LINGUISTIC EVIDENCE FOR THE DISSOCIATION BETWEEN IMPURITY AND HARM: DIFFERENCES IN THE DURATION AND SCOPE OF CONTAMINATION VERSUS INJURY

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Previous research has shown that harm and impurity are relevant to a different extent across individuals and transgressions. However, the source of these differences is still unclear. Here, we combine language analysis and social-moral psychology to articulate the core defining features of impurity versus harm. In Study 1 (a–c), we found systematic variation in language use, indicating that people infer that contamination, unlike injury, affects a target completely and irreversibly, rendering them a transmitter of contamination. In Study 2 (a–b), we investigated how evoking intuitions about these core features of contamination—completeness, irreversibility, and transferability—influences judgments of impurity and harm. We found that implying effects on a target were complete and irreversible altered judgments of impurity, but not harm. Overall, our research supports the conclusion that impurity and harm are substantially distinct in cognition and moral judgment; unlike harm, impurity connotes negative effects that spread continually across space and time.

Keywords: moral psychology, language analysis, harm, impurity, contamination, blame

Consider a nation facing a crisis, where two groups of citizens have joined together to oust the leaders. One group spreads the message that the leadership *harms* the nation's standing in the eyes of the world; another group spreads the message that the leadership *taints* the nation's standing in the eyes of the world. Such a minor tweak to

language might seem inconsequential. Indeed, some research in moral psychology has argued that judgments of impurity are just a functionally equivalent subset of harm judgments. Other research, however, has shown that people direct harm and impurity judgments at different kinds of transgressions, and to a differing extent across individuals. While harm and impurity both communicate that a target is strongly negatively affected, they are invoked differently, for reasons that have not yet been clarified by existing research. The present research takes a novel approach to understanding the nature and moral implications of harm and impurity judgments. Here, we investigate the core defining features of injury and contamination, how these features are reflected in language, and how they influence moral judgments.

The current research builds on a growing literature in moral psychology concerned with understanding how people delineate morality. For example, recent work has addressed fairness versus loyalty, "binding" versus "individualizing" values (Graham et al., 2011, 2018; Haidt, 2007; Hildreth, Gino & Bazerman, 2016; Mooijman et al., 2018; Napier & Luguri, 2013; Niemi & Young, 2013, 2016; Niemi, Hartshorne, Gerstenberg, Stanley, & Young, 2020; Niemi, Wasserman & Young, 2018; Waytz, Dungan & Young, 2013), as well as harm versus impurity judgments (Chakroff et al., 2016; Chakroff, Dungan, & Young, 2013; Chakroff & Young, 2015; Dungan, Chakroff, & Young, 2017; Gray, Schein & Ward, 2014; Parkinson & Byrne, 2018; Young & Saxe, 2011). Some researchers have argued that impure acts are simply instances of harm, referring to work indicating that participants seem to conceptually prioritize harm over impurity, refer to the harmful nature of impure acts, and identify "victims" of ostensibly victimless purity violations (Gray et al., 2014; Schein & Gray, 2018; Schein, Ritter & Gray, 2016). Other researchers of moral foundations theory, looking to the possible evolutionary roots of these moral norms, contend that the domains of harm and impurity are disassociated: Harm norms protect *individuals* regardless of group membership, whereas purity norms protect *groups* by obligating individuals to adhere to collective norms (Graham et al., 2011; Haidt, 2003, 2007). Dungan and colleagues (2017) likewise argue that impurity judgments do not collapse into harm judgments; they find that impure, unlike harmful, acts are judged as most immoral when committed against *oneself* rather than others. Other work has distinguished harm and impurity by examining associated cognitive patterns. People are more likely to explain impure versus harmful acts with reference to the person rather than the situation (Chakroff & Young, 2015); and moral judgments of harm are modulated by information about agents' intentions, whereas moral judgments of impurity are relatively insensitive to information about intent (Barrett et al., 2016; Chakroff et al., 2013; Chakroff et al., 2016; Young & Saxe, 2011). Emotion researchers have investigated impurity and harm by comparing the cognition associated with disgust and anger-inducing acts, respectively. They have found, for example, that participants employ simplistic reasoning to justify moral condemnation of disgust-eliciting sexual acts versus anger-eliciting harmful acts—reflected in greater use of evaluative (e.g., "X is bad") versus elaborative judgments (e.g., "X violated others' human rights"), respectively (Russell & Giner-Sorolla, 2011). Convergent evidence reveals disgust to be generally resistant to reasoning. For example, participants report a distaste for juice that has come in contact with a sterilized cockroach and feces-shaped fudge, even when both are perfectly safe to consume (Rozin, Millman, & Nemeroff, 1986).

The prior research has largely used stimulus sets of transgressions that ostensibly represent acts of harm and impurity. Disagreement about the particular characteristics (e.g., weirdness, Gray & Keeney, 2015; dose sensitivity, Rottman & Young, 2019) that qualify a transgression as harm versus impurity has prevented researchers from coming to a consensus about the distinctiveness of these moral domains. In the current research, we bypass these disagreements with an approach that does not rely on stipulating behaviors as either harmful or impure. Instead, we investigate these domains by studying the structure and use of moral language, thereby discovering (rather than stipulating) what constitutes harm or impurity.

Research on moral language has the potential to advance understanding as it merges theory-driven and data-driven approaches: Natural language serves as a window into cognition, as theories of language and moral psychology guide the interpretation of linguistic data. For example, some prior research on moral language has investigated the moral discourse characterizing social networks and debates around pressing social issues; this research has applied moral foundations theory to interpret patterns in the use of words referring to the moral foundations (e.g., harm, fairness, loyalty, purity; Clifford & Jerit, 2013; Dehghani et al., 2016; Sagi & Dehghani, 2014). This exercise has revealed that arguments on topics such as stem cell research, the World Trade Center attacks, and abortion use words related to the moral foundations differently; notably, differences often reflect variation in references to purity and harm. This research, and much of the prior work on moral language, has helped to shed light on the features of moral discourse.

Here, we pursue a different but complementary language-based approach. We build on theories of social-moral cognition and cognitive linguistics, proposing that impurity and harm meaningfully dissociate: Language used to communicate about impurity, but not harm, encodes specific information about the duration and scope of negative effects on a target—namely, the completeness, irreversibility, and transferability of the damage. This not to say that impurity and harm have nothing in common; they both entail negatively affecting a target. However, a complete understanding of impurity and harm requires considering this shared feature in the context of their important differences.

A prominent account of moral cognition, the theory of dyadic morality (Gray, Waytz, & Young, 2012; Schein & Gray, 2018), is consistent with the shared nature of impurity and harm. On this account, the framework of a moral transgression involves an agent who is causal and intentional, harming a patient who is not. This framework informs moral judgment, motivating evaluations such as blame and wrongness directed at the agent. Squaring the theory of dyadic morality with the findings of other researchers of harm and impurity is problematic. Impurity can be imparted without the existence of a dyad, such as when one finds oneself impure through one's own actions (Dungan et al., 2017); and, people harshly judge *un*intentional acts that impart impurity (e.g., Chakroff et al., 2016; Young & Saxe, 2011). Further, as detailed in the next section, linguistic theory on which the dyadic morality theory is built does not support overlapping psychological frameworks for impurity and harm.

Other social psychological research has identified common principles of thinking that are good fits with the concept of impurity in a moral context. The "law of contagion" is a pattern of thought that researchers have found U.S. adults apply in thinking

about morally relevant "contagions" (Nemeroff & Rozin, 1994; Rozin et al., 1986). The law of contagion stipulates that an essence is transferred by contact between entities (no intention necessary), and continues to affect the contacted entity long after contact ends, sometimes forever. People's use of the contagion template is consistent with the features of contamination posited to set impurity apart from harm in the present research: negative effects that are complete, irreversible, and transfer to others.

In the current studies, we combine the methods of linguistic analysis and social psychology vignette studies to investigate the defining features of harm and impurity. As described in the next section, we analyze the meaning and usage of words for harm and impurity, revealing essential differences in how these processes transmit their negative effects (Study 1 a–c). Subsequently, in Study 2 (a–b), we investigate how the core features of impurity—complete and irreversible negative effects that transfer to others—influence contamination and harm judgments.

CONTAMINATION AND INJURY IN LANGUAGE

The semantics of verbs that communicate impurity, such as *contaminate* and *taint,* contrast in important ways with verbs that convey harm, such as *injure* and *wound.* According to a prominent theory of verb semantics (Kipper et al., 2008; Kipper-Schuler, 2005; Levin, 1993), *contaminate* and *taint* are classified as members of the *fill* category (9.8).

These verbs have semantic frameworks that indicate that a substance moved with the result of an entity that is completely affected. For example, when "A tainted B," this can indicate an event in which an agent (A) causes a substance to relocate somewhere new (B), or an event in which some substance (A) and its destination (B) become co-located.[2]

FILL 9.8 *adorn, anoint, bathe, coat,* **contaminate,** *cover, soil, sully, surround, swathe,* **taint,**[1]

Verbs in the *fill* category, including *contaminate* and *taint,* have a particular grammatical feature; they do not allow "holistic/partitive" alternation (Levin, 1993, p. 50; VerbNet, Kipper-Schuler, 2005), unlike a range of other verbs such as *spray* which do allow this alternation and can be used in both "partitive" or "holistic" constructions. For example:

(1) Holistic construction, "*I sprayed the sink* with *water."*
(2) Partitive construction: "*I sprayed water into the sink."*

The meaning of these sentences may differ, but both types are felicitous—appropriately constructed and smoothly understood. The holistic construction (1) implies that the target (the sink) was completely affected whereas the partitive construction (2) allows for the interpretation that some parts of the target (sink) may have been unaffected by the water (Levin, 1993).

