.668 | 2.885 | 0.356 |
| Internal self-relevance | 0.294 | 0.403 | 0.466 |
| External self-relevance | -0.002 | 0.498 | 0.997 |
| Interaction | 0.013 | 0.067 | 0.844 |
| <i>Universalism</i> | <i>B</i> | <i>SE B</i> | <i>p</i> |
| Intercept | 4.175 | 2.374 | 0.081 |
| Internal self-relevance | 0.158 | 0.343 | 0.646 |
| External self-relevance | -0.563 | 0.413 | 0.174 |
| Interaction | 0.083 | 0.057 | 0.149 |
| <i>Conformity</i> | <i>B</i> | <i>SE B</i> | <i>p</i> |
| Intercept | 4.499 | 2.591 | 0.084 |

| | | | | |
|-----------------------|-------------------------|--------|----------------|----------|
| | Internal self-relevance | -0.080 | 0.395 | 0.840 |
| | External self-relevance | -0.817 | 0.444 | 0.067 |
| | Interaction | 0.114 | 0.064 | 0.079 |
| <i>Stimulation</i> | <i>B</i> | | <i>SE B</i> | <i>p</i> |
| | Intercept | 2.886 | 1.579 | 0.069 |
| | Internal self-relevance | 0.263 | 0.296 | 0.376 |
| | External self-relevance | -0.124 | 0.273 | 0.650 |
| | Interaction | 0.028 | 0.050 | 0.570 |
| <i>Hedonism</i> | <i>B</i> | | <i>SE B</i> | <i>p</i> |
| | Intercept | 3.689 | 2.495 | 0.141 |
| | Internal self-relevance | 0.219 | 0.402 | 0.587 |
| | External self-relevance | -0.350 | 0.359 | 0.330 |
| | Interaction | 0.020 | 0.055 | 0.722 |
| <i>Achievement</i> | <i>B</i> | | <i>SE B</i> | <i>p</i> |
| | Intercept | 6.367 | 3.534 | 0.073 |
| | Internal self-relevance | -0.269 | 0.532 | 0.613 |
| | External self-relevance | -0.654 | 0.550 | 0.236 |
| | Interaction | 0.106 | 0.080 | 0.187 |
| | | | Malicious envy | |
| <i>Self-direction</i> | <i>B</i> | | <i>SE B</i> | <i>p</i> |
| | Intercept | 2.606 | 2.768 | 0.348 |
| | Internal self-relevance | -0.178 | 0.373 | 0.633 |
| | External self-relevance | 0.028 | 0.457 | 0.952 |
| | Interaction | <0.001 | 0.060 | 0.996 |
| <i>Tradition</i> | <i>B</i> | | <i>SE B</i> | <i>p</i> |
| | Intercept | -1.664 | 1.390 | 0.233 |
| | Internal self-relevance | 0.419 | 0.245 | 0.089 |
| | External self-relevance | 0.732 | 0.274 | 0.008 |
| | Interaction | -0.095 | 0.044 | 0.033 |
| <i>Power</i> | <i>B</i> | | <i>SE B</i> | <i>p</i> |
| | Intercept | -2.086 | 1.504 | 0.167 |
| | Internal self-relevance | 0.795 | 0.346 | 0.023 |
| | External self-relevance | 0.674 | 0.217 | 0.002 |
| | Interaction | -0.118 | 0.048 | 0.016 |
| <i>Security</i> | <i>B</i> | | <i>SE B</i> | <i>p</i> |
| | Intercept | 6.407 | 2.730 | 0.020 |
| | Internal self-relevance | -0.578 | 0.431 | 0.182 |
| | External self-relevance | -0.657 | 0.421 | 0.121 |
| | Interaction | 0.075 | 0.063 | 0.235 |
| <i>Benevolence</i> | <i>B</i> | | <i>SE B</i> | <i>p</i> |
| | Intercept | 0.635 | 2.141 | 0.767 |
| | Internal self-relevance | 0.029 | 0.299 | 0.922 |
| | External self-relevance | 0.312 | 0.369 | 0.399 |
| | Interaction | -0.031 | 0.050 | 0.532 |
| <i>Universalism</i> | <i>B</i> | | <i>SE B</i> | <i>p</i> |
| | Intercept | 2.411 | 1.849 | 0.194 |
| | Internal self-relevance | -0.225 | 0.267 | 0.401 |
| | External self-relevance | 0.061 | 0.321 | 0.850 |
| | Interaction | 0.005 | 0.044 | 0.902 |

