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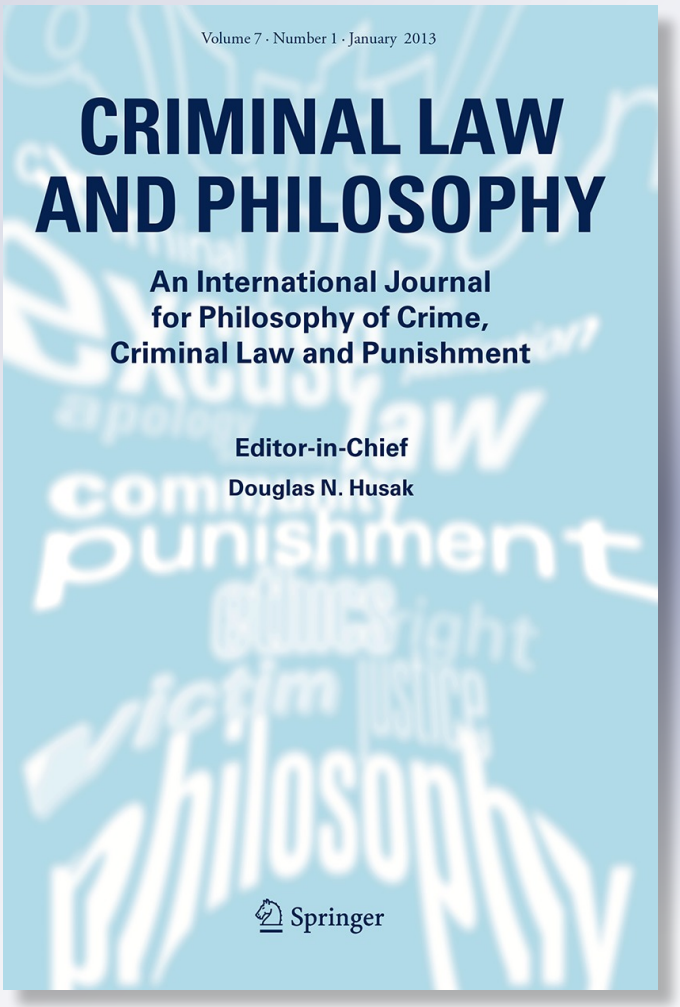

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ORIGINAL PAPER

Moral Outrage and Opposition to Harm Reduction

Robert J. MacCoun

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Abstract Three public opinion studies examined public attitudes toward prevalence reduction (PR; reducing the number of people engaging in an activity) and harm reduction (HR; reducing the harm associated with an activity) across a wide variety of domains. Studies 1 and 2 were telephone surveys of California adults' views on PR and HR strategies for a wide range of risk domains (heroin, alcoholism, tobacco, skateboarding, teen sex, illegal immigration, air pollution, and fast food). "Moral outrage" items (immoral, disgusting, irresponsible, dangerous) predicted preference for PR over HR, with disgust the most important predictor. In contrast, preferences were not predicted by whether the risk behavior was common, no one else's business, or harmless. Study 3 explored whether there are domains where liberals might reject HR. A sample of liberal students preferred HR > PR for heroin, but PR > HR for ritual female circumcision; path analysis suggested that this reversal was explained by moral outrage rather than consequentialist judgments of harm to self and harm to others.

Keywords Harm reduction · Vice law · Disgust · Prohibition

Introduction

> Rhapsodol provides an intense (but not unduly frightening) altered state, full of intellectually and aesthetically intriguing mental imagery, and a profound sense of love for all living creatures. These sensations last for approximately 30 minutes, then vanish completely, producing absolutely no detectable changes in one's life outlook or mental or physical functioning. They can only be experienced by sitting or lying in

Methodological details of the three studies in this paper appear in the *Supporting Document* at http://dl.dropbox.com/u/39168036/MacCoun_MoralOutrage_SupportingDocument.pdf.