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1. Sampling of the 97 verbs in the "fill" class; See page 20 of the Supplementary Material for full list.

2. For example, the felicitous sentence "He tainted their souls" fits with framework (A), which does not specify which substance the agent "He" caused to be relocated to the destination, "their souls." The felicitous sentence "Evil tainted their souls" fits with the agent-less framework (B) where the substance, "evil," is co-located with the destination, "their souls."

The non-alternating verbs *contaminate* and *taint,* however, accommodate only the holistic construction and not the partitive construction. For example:

(3) Holistic construction: *"He tainted the woman with evil."*
(4) Partitive construction: *"He tainted evil into the woman."*

The felicitous (3) holistic construction implies that target (the woman) was completely affected by the tainting. The infelicitous (4) partitive construction forces an interpretation that is incongruent with the semantics of *taint*: namely, that some parts of the target may have been unaffected by the tainting. The fact that verbs that convey impurity are felicitous with the holistic construction, but infelicitous with the partitive construction, supports the hypothesis that people expect contamination and taint to involve a process that affects an entity completely.

By contrast, the verbs *injure* and *wound* do not necessarily evoke "complete affectedness" of the object, nor do many other verbs in harm events like *hit* and *stab. Injure* is among the *"hurt"* verbs (Levin, 1993, p. 34), which can take as their direct objects particular *parts* of the body (e.g., *"She injured her hand"*). This feature is consistent with the harm's reversibility: Unlike impurity and contamination, injuries can be remediated through healing processes localized to the injury site. Further, unlike the semantic frameworks for impurity, which indicate movement of a substance, the framework for harm involves one entity causing a change of state in another entity (Levin, 1993). Harm events have an intentional agent or stimulus who is assigned the property "cause"; the experiencer of the harm or affected patient is assigned a property indicating their resulting change of state (e.g., "subjugated," "destroyed"). The dyadic morality model in which moral transgressions entail agents harming patients (e.g., Gray et al., 2012) fits well with the semantic framework of harm; it does not fit with the semantic frameworks for impurity, for which the agent-patient dyad is irrelevant.

In Study 1 (a–c), we designed experiments which capitalized on this prior work in verb semantics. We examined harm and impurity by analyzing words used to directly convey these concepts, and we tested whether these words in their active and passive forms are applied differently to agents and patients, respectively. One form of the words, passive participles (adjectival forms of verbs that end in *-ed*), is typically considered "patient-oriented" and applicable to previously affected entities. The second form, active participles (end in *-ing*), is considered "agent-oriented" and applicable to entities having progressive effects (Haspelmath, 1994). To investigate how people understand humans as agents and patients of contamination and injury, we asked participants to assign active participles ("contaminating or tainting," "injuring or wounding") and passive participles ("contaminated or tainted," "injured or wounded") to generic "victims" and "perpetrators" of crimes. This design let us assess how role in transgression (victim vs. perpetrator) and descriptor type (active/passive) affect the assignment of harm and impurity terms.

We expected (1) congruent assignment of active and passive participles for contamination, indicating its perceived active, progressive nature even in a passive state; for example, the OED definition for "tainted" specifies being "affected with some corrupting influence." In the case of injury, (2) we did not expect congruent assignment of active and passive participles, showing dissociation between these concepts: Whereas contamination implies that being contaminated involves being affected by a negative

substance that transfers to others in a full, irreversible way (i.e., contaminating others), being injured does not. We also expected (3) that perpetrators and victims would be assigned the descriptors in different ways: Perpetrators might qualify as contaminated, contaminating, and injuring *but* not injured; victims would be most likely to be considered injured, followed by contaminated. Finally, prior work had also investigated assignment of the passive participles for contamination ("contaminated or tainted") and injury ("injured or wounded") to victims; the more victims were viewed as contaminated, the less they were viewed as injured (Niemi et al., 2020; Niemi & Young, 2016). Following on this prior research, we also tested the relationship between contamination and injury ratings with correlational analyses.

STUDY 1A

In Study 1a, we examined our hypotheses that (1) participants would assign active and passive participles for contamination equally; (2) participants would assign active participles for injury to perpetrators and passive participles to victims; and (3) perpetrators would qualify as "contaminated," "contaminating," "injuring" *but* not "injured" in participants' ratings, whereas victims would be most likely to be considered "injured," followed by "contaminated." Finally, we tested the relationships between assignment of injury and contamination participles.

METHOD

Participants were 153 individuals on Amazon's Mechanical Turk; 27 participants were excluded for not completing the study or not providing their worker identification number. We aimed for approximately 50 individuals per condition (active/passive participle) based on standards for reasonable sample size, given that we did not have similar studies to refer to as precedents. Participants took the study for a small payment; our final sample after these exclusions was 126 ($M_{age}(SD) = 34.63(12.13)$; 62 female, 63 male, 1 selected other).

Participants were asked about both hypothetical perpetrators and victims of crimes. Descriptor type (active participle "-ing," passive participle "-ed") was varied between subjects. Prompts were in the form: "Please consider the following hypothetical crime [victim; perpetrator]: a [victim; perpetrator] of [crime]." The crimes were molestation, rape, strangling, and stabbing.[3] In the passive participle condition, participants ($n = 63$) were asked: "How injured or wounded is this person?" and "How contaminated or tainted is this person?" in counterbalanced order. In the active participle condition, participants ($n = 63$) were asked: "How injuring or wounding is this person?" and "How contaminating or tainting is this person?" in counterbalanced order. Participants provided their ratings using labeled sliding scales with the instructions: "Please use the slider to indicate your response, [0 = Not at all] to [7 = Very much]." Data and

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3. We were also interested in whether crime *type* [i.e., sexual (rape, molestion) versus non-sexual (stabbing, strangling)] would influence contamination ratings. We found small effects suggestive of this, which are not our focus here. See Supplementary Material for additional analyses broken down by crime type.

materials for this and all studies are available at osf.io/s3t4h. We report all measures, manipulations, and exclusions in these studies.

RESULTS

We conducted an analysis of variance on contamination and injury ratings of perpetrators and victims in the active and passive descriptor conditions. We observed main effects for rating type ($F(1,124) = 4.12$, $p = .04$, $\eta^2 = .032$) and role ($F(1,124) = 30.78$, $p < .001$, $\eta^2 = .199$). We observed two-way interactions of descriptor condition and role ($F(1,124) = 109.32$, $p < .001$, $\eta^2 = .47$); descriptor condition and rating ($F(1,124) = 12.84$, $p < .001$, $\eta^2 = .09$); and role and rating ($F(1,124) = 96.49$, $p < .001$, $\eta^2 = .438$). The three-way interaction of rating, role, and descriptor condition interaction was significant ($F(1,124) = 40.24$, $p < .001$, $\eta^2 = .24$). Participants rated perpetrators highly and equivalently "contaminating," "contaminated," and "injuring," whereas they rated victims highly "injured," in particular (see Figure 1 and descriptive statistics in Table 1).

Correlations Among Ratings. In prior work involving a richer experimental context that included more detailed crime vignettes, participants rated victims as "contaminated" and "injured"—these ratings were negatively correlated (Niemi & Young, 2016). Here, in the passive participle condition, "injured" and "contaminated" ratings were unrelated for victims ($r = -.106$, $p = .41$) and perpetrators ($r = .05$, $p = .69$). However, in the active participle condition, "injuring" and "contaminating" ratings were positively correlated for victims ($r = .588$, $p < .001$) and perpetrators ($r = .308$, $p < .014$), suggesting that being actively contaminating is consistent with being actively injurious.

Summary. The findings of Study 1a (Figure 1 and Table 1) support the notion that people perceive contamination, unlike injury, to fundamentally involve active transfer of negative effects. (1) Consistent with our first hypothesis, "contaminating" was assigned equivalently with "contaminated." (2) In line with our second hypothesis, the active and passive participles for injury were assigned differently: "injuring" and "injured" traded off. (3) Finally, as expected, perpetrators and victims were assigned the descriptors in different ways: perpetrators were "contaminated," "contaminating," and "injuring" *but* not "injured"; victims were considered "injured." In sum, being contaminated is considered to be consistent with being contaminating and injuring, but not being passively injured. In order to ascertain whether people would be influenced in their assignment of the active participles "contamina*ting*" and "inju*ring*" if they were *also* asked for the passive participle "contamina*ted*" and "inju*red*" ratings, we administered the next study (Study 1b) with the descriptor condition varied within-subjects.