| <i>Conformity</i> | <i>B</i> | <i>SE B</i> | <i>p</i> |
|-------------------------|----------|-------------|----------|
| Intercept | -1.166 | 2.261 | 0.607 |
| Internal self-relevance | 0.319 | 0.345 | 0.356 |
| External self-relevance | 0.708 | 0.387 | 0.069 |
| Interaction | -0.082 | 0.056 | 0.145 |
| <i>Stimulation</i> | <i>B</i> | <i>SE B</i> | <i>p</i> |
| Intercept | 2.249 | 1.108 | 0.044 |
| Internal self-relevance | -0.213 | 0.208 | 0.306 |
| External self-relevance | -0.197 | 0.192 | 0.307 |
| Interaction | 0.054 | 0.035 | 0.123 |
| <i>Hedonism</i> | <i>B</i> | <i>SE B</i> | <i>p</i> |
| Intercept | 2.264 | 2.099 | 0.282 |
| Internal self-relevance | 0.068 | 0.338 | 0.841 |
| External self-relevance | 0.114 | 0.302 | 0.705 |
| Interaction | -0.030 | 0.046 | 0.518 |
| <i>Achievement</i> | <i>B</i> | <i>SE B</i> | <i>p</i> |
| Intercept | 0.146 | 3.034 | 0.962 |
| Internal self-relevance | 0.215 | 0.457 | 0.638 |
| External self-relevance | 0.337 | 0.472 | 0.476 |
| Interaction | -0.044 | 0.069 | 0.525 |

Table 28

Regression Results per Value, Study 3

| | Benign envy | | |
|-------------------------|-------------|-------------|----------|
| <i>Self-direction</i> | <i>B</i> | <i>SE B</i> | <i>p</i> |
| Intercept | 1.373 | 1.247 | 0.271 |
| Internal self-relevance | 0.422 | 0.176 | 0.017 |
| External self-relevance | 0.063 | 0.229 | 0.782 |
| Interaction | 0.008 | 0.031 | 0.789 |
| <i>Tradition</i> | <i>B</i> | <i>SE B</i> | <i>p</i> |
| Intercept | -1.234 | 1.069 | 0.249 |
| Internal self-relevance | 0.937 | 0.189 | <0.001 |
| External self-relevance | 0.216 | 0.196 | 0.271 |
| Interaction | -0.038 | 0.032 | 0.235 |
| <i>Power</i> | <i>B</i> | <i>SE B</i> | <i>p</i> |
| Intercept | 0.623 | 0.673 | 0.355 |
| Internal self-relevance | 0.713 | 0.163 | <0.001 |
| External self-relevance | 0.053 | 0.116 | 0.647 |
| Interaction | -0.018 | 0.025 | 0.468 |
| <i>Security</i> | <i>B</i> | <i>SE B</i> | <i>p</i> |
| Intercept | 2.046 | 1.642 | 0.213 |
| Internal self-relevance | 0.248 | 0.269 | 0.358 |
| External self-relevance | -0.422 | 0.268 | 0.117 |
| Interaction | 0.071 | 0.040 | 0.077 |
| <i>Benevolence</i> | <i>B</i> | <i>SE B</i> | <i>p</i> |
| Intercept | 0.262 | 1.323 | 0.843 |