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> a completely stationary position; any abrupt physical movements end the psychedelic state and return one to a normal state. Moreover, because of neurochemical processes of adaptation, the effects can only be experienced once a day. (Thought experiment in MacCoun and Reuter 2001.)

Would you consider Rhapsodol use immoral? Should it be legally prohibited? I have presented this thought experiment to many different audiences over the past decade. My student audiences are more likely to say "no" than "yes"—plus the occasional smattering of "where can I get some?" But even in Berkeley, there are always some who find Rhapsodol objectionable and/or worthy of prohibition, despite my efforts to create a hypothetical that largely eliminates the major risks of harm we have come to associate with psychoactive drug use. Of course, there are no real drugs quite like Rhapsodol (yet). The use of real drugs offers any hedonic or rhapsodic benefits only with a risk of potential harms to the user and/or other people. But there are undoubtedly many ways we could make psychoactive drug use safer than it is for our current drugs, in our current legal regime (Marlatt 1996; Ritter and Cameron 2006; Siegel 1989).

The term "harm reduction"—so unobjectionable on its face—has become such a hot button label that many public health researchers shy away from using it (Hall 2007; Leshner 2008; cf. MacCoun 2009). Over the past decade, a similar conflict has played out for topics at the core of vice law (drugs and prostitution; see Normand et al. 1995; Rekart 2005) and near its periphery (population control, sex education, alcohol treatment, and tobacco control policy; see Blake et al. 2003; Sobell and Sobell 1995; Warner and Martin 2003). In each case, advocates argue that pragmatic steps to reduce the harmful consequences of a risky behavior will save lives and reduce needless suffering, while opponents counter that these steps might "send the wrong message"—encouraging or enabling the behavior and weakening society's moral stigma against it (Warner and Riviere 2007).

Vice law is particularly vexing because it involves concepts imported from either public health discourse (abstinence, prevention, treatment, regulation), or criminal justice discourse (deterrence, incapacitation, supply and demand reduction). But these terms are often used in ways that conflate attitudes (toughness vs. tolerance), strategies (goals), and tactics (programs and budget categories). Thus I have advocated the terms *prevalence reduction* (reducing the number of users), *quantity reduction* (reducing the amount consumed by each user), and *micro-harm reduction* (reducing the average harm per dose, including harms to users and harms to non-users) (MacCoun 1998; MacCoun and Reuter 2001).

From an analytic standpoint, all three strategies contribute to a broader goal, *total harm reduction* (reducing the total harm to society), which, for tangible (rather than purely symbolic) harms, can be defined as *total harm* = *average harm* × *prevalence* × *quantity*, summed across types of harm (health, public safety, etc.) (MacCoun 1998). But the strategies are potentially in tension, particularly if efforts to reduce prevalence increase harm (as argued by many drug policy reformers), efforts to reduce quantity discourage abstinence (as argued by opponents of "controlled drinking"), or efforts to reduce average harm encourage the prevalence or quantity of the behavior (e.g., the argument that harm reduction "sends the wrong message"). There is evidence suggesting that many micro-harm reduction programs do indeed reduce harm without an offsetting increase in risky behavior: e.g., syringe,"safe sex" education, and condom distribution programs (Blake et al. 2003; Koehler et al. 2008; Ritter and Cameron 2006). But evidence is less consistently supportive for tobacco harm reduction (Stratton et al. 2001), and in all of these domains, methodological obstacles have created vocal skeptics.

In this paper, I examine the tension between two of these strategies—prevalence reduction (PR) and harm reduction (HR). It is interesting that harm reduction can evoke hostility, because modern society routinely embraces harm reduction—in the guise of "safety regulation"—in a wide variety of risk domains, including automobile and other product designs, traffic rules, institutionalized sports, food inspection, pharmaceutical packaging, and so on. In each case, it is taken for granted that people will engage in the behavior, and steps are taken to make it less risky. These domains differ from the aforementioned public health controversies along many potentially relevant dimensions, including social stigma, popular moral judgment, legality, and familiarity.