STUDY 1B

METHOD

In Study 1b, we asked: Would asking participants to assign *both* the active and passive forms of the descriptors to victims and perpetrators eliminate the congruence in assignment of "contaminating" and "contaminated"? Study 1b was identical to Study
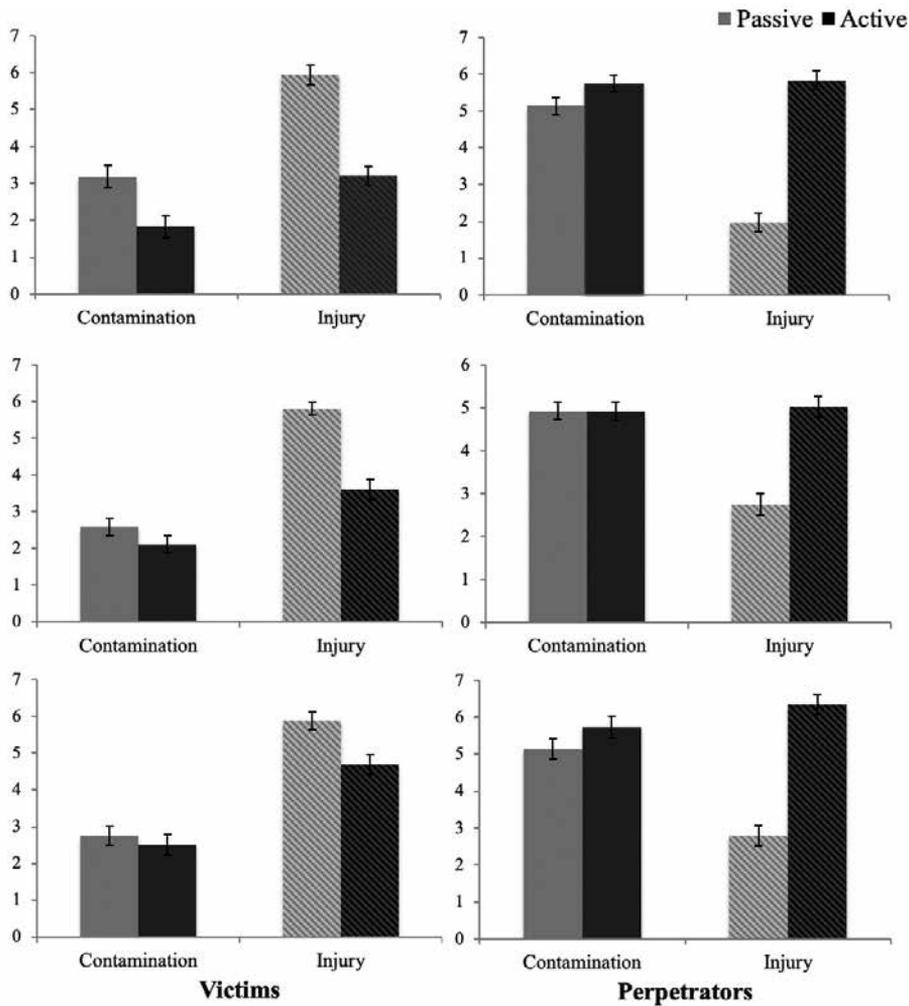
FIGURE 1. Ratings of contamination and injury ("not at all" – "very much") in the active participle ("contaminating" and "injuring") and passive participle ("contaminated" and "injured") conditions for victims and perpetrators. Pattern of results was maintained across Study 1a (TOP) with active or passive participle condition varied between-subjects; Study 1b (MIDDLE) with active or passive particle condition within-subjects; and Study 1c (BOTTOM) with active or passive participle condition and victim/perpetrator role conditions between-subjects. Error bars indicate SEM.

1a with the exception that conditions were varied within-subjects: Participants completed both descriptor conditions (active/passive) for victims and perpetrators in randomized order. Participants included 154 individuals on Amazon's Mechanical Turk who took the study for a small payment; 49 participants were excluded for not completing the study or for not providing their worker identification number. Our final sample comprised 105 individuals (M_{age}(SD) = 36.94(12.01); 55 female, 50 male).

TABLE 1. Descriptive Statistics for Study 1 (a–c)

Role	Descriptor	Mean	SE	95% Confidence Interval	
				Lower Bound	Upper Bound
Perpetrator	Contaminat**ing**	5.74	0.23	5.28	6.20
		4.92	0.21	4.50	5.35
		5.73	0.28	5.18	6.29
	Contaminat**ed**	5.14	0.23	4.68	5.61
		4.92	0.20	4.53	5.32
		5.14	0.28	4.58	5.70
	Injur**ing**	5.85	0.26	5.34	6.35
		5.03	0.24	4.55	5.51
		6.34	0.28	5.80	6.89
	Injur**ed**	1.97	0.26	1.46	2.48
		2.75	0.26	2.24	3.26
		2.79	0.28	2.24	3.34
Victim	Contaminat**ing**	1.83	0.30	1.24	2.41
		2.11	0.23	1.65	2.57
		2.51	0.28	1.96	3.05
	Contaminat**ed**	3.18	0.30	2.60	3.76
		2.58	0.23	2.11	3.04
		2.75	0.25	2.25	3.25
	Injur**ing**	3.21	0.26	2.69	3.73
		3.61	0.28	3.06	4.17
		4.70	0.27	4.16	5.23
	Injur**ed**	5.94	0.26	5.42	6.46
		5.80	0.16	5.49	6.12
		5.89	0.25	5.40	6.37

Note. Statistics for each condition in the following order Study 1a, 1b, 1c.

RESULTS

We conducted an analysis of variance on contamination and injury ratings of perpetrators and victims in the active and passive descriptor conditions. We observed main effects for rating type ($F(1,104) = 19.78$, $p < .001$, $\eta^2 = .160$) and role ($F(1,104) = 14.62$, $p < .001$, $\eta^2 = .123$); and two-way interactions of descriptor condition and role ($F(1,104) = 62.18$, $p < .001$, $\eta^2 = .37$) and role and rating ($F(1,104) = 106.78$, $p < .001$, $\eta^2 = .507$). The three-way interaction of rating, role, and descriptor condition interaction was significant ($F(1,104) = 65.72$, $p < .001$, $\eta^2 = .387$). Participants again rated perpetrators highly and equivalently "contaminating," "contaminated," and "injuring," whereas they rated victims highly "injured" (see Figure 1 and descriptive statistics in Table 1).

Correlations Among Ratings. Ratings of victims as "contaminated" were correlated with "contaminating" ($r = .72$, $p < .001$) and "injuring" ratings ($r = .22$, $p = .03$), but not "injured" ratings ($p = .12$) Likewise, ratings of perpetrators as "contaminated" were correlated with "contaminating" ($r = .71$, $p < .001$) and "injuring" ratings ($r = .48$, $p < .001$), but not "injured" ratings ($p = .06$).

Summary. In Study 1b, results replicated Study 1a. Giving participants both active and passive descriptors (e.g., "contaminated" and "contaminating") in the same study did not change how they applied these terms. Again, supporting our first and second hypotheses, (1) participants assigned active and passive participles for contamination equally, and (2) participants assigned active participles for injury to perpetrators and passive participles for injury to victims. Also, (3) victims were again mostly considered "injured," while perpetrators were considered "contaminated," "contaminating," and "injuring" to a substantially greater degree than victims. Correlations were found among "contaminated," "contaminating," and "injuring" ratings, but these were not correlated with "injured" ratings, for both victims and perpetrators.

Overall, these results provide further support for the notion that being passively contaminated is considered more likely to co-occur with being actively contaminating and injuring, but not passively injured. In our final iteration, Study 1c, we varied between-subjects whether participants rated victims *or* perpetrators in order to rule out the possibility that the relationships between the descriptors may have been affected by comparisons made between "perpetrators" or "victims" when they were in the same study.

STUDY 1C

METHOD

Study 1c was identical to Study 1a except participants rated *either* victims or perpetrators rather than both. We doubled the sample size to accommodate the fully between-subjects design. Participants were 198 individuals on Amazon's Mechanical Turk who completed the study for a small payment ($M_{age}(SD) = 35.39(11.77)$; 102 female, 94 male, 2 other).

RESULTS

We conducted an analysis of variance on contamination and injury ratings of perpetrators and victims in the active and passive descriptor conditions. We observed main effects for rating type ($F(1,194) = 27.17$, $p < .001$, $\eta^2 = .123$); descriptor condition ($F(1,194) = 10.46$, $p = .001$, $\eta^2 = .051$); and role ($F(1,194) = 24.71$, $p < .001$, $\eta^2 = .113$). We again observed two-way interactions of descriptor condition and role ($F(1,194) = 44.32$, $p < .001$, $\eta^2 = .19$); role and rating ($F(1,194) = 105.60$ $p < .001$, $\eta^2 = .352$); and descriptor condition and rating ($F(1,194) = 8.57$, $p = .004$, $\eta^2 = .04$). The three-way interaction of rating, role, and descriptor condition interaction was significant ($F(1,194) = 32.19$, $p < .001$, $\eta^2 = .142$; see Figure 1 and descriptive statistics in Table 1): participants rated perpetrators more contaminating *and* contaminated than victims; whereas they

rated perpetrators as more injuring than victims, and victims as more injured than perpetrators.[4]

Correlations Among Ratings. As in Study 1a, in the passive participle conditions for victims and perpetrators, "injured" and "contaminated" ratings were unrelated ($r = .025$, $p = .86$; $r = −.014$, $p = .93$). In the active participle condition, "injuring" and "contaminating" ratings were again positively correlated for victims ($r = .476$, $p < .001$), but not for perpetrators ($r = .04$, $p < .78$), partially replicating Study 1a and providing support for the notion that being actively contaminating is associated with being actively injurious.

Summary. The pattern of results in Study 1c, like Study 1 (a–b), indicates (1) that people perceive passive contamination (being "contaminated") to be consistent with active contamination (being "contaminating"); (2) there is no such active-passive congruency in the case of injury; and, (3) these descriptors are applied differently for victims versus perpetrators: Victims were considered highly "injured" and substantially lower in the other descriptors, while perpetrators showed the opposite pattern.

The results support the conclusion that people understand impurity to fundamentally involve being not only passively contaminated but also actively contaminating: transferring the damage incurred—a feature not found in their understanding of harm. Moreover, across Study 1 (a–c), participants assigned contamination terms to perpetrators more than victims, suggesting that perceptions of impurity are generally exacerbated by being an agent of harm.