| | | | | |
|-----------------------|-------------------------|--------|-------------|----------------|
| | Internal self-relevance | 0.607 | 0.192 | 0.002 |
| | External self-relevance | 0.141 | 0.235 | 0.548 |
| | Interaction | -0.002 | 0.032 | 0.946 |
| <i>Universalism</i> | <i>B</i> | | <i>SE B</i> | <i>p</i> |
| | Intercept | -2.154 | 1.177 | 0.068 |
| | Internal self-relevance | 1.002 | 0.171 | <0.001 |
| | External self-relevance | 0.428 | 0.222 | 0.055 |
| | Interaction | -0.051 | 0.030 | 0.094 |
| <i>Conformity</i> | <i>B</i> | | <i>SE B</i> | <i>p</i> |
| | Intercept | 1.120 | 1.364 | 0.412 |
| | Internal self-relevance | 0.288 | 0.215 | 0.180 |
| | External self-relevance | -0.166 | 0.240 | 0.490 |
| | Interaction | 0.040 | 0.035 | 0.247 |
| <i>Stimulation</i> | <i>B</i> | | <i>SE B</i> | <i>p</i> |
| | Intercept | 1.350 | 0.738 | 0.068 |
| | Internal self-relevance | 0.464 | 0.139 | <0.001 |
| | External self-relevance | -0.041 | 0.147 | 0.780 |
| | Interaction | 0.009 | 0.025 | 0.723 |
| <i>Hedonism</i> | <i>B</i> | | <i>SE B</i> | <i>p</i> |
| | Intercept | 1.312 | 0.878 | 0.136 |
| | Internal self-relevance | 0.351 | 0.143 | 0.015 |
| | External self-relevance | -0.105 | 0.150 | 0.483 |
| | Interaction | 0.020 | 0.022 | 0.378 |
| <i>Achievement</i> | <i>B</i> | | <i>SE B</i> | <i>p</i> |
| | Intercept | 0.033 | 1.613 | 0.984 |
| | Internal self-relevance | 0.385 | 0.249 | 0.124 |
| | External self-relevance | 0.288 | 0.269 | 0.285 |
| | Interaction | 0.005 | 0.039 | 0.902 |
| | | | | Malicious envy |
| <i>Self-direction</i> | <i>B</i> | | <i>SE B</i> | <i>p</i> |
| | Intercept | 2.415 | 1.069 | 0.024 |
| | Internal self-relevance | -0.280 | 0.151 | 0.065 |
| | External self-relevance | 0.123 | 0.196 | 0.530 |
| | Interaction | 0.008 | 0.026 | 0.726 |
| <i>Tradition</i> | <i>B</i> | | <i>SE B</i> | <i>p</i> |
| | Intercept | 1.174 | 0.850 | 0.168 |
| | Internal self-relevance | -0.003 | 0.150 | 0.985 |
| | External self-relevance | 0.016 | 0.156 | 0.919 |
| | Interaction | 0.013 | 0.025 | 0.606 |
| <i>Power</i> | <i>B</i> | | <i>SE B</i> | <i>p</i> |
| | Intercept | 1.078 | 0.607 | 0.076 |
| | Internal self-relevance | 0.180 | 0.147 | 0.220 |
| | External self-relevance | 0.024 | 0.104 | 0.819 |
| | Interaction | <0.001 | 0.022 | 0.983 |
| <i>Security</i> | <i>B</i> | | <i>SE B</i> | <i>p</i> |
| | Intercept | 1.765 | 1.233 | 0.153 |
| | Internal self-relevance | -0.086 | 0.202 | 0.671 |
| | External self-relevance | 0.033 | 0.201 | 0.869 |
| | Interaction | 0.005 | 0.030 | 0.857 |