In an earlier article (MacCoun 1998), I suggested that responses to harm reduction might form a continuum determined by one's responses to three questions:

1. If new evidence suggested that needle exchange (or some other harm-reduction strategy) reduced total harm, would you still be opposed?
2. If the answer is "yes": If new evidence suggested a reduction in harm, with no increase in use, would you still be opposed?
3. If the answer is "yes": Would you be opposed to drug use even if it were made completely harmless?

I speculated that one's position on this continuum would reflect a mix of instrumental or consequentialist considerations but also deontological moral beliefs, symbolic or expressive attitudes, and more affective psychological reactions, such as the desire for predictability, an aversion to acknowledging value tradeoffs (Fiske and Tetlock 1997), authoritarian attitudes toward punishment of deviance (Duckitt 2001), and disgust reactions to violations of bodily purity (Rozin et al. 1999).

We now know a great deal more than we did in 1998 about affective psychological responses to risk and deviance (Finucane et al. 2000; Haidt 2001; Loewenstein et al. 2001; Schnall et al. 2008b) and their implications for law and politics (Darley 2009; Kahan 2007; Lynch 2002; Nussbaum 2006). This paper complements these lines of inquiry, but the PR–HR distinction offers a somewhat different framing. Whereas much past research falls squarely within either the criminal justice paradigm (which emphasizes prevalence reduction) or the risk regulation paradigm (which emphasizes making risky activities safer), the PR–HR debates involve an uneasy clash of those paradigms. In the remainder of this paper, I will show that many citizens are willing to blend PR and HR responses to risk, but that opposition to harm reduction appears to be grounded in a sense of moral outrage rather than any consequentialist views about risk management.

Study 1

Study 1 was a brief experiment embedded in a survey module in a statewide telephone survey of California adults. Respondents were asked their opinions about the acceptability of prevalence reduction and harm reduction approaches to one of four different risky behaviors—heroin use, tobacco use, teen sex, and skateboarding. Each of these behaviors poses health and safety risks to the actors that engage in them, and to varying degrees they each impose costs on other people as well. In each case, we can try to prevent the behavior, and we can try to make the behavior less harmful when it occurs. These domains of course differ in various dimensions; notably, they vary in social stigma, prevalence of occurrence, and legal status. At one extreme, heroin is the most highly stigmatized, legally prohibited, and relatively rare. At the other extreme, skateboarding was chosen as a legal and fairly

common activity with minimal stigma; nevertheless, it poses non-trivial health and safety risks (Kyle et al. 2002), and (unlike, say, high school football) it has a street subculture that at least superficially resembles some drug subcultures.

Methodology

A detailed description of the study's methodology appears in the Supporting Materials. In brief, Study 1 was a module in the 2004 Golden Bear Omnibus Survey, a Computer-Assisted Telephone Interviewing (CATI) survey of the State of California, conducted by the UC Berkeley Survey Research Center. There were 5,417 selected phone numbers, 3,225 eligible households, and 1,050 completed cases, with a non-response rate (refusals + never at home) of 24 % of eligible households.

Participants were randomly assigned to one cell of a 2(Domain) × 2(Stigma) × 2(Intervention Order) mixed factorial design. Respondents were randomly assigned to one of two domain (psychoactive substances vs. teenage activity). Within each domain, respondents were assigned one of two behaviors; a highly stigmatized act (heroin use or teenage sex, respectively) and a less stigmatized act (tobacco use or skateboarding, respectively). For each behavior, respondents were asked to assess a prevalence reduction strategy (3 items) and a harm reduction strategy (3 items) in a randomly assigned order.