STUDY 2 (A–B): MECHANICS AND MORAL IMPLICATIONS OF CONTAMINATION JUDGMENTS

Study 1 (a–c) provided linguistic evidence that the nature of impurity fundamentally differs from harm: Being passively contaminated involves being actively contaminating to others. The results are consistent with research on contagion beliefs where tainted entities are perceived to have an essence that transfers upon contact to a target, which then also becomes completely and irreversibly tainted (Nemeroff & Rozin, 1994; Rozin et al., 1986). The results are also consistent with a linguistic feature of impurity terms—they accommodate the grammatical construction that implies that a transferred substance filled its target, but not the grammatical construction that implies that it only affected its target in part (Levin, 1993). Thus, the evidence so far is consistent with the theory, and strongly suggests that impurity diverges from harm because it entails inferences that an entity is completely and irreversibly affected and actively spreads negative effects to others. In Study 2 (a–b), we investigated how judgments of contamination and injury are affected by such inferences about the scope and duration of negative effects on a target (i.e., completeness, irreversibility, and contagious transfer). This time, we investigated the "perpetrator-victim" dyad by communicating

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4. Unexpectedly, we see moderately higher values for "injuring" for victims in Study 1c relative to Study 1a and Study 1b. Unlike the previous studies, in Study 1c, descriptor condition ("-ing" vs. "-ed") was varied between-subjects, so participants saw either "injuring" or "injured." Participants who saw "injuring" may have read it as they expected it would read for victims, as "injured."

these roles *indirectly.* The protagonist in a vignette was presented as either harmed (the victim) or harmed someone (the perpetrator). We manipulated completeness, irreversibility, and contagious transfer by varying the qualities of changes that the protagonist endorsed, which fit into these categories.

We also tested effects on blame judgments to investigate the moral implications of dissociating these domains. Prior work indicated that the passive participles for contamination and injury were differently related to responsibility judgments for victims: The more contaminated people judged victims, the more responsible they judged them; whereas the more injured they judged victims, the less responsible they judged them (Niemi & Young, 2016). By manipulating the features of changes the protagonist expressed and determining effects on contamination, injury, and blame ratings, Study 2 (a–b) aimed to both specify mechanisms of contamination judgments and elucidate their moral implications.

STUDY 2A

In Study 2a, we investigated how judgments of harm and impurity are affected by inferences about completeness, irreversibility, and transmission, prompted by a protagonist's endorsements of personal changes representing these features. We used vignettes that conveyed the protagonists as a crime victim or perpetrator indirectly, as described next. We tested effects on ratings of contamination, injury, and blame, as well as on distractor variables, including resilience and disrespect.

METHOD

Participants were 2,400 individuals on Amazon's Mechanical Turk who completed the study for a small payment ($M_{age}(SD)$ = 36.92(12.17); 1303 female, 814 male, 7 selected other, 2 n/a). A total of 275 participants were excluded for not completing the study. Each participant read one of six vignettes featuring a quality hypothesized to relate to contamination (i.e., complete change n = 356, partial change n = 355; irreversible change n = 353, reversible change n = 353; transfer n = 353, no transfer n = 355). We were interested in whether each of these tested qualities would affect ratings of contamination and harm for a protagonist, Kim, presented either as a victim or as a perpetrator. In previous vignette research on blame, contamination, and injury, we found small relationships between ratings and moral values with samples of approximately 300 participants. In the present study, we aimed for approximately 300 participants per vignette to be able to detect potentially small effects with our subtler and briefer stimuli.

Status of the protagonist as a victim or perpetrator was implied. In the vignette where the protagonist was presented as a victim, "Kim was mugged" as in the vignette sample below, the term *victim* was not used. In the vignette where the protagonist was presented as a perpetrator, "Kim mugged someone," the term *perpetrator* was not used. The wording of each of the vignette variants (complete, partial, irreversible, reversible, transfer, no transfer) is provided in Table 2. Participants answered five questions about Kim after the vignette, presented in Table 3. The "victim: complete change" vignette was as follows:

TABLE 2. The Altered Portion of Each Vignette Variant in Study 2a–b (all beginning "Years later, Kim noted that")

Complete	. . . *"there was no part of herself that felt okay."*
Partial	. . . *"some parts of herself felt okay, but other parts did not."*
Irreversible	. . . she would *"never be the same again."*
Reversible	. . . she *"was just starting to go back to how she used to be."*
Transfer to others	. . . *"many people close to her were also affected."*
No transfer to others	. . . *"no one close to her seemed to be affected."*

Kim was mugged on April 7, 2013. After the court proceedings, Kim received a lot of treatment. As might be expected, all of this strongly affected Kim in many ways. Years later, Kim noted that "there was no part of herself that felt okay."

RESULTS

Kim as "Tainted or Contaminated." We conducted an analysis of variance on ratings of contamination for the perpetrator and victim based on the tested qualities in the six vignettes (complete, partial, irreversible, reversible, transfer, no transfer). We observed a main effect for role: victim Kim (*M(SEM)* = 3.33(.07)) was rated as slightly more "tainted or contaminated" than perpetrator Kim (2.93(.07); $F(1,2075)$ = 17.06, $p < .001$, η^2 = .01). We found a small main effect for the vignette qualities ($F(5,2075)$ = 3.85, p = .002, η^2 = .01).

We observed a main effect of vignette type ($F(5,2075)$ = 3.85, p = .002, η^2 = .01). Bonferroni-corrected follow-up comparisons indicated that people's ratings of Kim as contaminated were increased relative to the other vignettes when she expressed that "there was no part of herself that felt okay," that is, complete change (3.55(.12)) compared to the other vignette types: transfer (2.99(.12), p = .014); no transfer (2.96(.12), p = .006); reversible (2.95(.12), p = .005); and partial variant (trend: 3.09(.12), p = .09).

TABLE 3. The Items Used in Study 2a–b

(1) How resilient is Kim, compared to other people you know?

(2) To what extent was Kim harmed or injured?

(3) To what extent was Kim tainted or contaminated?

(4) To what extent was Kim disrespected or disobeyed?

(5) How much blame do you believe Kim deserves for the mugging?

Note. Question 1 on resilience was presented first as a distractor item followed by questions 2–4 in randomized order; question 5 on blame was presented on a separate screen last. Responses were provided using a Likert scale anchored at 0 = "Not at all" and 7 = "Very much" for questions 1–4; and 0 = "None at all" and 7 = "A lot" for question 5. A short demographic survey completed the study.

Ratings of Kim as contaminated did not differ between the vignettes conveying complete and irreversible change. There was no significant difference in these effects based on her implied role as victim or perpetrator.

Kim as "Harmed or Injured." We conducted the same analysis on ratings of Kim as "harmed or injured." We observed a main effect of role ($F(1,2083)$ = 1790.23, $p < .001$, $\eta^2 = .46$): Consistent with Study 1 (a–c), and unsurprisingly, victim Kim ($M(SEM)$ = 5.23(.05)) was rated as substantially more "harmed or injured" than perpetrator Kim (1.95(.069)). There was no effect of the vignette type. Thus, the qualities hypothesized to be contamination-relevant had no effect on participants' ratings of Kim as "harmed or injured."

Kim as "Disrespected or Disobeyed." We conducted the same analysis on ratings of Kim as "disrespected or disobeyed." We observed a main effect of role ($F(1,2073)$ = 1337.53, $p < .001$, $\eta^2 = .39$). Unsurprisingly, victim Kim (5.24(.06)) was rated as substantially more "disrespected or disobeyed" than perpetrator Kim (1.92(.06)). There was a main effect of the vignette type ($F(5,2073)$ = 3.23, $p < .007$, $\eta^2 = .008$), which Bonferroni-corrected pairwise comparisons indicated was driven by ratings of Kim as more disrespected in the partial variant relative to the no transfer variant ($p = .04$).

Kim as Blameworthy. Regression analyses examined the contributions of ratings of Kim as harmed, disrespected, and contaminated on ratings of blame. For both Kim the perpetrator and Kim the victim, increased contamination ratings ($\beta = .166$, $p < .001$; $\beta = .136$, $p < .001$), reduced injured ratings ($\beta = -.356$, $p < .001$; $\beta = -.203$, $< .001$), and reduced disrespected ratings ($\beta = -.283$, $p < .001$; $\beta = -.156$, $p < .001$) significantly contributed to increased blame ratings ($F(3,994)$ = 132.42, $p < .001$, $R^2 = .29$; $F(3,1048)$ = 31.60, $p < .001$, $R^2 = .08$, respectively). Viewing Kim as more tainted (and less injured and disrespected), whether she was the victim or perpetrator, contributed to an impression of her as more blameworthy.

STUDY 2B

METHOD

In Study 2a, results suggested that inferences about complete and irreversible change might affect judgments of a person as contaminated, but not harmed. In Study 2b, we tested the role of the same qualities (i.e., complete, partial, irreversible, reversible, transfer, no transfer) for Kim presented as either the victim ($n = 411$) or the perpetrator ($n = 406$) of a mugging event. This time, we included three of the qualities in each vignette, as opposed to including just one quality in each vignette in Study 2a. This presentation aligns with people's typical, multi-dimensional self-presentations, which might describe changes in several of these qualities. This approach also let us test replication of the results of Study 2a, in a slightly modified design.