| <i>Benevolence</i> | <i>B</i> | <i>SE B</i> | <i>p</i> |
|-------------------------|----------|-------------|----------|
| Intercept | 1.853 | 1.174 | 0.115 |
| Internal self-relevance | -0.147 | 0.170 | 0.389 |
| External self-relevance | 0.101 | 0.209 | 0.629 |
| Interaction | 0.003 | 0.028 | 0.928 |
| <i>Universalism</i> | <i>B</i> | <i>SE B</i> | <i>p</i> |
| Intercept | 1.701 | 1.009 | 0.093 |
| Internal self-relevance | -0.161 | 0.146 | 0.273 |
| External self-relevance | 0.218 | 0.191 | 0.253 |
| Interaction | -0.008 | 0.026 | 0.772 |
| <i>Conformity</i> | <i>B</i> | <i>SE B</i> | <i>p</i> |
| Intercept | 0.443 | 1.063 | 0.677 |
| Internal self-relevance | 0.131 | 0.167 | 0.435 |
| External self-relevance | 0.353 | 0.187 | 0.060 |
| Interaction | -0.039 | 0.027 | 0.151 |
| <i>Stimulation</i> | <i>B</i> | <i>SE B</i> | <i>p</i> |
| Intercept | 2.065 | 0.566 | <0.001 |
| Internal self-relevance | -0.228 | 0.106 | 0.033 |
| External self-relevance | -0.164 | 0.113 | 0.145 |
| Interaction | 0.057 | 0.019 | 0.002 |
| <i>Hedonism</i> | <i>B</i> | <i>SE B</i> | <i>p</i> |
| Intercept | 1.397 | 0.801 | 0.082 |
| Internal self-relevance | 0.095 | 0.131 | 0.466 |
| External self-relevance | 0.007 | 0.137 | 0.960 |
| Interaction | -0.006 | 0.020 | 0.771 |
| <i>Achievement</i> | <i>B</i> | <i>SE B</i> | <i>p</i> |
| Intercept | 1.501 | 1.388 | 0.280 |
| Internal self-relevance | -0.095 | 0.215 | 0.657 |
| External self-relevance | 0.152 | 0.232 | 0.512 |
| Interaction | -0.002 | 0.033 | 0.945 |

Table 29

Means and Standard Deviation Benign and Malicious Envy Ratings for Every Value in Every Condition in Study 4

| | Tradition (<i>N</i> = 36) | | Stimulation (<i>N</i> = 51) | | Self-direction (<i>N</i> = 49) | | Achievement (<i>N</i> = 32) | | Conformity (<i>N</i> = 38) | |
|-----------------------|----------------------------|-----------|------------------------------|-----------|---------------------------------|-----------|------------------------------|-----------|-----------------------------|-----------|
| <i>Benign Envy</i> | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> |
| Internal low | 2.55 | (1.64) | 2.57 | (1.59) | 5.19 | (0.72) | 3.02 | (1.98) | 2.20 | (1.50) |
| Internal high | 5.35 | (1.33) | 5.62 | (0.92) | 5.11 | (1.67) | 5.91 | (0.74) | 5.50 | (0.84) |
| External low | 3.55 | (2.07) | 3.34 | (2.05) | 4.98 | (1.63) | 4.32 | (2.01) | 3.10 | (1.78) |
| External high | 4.28 | (2.01) | 3.24 | (1.89) | 5.21 | (1.61) | 3.67 | (2.32) | 2.10 | (1.66) |
| <i>Malicious Envy</i> | | | | | | | | | | |
| Internal low | 2.34 | (1.39) | 1.53 | (0.78) | 4.19 | (0.24) | 1.35 | (0.97) | 2.70 | (1.42) |
| Internal high | 2.47 | (1.72) | 2.02 | (1.59) | 1.39 | (0.79) | 2.14 | (1.18) | 2.12 | (1.65) |
| External low | 2.67 | (1.75) | 1.79 | (1.27) | 1.77 | (1.19) | 1.71 | (1.09) | 2.88 | (1.74) |
| External high | 2.06 | (1.17) | 1.50 | (0.70) | 1.51 | (1.00) | 1.52 | (1.13) | 2.44 | (1.14) |
| | Hedonism (<i>N</i> = 32) | | Benevolence (<i>N</i> = 34) | | Universalism (<i>N</i> = 43) | | Security (<i>N</i> = 38) | | Power (<i>N</i> = 39) | |
| <i>Benign Envy</i> | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> |
| Internal low | 2.47 | (1.51) | 3.75 | (1.02) | 3.20 | (2.52) | 2.67 | (1.37) | 1.92 | (1.01) |
| Internal high | 4.53 | (1.61) | 5.92 | (1.13) | 5.66 | (1.31) | 5.38 | (1.21) | 5.88 | (0.93) |
| External low | 3.16 | (1.88) | 5.53 | (1.24) | 5.63 | (1.75) | 4.05 | (1.65) | 2.49 | (1.80) |
| External high | 2.53 | (1.41) | 5.54 | (1.55) | 5.24 | (1.63) | 5.08 | (1.69) | 2.57 | (1.75) |
| <i>Malicious Envy</i> | | | | | | | | | | |
| Internal low | 3.24 | (1.49) | 2.71 | (1.23) | 3.15 | (1.41) | 2.67 | (1.32) | 1.80 | (1.21) |
| Internal high | 1.78 | (1.13) | 1.32 | (0.74) | 1.18 | (0.56) | 1.52 | (1.09) | 2.62 | (1.84) |
| External low | 2.79 | (1.53) | 1.68 | (1.17) | 1.52 | (1.14) | 1.62 | (1.09) | 2.15 | (1.33) |
| External high | 3.08 | (1.61) | 1.46 | (0.78) | 1.36 | (0.82) | 1.96 | (1.35) | 1.70 | (1.32) |