Risky Behaviors

There were four different behavioral labels: "the use of heroin," "cigarette smoking," "teenage sexual activity," and "skateboarding." Respondents were told, "Now I would like to ask you about different ways society can deal with risky behaviors. One such risky behavior is {BEHAVIOR}. As you may know, {BEHAVIOR} can produce serious health hazards for those who engage in it, and it imposes many costs on society as a whole." (For skateboarding, the wording was slightly modified to make it more credible: "…and accidents involving skateboards impose many costs on society as a whole.")

Policies

In Study 1, prevalence reduction was described in the abstract, because particular tactics vary in applicability across domains (viz., prevention is possible for any of the behaviors, but arrest and incarceration are only plausible for heroin): "One way {or, if presented second: "Another way…"} to deal with the risks posed by {the use of heroin} {cigarette smoking} {teenage sexual activity} {skateboarding} is to do everything we can to try to stop people from engaging in the behavior."

For each behavior, particular harm reduction interventions were chosen to be feasible, easily comprehended, and relevant to contemporary policy debates: "One way {or, if presented second: "Another way…"} to deal with the risks posed by {BEHAVIOR} is to try to make the behavior less dangerous so that there is less risk involved when people engage in it. For example, we can {provide users with clean needles to make injection less risky} {develop less harmful forms of tobacco} {provide free condoms at schools and other gathering places} {build more skateboarding parks equipped with safety equipment}."

Three 4-point items assessed public support for prevalence reduction: "How much would you favor government efforts to try to stop people from {BEHAVIOR}?" "How

effective do you think it is to try to stop people from {BEHAVIOR}?" And "How morally appropriate would it be for the government to try to stop people from {BEHAVIOR}?" Respondents were asked a similar set of three questions about their support for harm reduction.

Results

Citizens' opinions of the acceptability of PR and HR are presented by condition in Fig. 1. Opinions varied significantly by experimental condition.[1] Prevalence reduction was viewed favorably by 85 % in the heroin condition, 72 % for tobacco, 53 % for teen sex, but only 23 % for skateboarding. Harm reduction was viewed favorably by 50 % for heroin (providing clean needles), 65 % for tobacco (less harmful forms of tobacco), 64 % for teen sex (providing free condoms), and 86 % for skateboarding (parks equipped with safety equipment).

Four other items assessed the perceived effectiveness and moral appropriateness of PR and HR, respectively. The effectiveness and moral appropriateness of each policy were positively associated with each other and with overall support for each approach, so two composite scales were created by averaging responses to the three PR items (coefficient alpha = 0.81) and the three HR items (coefficient alpha = 0.82). These composite scales had a weak negative correlation ($r = -0.06$, $p < .001$), suggesting it is not the case that PR and HR are inherently in tension, at least not for the cases and respondents considered here.

I also examined a number of demographic predictors of the preference for PR over HR. The most important one was a rating of self-identified conservatism, though it only mattered in the domains of heroin and teen sex (βs = 0.26 and 0.28, respectively). Protestants were less supportive of harm reduction than other groups, but this effect disappeared once conservatism was included in the analysis. There were no consistent effects of race, gender, or religious affiliation, but older respondents were more opposed to harm reduction. Respondents were also asked to rate the behavior in question with respect to the harm it posed to self and to others, and whether they or their acquaintances had ever engaged in it. Harm to self reliably predicted the preference for PR over HR in the heroin, teen sex, and skateboarding domains (βs of 0.20, 0.26, and 0.26); harm to others only mattered for tobacco (presumably, due to secondhand smoke effects; $\beta = 0.31$); and personal familiarity only mattered for skateboarding, $\beta = -0.24$).

Discussion

Study 1 showed more support for harm reduction (at least among Californians) than one might have expected from the tenor of the policy debates. Nevertheless, harm reduction was far more palatable for skateboarding than for heroin injection (with teen sex and tobacco falling in the middle). And while attitudes toward prevalence and harm reduction were not inversely related overall, the distributions of responses to harm reduction (not shown) were bimodal for heroin, tobacco, and teen sex, with the "strongly oppose" and "strongly favor" options each getting at least a quarter of all respondents. To explore the basis for this opposition, Study 2 used a similar but more ambitious approach, with a larger number of risk domains and a more detailed set of questions.