Participants were 817 individuals on Amazon's Mechanical Turk who completed the study for a small payment ($M_{age}(SD)$ = 35.6(11.6); 484 female, 323 male, 2 selected other,

8 n/a). The sample size was reduced, as we changed the design from Study 2a where each vignette represented one of the six tested qualities for either a victim or perpetrator to each vignette including one of each of the pairs of qualities (complete/partial, irreversible/reversible, transfer/no transfer) for a victim or perpetrator. For example, the vignette read by subjects for one of the variants: "victim: complete, irreversible, transfer" was as follows:

> Kim was mugged on April 7, 2013. After the court proceedings, Kim received a lot of treatment. As might be expected, all of this strongly affected Kim in many ways. Years later, Kim noted that "there was no part of herself that felt okay," that she would never be the same again," and that "many people close to her were also affected."

Following the vignette, participants were presented with same questions as in Study 2a.

RESULTS

Kim as "Tainted or Contaminated." We conducted an analysis of variance on ratings of contamination for the perpetrator and victim based on the tested qualities (complet / partial, irreversible/reversible, transfer/no transfer). As in Study 2a, we observed a main effect for role: Victim Kim (3.71(.11)) was again rated as slightly more "tainted or contaminated" than perpetrator Kim (3.24(.11); $F(1,798) = 8.92$, $p = .003$, $\eta^2 = .01$). We observed an interaction of role with the qualities irreversible reversible ($F(1,798) = 6.98$, $p = .008$, $\eta^2 = .01$). Victim Kim was rated as more contaminated when she expressed she would "never be the same again" (irreversible; 4.00(.16)) compared to when she expressed she was "just starting to go back to how she used to be" (reversible; 3.42(.16)). This indicates that the victim's irreversible change was likely perceived as being permanently negatively affected, causing judgments of contamination to increase. Perpetrator Kim was rated as *less* contaminated when she expressed that she would "never be the same again" (irreversible; 3.11(.16)) compared to when she was "just starting to go back to how she used to be" (reversible; 3.37(.16)). This finding suggests that the perpetrator's irreversible change was likely perceived as a permanent positive change, which caused judgments of contamination to decrease.

Kim as "Harmed or Injured." We conducted the same analysis on ratings of Kim as "harmed or injured." We observed a main effect of role ($F(1,798) = 452.10$, $p < .001$, $\eta^2 = .36$). Again, victim Kim (5.36(.09)) was rated as substantially more "harmed or injured" than perpetrator Kim (2.57(.09)). There was no effect of the tested qualities on ratings of Kim as "harmed or injured."

Kim as "Disrespected or Disobeyed." We conducted the same analysis on ratings of Kim as "disrespected or disobeyed." We observed a main effect of role: Victim Kim (5.50(.10)) was rated as substantially more "disrespected or disobeyed" than perpetrator Kim (2.25(.10); $F(1,798) = 528.50$, $p < .001$, $\eta^2 = .40$). There was no effect of the tested

qualities on ratings of Kim as "disrespected or disobeyed," indicating the small effect observed in Study 2a is not robust.

Kim as Blameworthy. Regression analyses examined the contributions of ratings of Kim as harmed, disrespected, and contaminated on ratings of blame. Identical to Study 2a, for both Kim the perpetrator and Kim the victim, increased contamination ratings (β =.187, $p < .001$; β =.145, $p = .004$), reduced injured ratings (β = −.341, $p < .001$; β = −.178, $p < .001$), and reduced disrespected ratings (β = −.312, $p < .001$; (β = −.129, $p < .001$) significantly contributed to increased blame ratings ($F(3,388) = 52.37$, $p < .001$, $R^2 = .29$; $F(3,403) = 8.85$, $p < .001$, $R^2 = .06$). In sum, viewing Kim as more tainted (and less injured and disrespected), whether she was the perpetrator or victim, contributed to an impression of her as blameworthy.

Summary. Across Study 2 a–b, inferences posited to underlie contagion beliefs in linguistics and psychological science—namely, complete and irreversible change—affected judgments of a person as contaminated, but not injured. Contamination ratings predicted blameworthiness, regardless of the protagonist's role as harm-doer or harmed person.

GENERAL DISCUSSION

In this research, we combined language analysis and the methods of social and moral psychology methods to investigate the features that distinguish impurity and harm, and their moral implications. We proposed that, while impurity and harm both involve negative consequences for the affected, impurity affects the target completely, leaves an irreversible mark, and progressively transfers to others. These features do not characterize harm. Across studies, we found evidence of the defining features of impurity —completeness, irreversibility, and transfer to others—in patterns of language use (Study 1 a–c) and in studies that measured the effects of manipulating these features on judgments of contamination and injury (Study 2 a–b).

First, harm and impurity are delineated by very different linguistic features. As discussed in our analysis of lexical semantics, linguists specify basic differences in meaning for verbs that convey harm and impurity. Harm terms accommodate a semantic framework in which a causal, intentional agent causes a state change in an affected patient, whereas impurity terms accommodate semantic frameworks in which a substance occupies or changes its location (Levin, 1993). The model of moral cognition that specifies transgressions as events in which agents harm patients (e.g., Gray et al., 2012) fits well with the semantic framework of harm terms; it does not fit with the semantic frameworks for impurity terms for which the transfer of substance rather than the agent-patient dyad are relevant. Further, grammatically, the verbs *contaminate* and *taint* can be used in constructions that imply that the target was completely affected ("holistic"), but not in constructions that allow for the interpretation that the target was only partially affected ("partitive," Levin, 1993). By contrast, verbs conveying harm and injury are not characterized by this restriction. This grammatical feature is consistent with the hypothesis that impurity and harm dissociate,

in that impurity judgments, unlike harm judgments, communicate that an entity is negatively affected in entirety.

In Study 1 (a–c), we found, and twice replicated, differing patterns in how people apply participles, the adjectival form of verbs, for impurity and harm. People apply the active ("contaminating") and passive ("contaminated") participles for contamination nearly equivalently to targets, while they apply the active ("injuring") and passive ("injured") participles for injury differently, with "injuring" applied to perpetrators, and "injured" to victims. These findings support our hypothesis that a feature of impurity is an inference about progressive transfer: *to be contaminated is to be contaminating* —that is, patients of contamination by default are also agents of contamination. By contrast, in the case of injury, the active and passive participles cleanly map onto the agent/patient roles of perpetrator/victim. The linguistic results not only afford evidence that harm and impurity are distinct moral domains but also bring new specificity to our understanding of how and why harm and impurity psychologically diverge. While both are conditions involving damage to a target, they differ in that impurity implies that the affected individual is completely and irreversibly affected in a way that can spread to others.

In our studies of language use, we also observed that people generally considered perpetrators higher in contamination compared to victims. This indicates that harmfulness plays a role in judgments of impurity. However, the contrasting behavior of the contamination and injury descriptors and the inferences they point to indicate that impurity cannot be conceptualized as merely another kind of harm. When impurity and harm seem to overlap, it is likely due to a focus on their shared capacity to cause damaging effects. The qualities of those damaging effects, however, are crucial to the meaning of the concepts and are what separate the domains. The inference that an impure entity is completely damaged, is damaged for an indefinite duration, and becomes damaging to others starkly contrasts with harm, in that injuries and wounds are inferred to be isolable and to have the capacity to heal over time.

We further investigated the inferences driving impurity judgments in Study 2 (a–b). We precisely matched descriptions of a protagonist, Kim, presented as either a mugger or a mugged person, manipulated Kim's everyday language statements about herself as experiencing complete, irreversible, and spreading negative effects from the event, and measured judgments of her as contaminated and harmed. The results were consistent with accounts from linguistics and psychological science that stipulate contagion cognition as involving beliefs about total and irreversible damage that spreads on contact (e.g., Nemeroff & Rozin, 1994; Rozin et al., 1986). Summarizing across Studies 2a and 2b, we found that when Kim was presented as completely and irreversibly changed, this affected participants' contamination—but not harm—ratings, relative to changes, including that her experiences affected others (i.e., transfer). Although contamination is a process evoking contagiousness, the protagonist's statements about personal change of a complete and irreversible nature had effects on perceptions of contamination that statements implying spreading social effects did not. Future work should explore alternative approaches to measuring these concepts using everyday language to better understand whether statements about spreading effects should be understood to be less crucial to social-moral inferences about contamination than statements implying irreversible and complete change.

CONTAMINATION OF HARMED PEOPLE AND HARM-DOERS

In prior exploratory work, the core concepts of complete and irreversible affectedness also appeared when people were asked to write freely about what they meant when they rated victims as "*contaminated or tainted*" (see a sample of responses in Supplementary Materials). Their responses describe a long-lasting temporal dimension to victim contamination and complete, total change, for example, in the case of rape: "*nothing will be the same,*" "*every aspect of the rape victim's life is negatively affected,*" the victim "*may never be able to get over it.*" When people described contaminated victims, they described personal, often psychological, features they believe to be affected; less often did they specify how a person would affect other people by being contaminated. This suggests that evaluations of people as contaminated might be more likely to be based on how long in duration and how complete the negative effects appear to be for an affected individual, rather than whether they transfer negative effects to others.

Alternatively, thinking about victims as contaminated may be construed by participants as a form of victim-blaming. Previous research indicates that judging victims as contaminated is consistent with victim-blaming. In this work, the more participants judged victims as contaminated, the less they considered victims injured, even though one might think that evaluations of all kinds of negative impacts to victims should track together (Niemi et al., 2020; Niemi & Young, 2016). In addition, the more participants judged victims as contaminated, the more they considered victims to be causal contributors and deserving of harm (Niemi et al., 2020). Aversion to victim-blaming might reduce the salience of contamination when evaluating victims—in particular, the active aspect of contamination, as studied here, where victims spread damage to others.