Table 30

Means and Standard Deviation Benign and Malicious Envy Ratings for Every Value in Every Condition in Study 5

| | Tradition (<i>N</i> = 23) | | Stimulation (<i>N</i> = 45) | | Self-direction (<i>N</i> = 25) | | Achievement (<i>N</i> = 26) | | Conformity (<i>N</i> = 22) | |
|-----------------------|----------------------------|-----------|------------------------------|-----------|---------------------------------|-----------|------------------------------|-----------|-----------------------------|-----------|
| <i>Benign Envy</i> | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> |
| Internal low | 3.98 | (1.52) | 4.08 | (1.49) | 4.44 | (1.56) | 4.94 | (1.37) | 2.84 | (1.71) |
| Internal high | 3.70 | (1.80) | 4.18 | (1.97) | 5.48 | (1.46) | 4.67 | (1.79) | 4.88 | (1.52) |
| External low | 3.65 | (1.24) | 3.76 | (2.06) | 4.92 | (1.67) | 4.67 | (1.58) | 3.53 | (2.20) |
| External high | 4.12 | (2.04) | 4.42 | (1.37) | 5.31 | (1.47) | 4.83 | (1.77) | 3.61 | (1.78) |
| <i>Malicious Envy</i> | | | | | | | | | | |
| Internal low | 2.15 | (1.36) | 1.59 | (1.01) | 1.94 | (1.02) | 1.97 | (1.18) | 2.21 | (0.98) |
| Internal high | 1.30 | (0.71) | 1.60 | (1.02) | 1.92 | (1.50) | 2.24 | (1.50) | 1.69 | (0.83) |
| External low | 1.67 | (0.89) | 1.50 | (0.89) | 1.83 | (1.03) | 1.83 | (1.26) | 1.75 | (1.00) |
| External high | 1.92 | (1.53) | 1.67 | (1.10) | 2.04 | (1.63) | 2.48 | (1.49) | 2.18 | (0.91) |
| | Hedonism (<i>N</i> = 33) | | Benevolence (<i>N</i> = 21) | | Universalism (<i>N</i> = 25) | | Security (<i>N</i> = 29) | | Power (<i>N</i> = 16) | |
| <i>Benign Envy</i> | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> |
| Internal low | 3.94 | (1.39) | 4.25 | (1.68) | 5.14 | (0.81) | 3.20 | (1.79) | 4.91 | (1.74) |
| Internal high | 4.30 | (1.53) | 4.91 | (1.59) | 5.00 | (1.49) | 4.39 | (1.17) | 4.05 | (1.40) |
| External low | 4.32 | (1.56) | 4.62 | (1.63) | 4.89 | (1.25) | 3.50 | (1.56) | 4.61 | (1.38) |
| External high | 3.94 | (1.37) | 4.57 | (1.71) | 5.12 | (1.23) | 4.66 | (1.21) | 4.68 | (2.05) |
| <i>Malicious Envy</i> | | | | | | | | | | |
| Internal low | 2.07 | (1.37) | 1.57 | (1.05) | 2.02 | (1.50) | 2.34 | (1.59) | 3.32 | (1.67) |
| Internal high | 2.67 | (1.55) | 1.91 | (1.27) | 2.00 | (1.35) | 1.64 | (0.58) | 3.65 | (1.35) |
| External low | 2.30 | (1.29) | 1.98 | (1.18) | 1.75 | (0.87) | 2.04 | (1.19) | 3.89 | (1.67) |
| External high | 2.42 | (1.64) | 1.55 | (1.14) | 2.11 | (1.55) | 1.68 | (0.98) | 2.82 | (1.22) |

Table 31

Means and Standard Deviation of Benign and Malicious Envy Ratings for Every Value in Every Condition in Study 6

| | Tradition (<i>N</i> = 29) | | Stimulation (<i>N</i> = 41) | | Self-direction (<i>N</i> = 30) | | Achievement (<i>N</i> = 55) | | Conformity (<i>N</i> = 26) | |
|-----------------------|----------------------------|-----------|------------------------------|-----------|---------------------------------|-----------|------------------------------|-----------|-----------------------------|-----------|
| <i>Benign Envy</i> | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> |
| Internal low | 1.90 | (1.09) | 2.12 | (1.30) | 3.36 | (1.75) | 2.60 | (1.44) | 1.38 | (0.58) |
| Internal high | 3.34 | (1.61) | 4.97 | (1.35) | 4.56 | (1.93) | 4.06 | (1.65) | 3.09 | (1.75) |
| External low | 2.09 | (1.21) | 3.82 | (2.10) | 3.33 | (1.76) | 3.36 | (1.56) | 2.30 | (1.32) |
| External high | 3.21 | (1.69) | 3.51 | (1.85) | 4.77 | (1.85) | 3.52 | (1.86) | 2.30 | (1.77) |
| <i>Malicious Envy</i> | | | | | | | | | | |
| Internal low | 1.65 | (0.93) | 1.55 | (0.83) | 2.86 | (1.52) | 1.99 | (1.15) | 1.42 | (0.91) |
| Internal high | 2.02 | (1.20) | 1.47 | (0.72) | 1.62 | (0.99) | 1.97 | (1.33) | 1.93 | (1.24) |
| External low | 1.72 | (1.02) | 1.40 | (0.52) | 2.22 | (1.32) | 1.83 | (1.20) | 1.85 | (1.07) |
| External high | 1.96 | (1.15) | 1.59 | (0.91) | 2.18 | (1.51) | 2.10 | (1.29) | 1.59 | (1.15) |
| | Hedonism (<i>N</i> = 40) | | Benevolence (<i>N</i> = 30) | | Universalism (<i>N</i> = 22) | | Security (<i>N</i> = 48) | | Power (<i>N</i> = 23) | |
| <i>Benign Envy</i> | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> |
| Internal low | 2.44 | (1.12) | 2.92 | (1.54) | 2.84 | (1.47) | 2.57 | (1.39) | 2.88 | (1.44) |
| Internal high | 4.82 | (1.43) | 4.34 | (1.04) | 4.79 | (2.13) | 3.48 | (1.66) | 4.77 | (1.93) |
| External low | 3.83 | (1.68) | 3.40 | (1.46) | 3.88 | (2.20) | 2.59 | (1.80) | 3.66 | (2.01) |
| External high | 3.65 | (1.89) | 3.47 | (1.62) | 4.50 | (2.00) | 3.31 | (1.38) | 3.90 | (1.90) |
| <i>Malicious Envy</i> | | | | | | | | | | |
| Internal low | 2.00 | (1.24) | 1.59 | (0.87) | 1.69 | (0.85) | 2.30 | (1.27) | 2.29 | (1.14) |
| Internal high | 2.23 | (1.10) | 1.32 | (0.61) | 1.43 | (0.67) | 1.65 | (1.14) | 4.00 | (1.87) |
| External low | 2.42 | (1.31) | 1.50 | (0.92) | 1.47 | (0.71) | 2.09 | (1.26) | 3.30 | (1.63) |
| External high | 1.76 | (0.84) | 1.49 | (0.69) | 1.64 | (0.81) | 1.90 | (1.25) | 2.94 | (1.87) |