Past research shows that some people are more likely than others to consider victims to be contaminated. People high in binding values, a cluster of group-oriented moral values (e.g., Graham et al., 2011), are more likely to judge victims as contaminated, causal, responsible, and blameworthy (Niemi et al., 2020; Niemi & Young, 2016). As noted earlier, both the semantic structure of contamination and many of the transgressions under the purview of binding values do not fit with the dyadic framework. To understand the nature of contamination judgments in the context of individual differences in moral values, future work should explore whether the extent to which one endorses binding values determines which aspects of contamination one references when judging victims as impure (i.e., complete, irreversible, or spreading damage).

It is notable that in Study 1 (a–c), perpetrators were rated more contaminated than victims, whereas in Study 2 (a–b) this pattern flipped: A victim was actually rated as slightly more contaminated than a perpetrator. The results of Study 1 (a–c) seem to suggest that perceived harmfulness drives perceived impurity, consistent with our finding of a correlation between "injuring" and "contaminating" ratings. However, we also found that impure entities are both passively contaminated (completely and irreversibly negatively affected) and actively contaminating (transfers these negative effects to others). As active and passive contamination are intertwined, victims may sometimes be considered actively contaminating, and perpetrators passively contaminated. Indeed, in Study 2 (a–b), the vignette emphasized patient-like qualities (Kim

receives treatment, feels strong emotions), and Kim the perpetrator's contamination ratings were greatly reduced, even slightly below Kim the victim's ratings. This further indicates that contamination is modulated by factors other than harm.

Future research investigating whether indicators of agent and patient role modulate contamination may be useful in order to construct a more detailed explanation for moral judgments of impurity. For example, we might learn more about why and how contamination judgments are applied to both perpetrators and seemingly unlikely targets like victims. One possible model might sort the features of contamination into two dimensions: (1) *passive* – the extent to which the target is completely and irreversibly negatively affected, and (2) *active* – the extent to which the target transfers negative effects to others. The active and passive dimensions of impurity might come into focus differently depending on context, for example, when judging agents such as perpetrators and patients such as victims. However, the agent-patient framework does not enable the full conceptualization of impurity, which entails being both passively contaminated and actively contaminating. Another approach to explaining patterns of contamination judgments might explore whether people are referring to two different kinds of contamination when they refer to perpetrators and victims as contaminated. For example, they might infer that perpetrators and victims are contaminated by different symbolic "substances," such as evil or filth (Elliott & Radomsky, 2012; Nemeroff & Rozin, 1994).

Finally, regardless of the target's harm-doer or harmed status, the more participants judged Kim to be "tainted or contaminated," the more she was rated as blameworthy. This reveals that judgments of a person as "contaminated or tainted" are likely to be found alongside accusatory judgments, which may have problematic normative implications for people who have been harmed, in particular. Namely, victim-blaming may be facilitated when targets are viewed as tainted.

LINKING APPROACHES TO STUDY MORALITY

This research demonstrates how morality can serve as a hub to unite theory and methods from across disciplines, in this case linguistics and experimental social and moral psychology. As such, our results have significance for our understanding of language as well as social and moral psychology. Our experimental designs rely on theory about lexical semantics and grammatical structure, as well as on social psychology theory on contagion beliefs. As a result of this merger, the findings broadly contribute to our understanding of the relevance of theories of verb semantics to social and moral judgment. For example, as discussed, effects on objects on the spatial dimension— "complete affectedness"—allow the verbs *contaminate* and *taint* to be classified along with the *fill* verbs (based on alternation behavior; Levin, 1993). It has been proposed that the notions of *complete* and *continuous* affectedness may be hard to disentangle for theories of verb semantics because of the confoundedness of space and time (Croft, 2012). In line with this, across Study 2 (a–b), manipulation of the temporal (irreversibility) and spatial dimensions affected ratings of Kim as contaminated. Thus, the current research links the study of language and moral psychology by demonstrating that core concepts that intermingle in theories of verb semantics—complete spatial affectedness and unbounded temporal affectedness—also intermingle in their contributions

to people's *morally* relevant judgments. Further, the findings show that the moral domains *impurity* and *harm* may not be collapsed together if we pay mind to the cognitive-linguistic underpinnings of the processes of contamination and injury at their roots. Discovering the distinctions between these moral domains would not have been possible without morality serving as the center point that accommodates and fruitfully unites multiple approaches.

CONCLUSIONS

Whether and how impurity and harm should be distinguished has been disputed; some commentators view impurity as harm, while other contend they represent distinct normative domains. These questions are illuminated, we have shown, by combining the resources of distinct, complementary methodologies. Through a combination of language analysis and vignette studies, both the partial overlap and clear differences between impurity and harm judgments are revealed. The concepts partially overlap in that they both entail negative, damaging effects. However, impurity cannot be simply reduced to harm; impurity involves unique inferences that the damage is complete, irreversible, and transfers to others. These inferences are encoded in the words and grammatical constructions associated with contamination, not injury, and when conveyed in everyday speech in vignettes, they altered people's contamination, but not harm, ratings, which in turn were associated with exacerbated blame. These results are important for our understanding of lexical semantics and moral cognition, and have novel practical implications. They indicate that when a person communicates that *every* aspect of their life has been negatively affected or that they will *never* be the same again (i.e., complete and irreversible change), this may not only reflect damage to personal well-being (e.g., Ehlers & Clark, 2000), it may also be consequential to others' morally relevant judgments of them as contaminated or pure.

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Linguistic evidence for the dissociation between impurity and harm:

Differences in the duration and scope of contamination versus injury

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Supplementary Material

A. Study 1: Additional Analyses

B. Contaminate, taint, and the other verbs in the "Fill" class

C. Data from Exploratory Free Text Items

A. Study 1: Additional Analyses

A repeated-measures ANOVA was conducted with DESCRIPTOR type [ACTIVE / PASSIVE] entered as the between-subjects variable and ROLE [VICTIM / PERPETRATOR], RATING [CONTAMINATION / INJURY], and CRIME [SEXUAL (MOLESTATION, RAPE) / NONSEXUAL (STABBING, STRANGLING)] entered as the within-subjects variables. A four-way interaction of DESCRIPTOR, ROLE, RATING, & CRIME ($F(1,124) = 13.09$, $p<.001$, partial eta=.095) was observed, described next.

Victims. In the ACTIVE participle condition, sexual crime victims were rated as more "contaminating" (M(SEM) = 1.94(.33)) than nonsexual crimes victims (M(SEM) = 1.71(.29)), by contrast, nonsexual crimes victims were rated more "injuring" (M(SEM) = 3.25(.27)) than sexual crime victims (M(SEM) = 3.18(.29)). In the PASSIVE participle condition (see Figure S1: right panel), sexual crime victims were rated as more "contaminated" (M(SEM) = 3.77(.33)) than nonsexual crime victims (M(SEM) = 2.59(.29)); whereas nonsexual crime victims were rated more "injured" than sexual crimes (M(SEM) = 6.08(.27)) than sexual crime victims (M(SEM) = 5.80(.29)).

Perpetrators. Sexual crime perpetrators were rated more "contaminating" (M(SEM) = 6.28(.23)) than nonsexual crimes perpetrators (M(SEM) = 5.20(.28)); and also more "injuring" (sexual crime perpetrators: M(SEM) = 5.98(.27); nonsexual crime perpetrators: M(SEM) = 5.71(.26). Sexual crime perpetrators were rated more "contaminated" than (M(SEM) = 5.44(.23)) nonsexual crime victims (M(SEM) = 4.84(.28)); and also more "injured", also ratings of perpetrators as "injured" were very low overall (nonsexual crime perpetrator: M(SEM) = 1.89(.26); sexual crime perpetrators: M(SEM) = 2.05(.27).

Thus, the sexual nature of crimes increased the perception of contamination in particular. Participants rated perpetrators of sexual crimes as more "contaminating" and "contaminated" than perpetrators of nonsexual crimes; and, victims of sexual crimes were rated as more "contaminated" than victims of nonsexual crimes.

B. Contaminate, taint, and the other verbs in the "fill" class (VerbNet, Kipper-Schuler 2006)

FILL 9.8

adorn anoint bandage bathe bestrew bind blacktop blanket block
blockade blot bombard carpet choke cloak clog clutter coat **contaminate**
cover dam dapple deck decorate deluge dirty disguise dope dot douse
drench edge embellish emblazon encircle encrust endow enrich entangle
face festoon fill fleck flood frame garland garnish gild grace gum up
inject inlay interlace interlard interleave intersperse interweave inundate
lard lash line litter marinate mask mottle ornament pad panel pave plate
plug prefill redecorate replenish repopulate resupply riddle ring ripple
robe saturate sauce season shroud smother smut soak soil speckle
splotch spot staff stipple stop up stud suffuse sully surround swaddle
swathe **taint** tile tinge tool trim veil vein

C. Data from Exploratory Free Text Items

Participants provided free text responses about "what they meant by "**contaminated/tainted**"

when selected between 1 and 7 for "**contaminated/tainted**" on a scale for victims of crimes in

earlier studies. The following are responses for the "**victim of rape**" item". Items are colored in

red that convey **continuous/irreversible** or **complete** change.

I am using the term "contaminated/tainted" in the sense that one usually hears it when some people - usually men - refer to a victim of rape. Used most frequently when referring to a partner, girlfriend or wife who is a victim of rape. I think in their tiy minds they are blaming the victim and have some idiotic macho feeling that someone has "touched" HIS property. Often these men turn away from the woman victim as if she is somehow dirtied.

Rape victims, like molestation victims are percieved as dirty and/or the guilty ones as if they did something to cause it to happen.

I think every aspect of the rape victims life is affected negatively by rape.

Unwanted, shame.

No need the person is a victim therefore she is not contaminated/tainted

Mental/spiritual contamination as a result of rape.

An individual that has been raped may never be able to get over it and the shadow of that event will affect their actions for the rest of their life.

They may not feel clean or pure anymore

Someone who has been raped has not in any fashion been contaminated.

A person who is raped will deal with many emotions and these are some of the things each person will have to sort through.

This person will have experienced a feeling which would have made him/her feel as if they were useless and that what happen to them they did not deserve. The will have to deal with this disgusting feeling of what they experience night after night and may contribute to them developing low self esteem issues and soon going in to deep depression.

Same as before... penetration equals disease and dirt.

Something that is forced on you that is disgusting and unwanted, violently forced,

against your will.

Rape is a violation of every aspect of someone's existence. Nothing will be the same. Open wounds will exist for a very long time. The victim will find it difficult to trust, to be open, to be comfortable. There will always be anxiety and worry.

The body may be contaminated by viruses, diseases, etc.

A person who is a victim of rape will most likely have their minds contaminated with dirty images of sex and feel dirty, especially if they have never engaged in sexual behavior. The person's mind might recall the rape incident each time they were about o engage in sexual activity willingly.

Well, you know, if there is sperm...

Trusting someone enough to get close again would be a tremendous challenge.

How hurt you feel inside, not physical.

When I say contaminated/tainted I mean it has been affected in a negative way.

This means that it has become impure.

Degraded.

Something that is not as whole as it was before

Can negatively impact relationships/ may blame themselves/ feel dirty/ they deserved it/ can ruin ability to trust

Something that is no longer the same as before, due to the rape.

This person will never be able to look at the opposite sex the same way with out thinking about the rape

Contaminated means to be spoiled or perhaps unusable, or is only usable to a lesser degree than before.

Contaminated or tainted means that those attributes have been lessened somehow. That they may think about the rape and that "taints' their choices. They might not act themselves for the fears instilled in them by that rape.

A part of the person has been violated and a part has been taken that they wont get back.

Rape has a negative impact on a woman's mental health.

I think of contamination as something that is made unusable or bad. I don't consider a rape victim to be contaminated in that way. Rape has certainly harmed her in many ways but she is still a vital, uncontaminated human being.

How others may see the victim

In this case I think it means to be spoiled without possibility of recovery. You'll have a life afterwards, but parts of you will not be the same again.

messed up in a way that is hard to fix. changed physically.

It is possible that a victim of rape could obtain a physical illness from his/her rapist.

I think everything is contaminated in this case.

Well, although it's not a victims fault that they were raped, if they were a virgin before, they are no longer a virgin. Which is a form of contamination/tainting, although those words maybe too strong a word, I would probably refer to it as innocence.

It puts a severe strain on the mind to accept

body can apply to contamination if the rapist has a disease. Otherwise, there is not spiritual or physical contamination or taint to a rape victim.

ruined

I guess has been infected badly which changes the person.

It can be literally or figuratively

Stained by an unfair stigma

I think everything is contaminated as the result of a rape. A rape is such an invasion of the mind and body that a person is never the same as they were before. When I think of the contamination aspect, I think of the heart being hardened and faith in goodess being destroyed.

Rape victims are often said to be defiled by their attackers. I see how this could be so, not as in, "She was raped, now she's dirty," but more of how the victim might feel contaminated by their attacker.

You would feel violated by being raped. It's hard to feel worthy of love.

Certainly rape victims have reported feeling unclean after a rape & that describes my idea of contamination.

A victim or rape has had their mental health contaminated/tainted - they will need much mental help or family help to recover from the trauma they have been put through. Their spirit (as in, their will, not "spirit" like ghost) is usually crushed as well during this violation.

The rapist has contaminated/tainted the purity, chastity, peace of mind and social status of the victim. The victim will have to work to overcome the mental obstacles and stigma of a rape.

I feel the same way about rape that I do about molestation. It is not the victim that is contaminated it is the suspect that is.

i dont think that they are contaminated because it is an act that was forced upon them

victims of rape have been violated mind body and soul and they will probably never get over this . this is what i mean by contaminated

I would consider rape a violation of anyone's being. After which, the individual is going to feel dirty and contaminated by another persons desire and overpowerment. A violation of one's body is like leaving someone else's dirty laundry laying around.

Some people's perception of the victim might change after the attack.

harmed

not sure

Contaminated and tainted tend to be connected to the ideas of purity and chastity for women, which are absolute garbage ideas and part of a horrible double standard.

The water is contaminated means the water is impure. not original

I have no comment.

Something that has been changed and can't be changed back

When you are raped you are contaminated with evil from the other person doing the raping. Your mind and body has been violated. You will find it hard to think and act the way you used to.

I would say contaminated/tainted means to be violated in someway without conscent.

A person's mental health, confidence, and wellbeing has been ruined.

It means that it is somehow made impure and cannot become the way it was before.

Contaminated means that those parts have become dirtied and bad.

I mean hurt in a non-physical way. As in psychologically damaged or somehow compromised.

something that is no longer pure because of it being poisoned.

It is an unwanted experience that changes/impacts the victim's body/soul/etc. and has changed their life forever.

I only said their social status is contaminated/tainted because their are stupid people who blame the victim, even though it is not their fault.

A victim of rape would be forever contaminated/tainted with the actions of the rapist.

Many people who are raped say that they just feel dirty afterwards, like they feel their rapists hands on them long after it's over.

Tainted in a negative forever way

It has nothing to do with the goodness of a person.

One of the worst contaminated/tainted survey topics. Not as physically harming, but an extremely damaging act causing immediate and prolonged mental and emotional side effects.

Moved from the baseline state toward the negative. #3 would depend on culture & perception.

Means to me that this will stick with them. Injuries eventually heal but contamination may stick around for awhile.

Contaminated refers to which mental effects will suffer because of the rape-- how it will affect her mentality and affect her outlook on the world.

Victims often report FEELING dirty and contaminated after a sexual assault, but they're not, really.

Something foreign or unnatural is brought into the specified item, usually unwanted.

In this case it's more the way society looks at a rape victim, that they are somewhat blamed sometimes for being raped. Or the victim themselves feels like they are being blamed.

Same as definition given for during "molestation" section.

Contaminated/tainted means that something is impure/bad.

Rape is the ultimate offense.

The way a person feel after the situation

Nope. Not the Victim's fault.

To be spoiled or invaded by something unnatural or unwanted

Something that the person treasures has been negatively affected. I think these are more emotional things rather than physical.

The connotation of others in society.

Again, I guess I mean "impure," which sounds terrible. It's almost like something has changed that can never be reversed; some dark thing has entered their life and they won't ever be the same. I don't mean that they are worthless or undesirable.

Like the last one, mental and unfair societal stigmas last.

These terms, to me, mean ruined or destroyed.

I don't think a person is contaminated when they are raped. I think they are definitely wounded, but they are not dirty or contaminated. They may feel that way after an assault.

Not has clean or pure as before the rape

Mental defects that will probably last a lifetime

I do not believe that a rape victim has been contaminated or tainted.

this is being contaminated or tainted

mental wounds

A change or shift in the natural quality, the original quality. This shift would be a negative one; a shift that is unpleasant to live with.

It contaminates one's thoughts, feelings, body and how one sees the world and themselves.

Contamination/tainted means to me that the person is no longer as good as they were.

Violated against the victim's will.

You would feel dirty, guilty, unclean, ruined, tainted, unpure.

I interpret contaminated/tainted as mentally wounded.

I imagine that a victim of rape would experience a great range of contamination. It may be physical, such as STDs or even an unwanted pregnancy. On the other hand, it can also contaminate and distort a person's mental state and world outlook as well.

Everything will be affected.

Takes a strong person to rise above this crime.

Same as I said before, contamination is emotional damage and could possibly be reversed throughout the person's life but not through physical healing.

Not really

Although the victim may feel that way, they would not be so.

Made unpure. Dirtied or stained.

Things that are dirty and ruined.

It is not just physical contamination. A victim of rape is affected in all areas and for a long time (if not forever).

Being raped would seem to affect current relationships with others like spouses in that the rape would taint the intimate relationship that married couples have.

Changing one's perception negatively, making something impure.

Same as other descriptions. Rape victims, as any of the past examples, should not be shunned by something they had no control over.   Others should not consider them dirty or unworthy. This applies to all past categories.

A person that is raped is in no way contaminated or tainted

being raped can hurt people in every way possible

I mean all of those things have been hurt in some way.

no

Something that has been spoiled in some way.

Dirtied, not as pure as before

no

diminished

Changed in a bad way. Made unclean somehow.

Being the victim of a rape would taint and contaminate someone in many ways. Your mind, heart and soul would forever be tainted, such a horrific event would be impossible to forget.

It means to feel no longer in control of your own body.

Rape is an awful form of degradation, a personal attack on the mind and body

Means soiled or made dirty.

As I said in my previous answer, a person who is a crime victim is not "tainted" in any way. If a pedestrian was struck down in a crosswalk by a drunk driver he would not be "tainted." Rape is a crime, not a social choice, and for this reason the victim is not contaminated.

I believe the rape victim will be blamed by a large part of society for the rape and so will suffer a poisoned social status. Memories of the attack will infect their thoughts.

Being married to a rape victim I see rape as having contaminated my wife's idea of sex as something used too hurt her than something to be enjoyed.

Violated.

Damaged in a non-physical way.

Mind and mental health ruined for a long period of time due to thoughts of unwanted sexual acts against your will.

Tainted means affected by an undesirable quality.

No.

Contamination can occur both mentally and physically.

Same as before, anything not physically harmed is fair game.

Abused or gone completely.