Table 32

Means and Standard Deviation of Benign and Malicious Envy Ratings for Every Value in Every Condition in Study 7

| | Tradition (<i>N</i> = 39) | | Stimulation (<i>N</i> = 43) | | Self-direction (<i>N</i> = 54) | | Achievement (<i>N</i> = 57) | | Conformity (<i>N</i> = 34) | |
|-----------------------|----------------------------|-----------|------------------------------|-----------|---------------------------------|-----------|------------------------------|-----------|-----------------------------|-----------|
| <i>Benign Envy</i> | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> |
| Internal low | 2.42 | (1.65) | 2.55 | (1.53) | 3.21 | (1.65) | 2.76 | (1.24) | 2.44 | (1.19) |
| Internal high | 3.70 | (1.93) | 4.53 | (1.79) | 5.10 | (1.55) | 4.93 | (1.66) | 4.21 | (1.82) |
| External low | 3.20 | (1.90) | 3.09 | (1.89) | 4.26 | (1.85) | 4.57 | (1.85) | 3.47 | (1.78) |
| External high | 2.96 | (1.92) | 3.80 | (1.93) | 4.47 | (1.84) | 3.75 | (1.79) | 3.21 | (1.78) |
| <i>Malicious Envy</i> | | | | | | | | | | |
| Internal low | 2.28 | (1.67) | 1.48 | (0.72) | 2.08 | (1.34) | 1.93 | (1.27) | 2.00 | (0.99) |
| Internal high | 1.70 | (0.94) | 1.92 | (1.15) | 1.45 | (0.66) | 1.64 | (0.85) | 2.10 | (1.25) |
| External low | 1.84 | (1.25) | 1.56 | (0.95) | 1.75 | (0.95) | 1.70 | (1.22) | 1.82 | (0.78) |
| External high | 2.11 | (1.48) | 1.78 | (0.99) | 1.64 | (1.10) | 1.79 | (0.93) | 2.24 | (1.31) |
| | Hedonism (<i>N</i> = 46) | | Benevolence (<i>N</i> = 39) | | Universalism (<i>N</i> = 18) | | Security (<i>N</i> = 54) | | Power (<i>N</i> = 23) | |
| <i>Benign Envy</i> | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> |
| Internal low | 3.12 | (1.38) | 3.25 | (1.98) | 4.41 | (2.20) | 2.36 | (1.34) | 2.38 | (1.44) |
| Internal high | 4.43 | (1.56) | 5.00 | (1.28) | 4.65 | (1.76) | 3.66 | (1.77) | 5.19 | (1.36) |
| External low | 3.60 | (1.73) | 4.31 | (1.65) | 4.62 | (2.13) | 3.07 | (1.80) | 4.60 | (2.00) |
| External high | 3.94 | (1.49) | 4.73 | (1.84) | 4.47 | (1.84) | 3.04 | (1.65) | 4.28 | (1.72) |
| <i>Malicious Envy</i> | | | | | | | | | | |
| Internal low | 2.41 | (1.47) | 1.79 | (1.20) | 1.88 | (1.21) | 1.44 | (0.67) | 1.92 | (1.35) |
| Internal high | 1.86 | (1.42) | 1.28 | (0.62) | 1.18 | (0.33) | 1.52 | (0.78) | 3.37 | (1.77) |
| External low | 1.88 | (1.41) | 1.50 | (0.99) | 1.22 | (0.53) | 1.36 | (0.55) | 2.88 | (1.83) |
| External high | 2.38 | (1.48) | 1.32 | (0.57) | 1.70 | (1.08) | 1.59 | (0.85) | 3.12 | (1.76) |