Feeling as though you will never be truly clean again, mentally and physically.

Something that is impure, and changed from what it use to be, not necessarily physically but emotionally

On the issue of rape, contamination can mean many things. For a virgin to be raped, the offender contaminates the victim's body with their seed and takes their chastity. There are germs and other virsuses and STDs that can be contracted by rape not to mention the mental damage it causes.

Something that is affected that was once pure or free from something bad.

Contaminated/tainted means to be impure, polluted, or dirty.

I don't think that people who are victims or crimes are contaminated or tainted in any way. To be contaminated or tainted means that whatever you have/have had happen to you can be passed to another person simply by association.

Some kind of purity loss

Tainted is when you do something of your own free will that paints you in a negative light.

In the instance of any sex crime, a victim might be able to get rid of the 'bad' (emotions). Again, as before, the 'bad' is mixed in with the 'good' that was there prior to the incident.

Dirtied.

Innocence and purity can be tainted by rape, the rapist takes contaminates your whole being.

Sullied

Again, I think of these words as describing something that cannot be improved upon or

fixed. I want to be optimistic and not think of rape victims in this way.

Same as previous, being changed in a negative way through no fault of the person's own.

It makes you different. I become less loving and feel with hate, becoming tainted.

Nothing has been contaminated.

N/A

As I said before it's something that reduces a person's worth, value and dignity in the eyes of others.

n/a

Negatively affected.

They are victims of a crime. Not to blame.

Not clean.

Nothing to comment really, my answers suffice.

They have been violated against their will and it leaves a mark on their psyche.

I think it means that something that's not physical has been changed in a negative way.

Person might feel dirty

I think people feel dirty after they have been raped. There is a social stigma that is attached to it that is felt more or less depending on the religion or cultural identity you have. And people are often made to feel that they have caused it in some way.

Mixing of more than one type of thing.

I take it to mean some kind of character or worthiness demerit, the concept of the woman being less desirable as a marriage prospect, for example, because her goods have been sampled.

Same

It means which cannot be pured again by washing or cleaning or praying

To make worsen. To weaken. To break down.

It's not any good now.

Tarnished or largely affected in a negative way by the rape.

It is when something has been harmed but not physically.

After a sexual assault, your body is contaminated temporarily by the sweat, spit or other bodily fluids of the attacker. However, your mind is contaminated by the memory and the trauma which pervades your thoughts and reactions to certain situations. The experience stays in the back of your mind for the rest of your life and cannot be washed away by counseling or by medication. THAT is what I mean by contaminated/tainted.

In my opinion, and in this particular case I think that contaminated means something that has been harmed/disturbed.

Dirtied; tainted.

A person who was raped may suffer as far as their reputation goes, because a lot of people think that those who were raped (especially women) are crying wolf and weren't actually raped... Which is very, very sad.

Again, to me contaminated/tainted means that ones sense of self has been taken away. They are never able to look at some situations the same way ever again. Like a piece of your soul being ripped out.

Out of respect for victims, I can't speak on their behalf.

Made impure.

In the case of rape, the body may be contaminated if an STD is contracted.

A person that has been raped often has their reputation tainted. Even though they were the victim people treat them like it was their fault. They might be afraid to report the rape because of the fear of being called a slut or a liar. Their spirit and soul are affected because they blame themselves for what has happened. The person's relationship with their spouse changes because of the violation. The person may avoid being intimate with their partner after the attack. They might also be afraid of meeting people or going places alone.

Same as my answer for the first question about molestation. Not the words I would choose.

Rape is violent and about domination and control...it taints the victim's view of themselves, of sexuality, and of trust in others. It often taints relationships because the partner either feels that the victim is now "damaged goods" or the partner cannot deal with the victim's emotional upsets, fears, and distrust.

I don't feel a victim of rape has been contaminated or tainted.

Making something dirty.

Tainted is more a long-term effect on the body / mind.

Being forced into submitting to sexual activity is horrific. It should be a choice how we share our bodies and really taints the idea of the control we should have over our sexuality. It also might taint a person's worth or feelings of how they feel the can express their love. I cannot imagine a much more horrific way a person could be tainted and change their whole identity because of that experience.

By this event occurring, the victim's life will forever be altered. The victim will have to carry the burden of the memory as well the burden placed upon them by society. Family and loved ones will always remember the event, and while they may feel pity, their actions and feelings may only cause the victim more suffering.

It's caused a disturbance in both the victim's physical and mental well-being whereas just being injured/wounded would be purely physical.

SAME.

I think it means affected by.

I don't feel that rape "contaminates" anything in the sense that I don't think rape victims have somehow been sullied or dirtied. It's very serious and hurtful, but I think it's equally awful to accuse someone of being "tainted" because of something out oftheir control. Something they didn't choose.

It would affect how a rape victim views the world.

They may go through a lot of mental anguish. Also their body may need to heal.

I think it means something that you can never really wash away, it is always going to be there no matter how many times you shower

"Unclean" in the eyes of whom? My opinion means little as to what the victim may feel.

The above words mean something which is spoiled by the wicked or bad actions of others.

The victim of rape's body is contaminated. ex someone is raped and gets HIV or their blood is in their blood against their will. it is the worst crime.

I mean it in both the physical way of medical contamination from harm to the physical body and in the way of forever changing a persons life.

No one is contaminated by rape. It's not their fault.

In this instance I mean mentally contaminated more than anything. The victim's mind perceives themselves as contaminated, often they consider their own goodness or morality contaminated, though I did not list those here because that is not my personal opinion.

It has long lasting effects into the future.

Same as before

No

As viewed by society, many would see rape as carrying a stigma or questions.

Same as before.

Rape victims have a fear of trusting someone else. Their minds have done a quick turn down a long, dark corridor that takes a long time to get through.

Again the thought that a victim would be considered tainted is abhorrent.

I do not consider a rape victim contaminated. or somehow dirtied. Their honor is not affected by rape.

Victims of rape are not to blame for what has happened to them, so in no way is their actual morality, purity, etc. diminished. However, there will always be people who will say that rape victims must have been engaging in certain behaviors or dressing a certain way to end up getting raped. There may also be people who will refuse to believe that someone was actually raped. Due to these factors, rape victims may lose the loyalty or friends and family members and lose respect from other people as well. Some individuals in society will see rape as a mark against the victims that ruins the victims' reputations forever.

I don't think they have been contaminated/tainted.

Spread of disease, mental damage

In this case, injured and contaminated are really similar. Any detriment can be injured, or can be considered damaged or contaminated with this scenario.

No longer clean or pure. Used and dirty.

Sense of safety.self respect are gone.

To me the words connotate spoiled, or ruined.

I mean that something horrible has been done to them and has taken away that person's feeling of safety and security in their body and in the world. The victim will most likely have a difficult time seeing themselves, including their body, in the same way

It would change everything about the person.

This is how I would feel if I were a victim of rape. That my mind and body had been contaminated by someone, and it would take a lot to wash that feeling off. Like I would never feel the same. I wouldn't ever be as open or comfortable ever again.

That its former state has been harmed

Unless the victim of rape was contaminated or tainted in that they received an STD as part of the rape, then I don't consider any part of them contaminated or tainted. Tainted and contaminated to me means hazardous and harmful to someone else and a victim of a rape, unless then contracted an STD during the incident, would not be health hazardous.

What the person most likely feels is dirty, or wrong.

No

I think these qualities are ones perceived by others than the victim. They are the views of much of society in regard to victims of rape.

Hatred will develop.

I don't view it as the person is dirty or tainted but more mean it towards their well being.   I think in any serious circumstance this happens.

Dirty or unclean.

When someone it raped they have had someone do things to them. They don't know where the other person has been.

No.

Life will never be the same, these ideals have been changed for the worse.

Once again almost every aspect of a rape victims life is tainted even if others don't see it that way. A victims body was attacked but so was every other part of their life.

In this case, as before, a rape victim may feel contaminated/tainted--she (most likely a she) may feel her spirit and soul sag. Tainted is like a Scarlet A--whatever is tainted is somehow lesser and worse than before, not as pure. No fault of the victim of course, but she may feel that way or people may judge her that way. (Hopefully not, but they may say she was at fault-wrong place, wrong outfit, etc)

how it affects ones mental/spirit

My personal view is this person will be affected by this event but not tainted nor contaminated.

The feeling of helplessness and the putting up of mental walls toward others.

I don't really believe a victim of rape is contaminated in the traditional sense. The problem for many is they feel contaminated which can be just as hard of an issue to deal with. Also like previous definitions I have stated by contaminate I also mean th issues a victim will have to deal with will affect them for a long time and require time and attention to help with the issues.

As a woman who was raped, I can say that as much as I washed and showered and scrubbed, I felt contaminated. It was a very long time before I could get in the shower

and just wash. Explaining that feeling of being tainted in this way is almost impossible but - when I was younger, I struggled with the 'purity/goodness/soul/chastity thing. That manifested in my feelings of shame and guilt, and it took me a very long time to recognize that the shame and guilt did not belong to me but to the perpetrator.

Again this a sad offense that ends up being the burden of the victim. So much is contaminated for this person. The person is not contaminated but all sense of right and wrong is.

No doubt a little more cynical.

Contaminated and tainted in the category of rape is mostly how the victim's mind percieves it and how others in society judge the victim with contaminated thoughts.

Nothing would be the same. The victim's body is physically harmed but the severity of what it would do to the mental health would be much worse

I would not consider a person contaminated or tainted but they may see themselves that way.

There would be psychological effects; the victim should have help working through the issues.

Victims of rape are unfairly tainted by the act itself, more so then with molestation the body is affected.