[1] For BR, $\chi^2(9) = 256.41$, $p < .001$; for HR, $\chi^2(9) = 93.35$, $p < .001$.

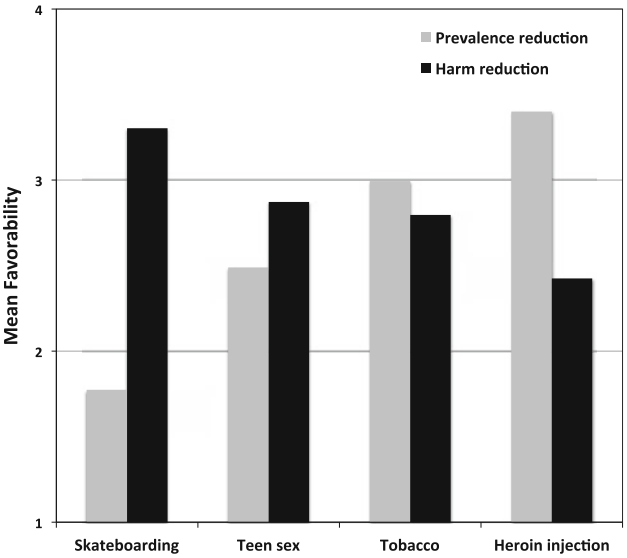

Fig. 1 Endorsement of prevalence reduction and harm reduction as responses to risky behaviors in Study 1. Behaviors are arrayed in decreasing order of support for harm reduction

Study 2

Methodology

Study 2 was a module in the 2005 Golden Bear Omnibus Survey with a sampling plan similar to Study 1. There were 6,329 selected phone numbers, 3,977 eligible households, and 993 completed cases, with a non-response rate (refusals + never at home) of 75 % of eligible households.

The experimental design for this module appears in the "Appendix". Participants were randomly assigned to one cell of a 6 (Domain) × 2 (Prevalence Reduction Tactic) × 2 (Harm Reduction Tactic) × 2 (Strategy Order: PR-HR or HR-PR) factorial design. Unlike Study 1, Study 2 examined two different forms of prevalence reduction ("hard" = either enforcing or creating a prohibition against the behavior; "soft" = attempting to persuade citizens not to engage in the behavior) and two different forms of harm reduction ("hard" = a technology or practice that makes the behavior less harmful; "soft" = information designed to help actors engage in the behavior less harmfully).

There were between 157 and 177 respondents assigned to per each focal domain: Heroin Injection, Alcoholism, Illegal Immigration, Teenage Sex, Air Pollution, and Fast Food. Each respondent was randomly assigned one of these domains first, as a "focal domain" with a full battery of questions. Then each respondent provided favorability ratings for prevalence and harm reduction (with the same tactic types assigned for the focal case) for the remaining five domains (in randomized order).

Four of these risk domains—heroin injection and teen sex (as in Study 1) plus alcoholism and fast food—are fairly obvious exemplars of the harm reduction debate. In contrast, illegal immigration and air pollution were chosen in order to explore attitudes less likely to be shaped by traditional risk behavior framings. In fact, both domains involve behaviors that pose a variety of risks, and we can attempt to mitigate the risks by

discouraging the relevant behaviors, but also by making the behaviors less harmful when they occur—e.g., by using "cap-and-trade" policies that allow individual firms to pollute while reducing total emissions, or by providing public health and education benefits to the children of illegal immigrants.

A set of nine questions asked about the risk behavior in question. Given the survey modality—a set of questions embedded in a much longer telephone interview on many different topics—a simple adjective rating approach was used, in which respondents were asked to indicate their agreement with nine different terms that might describe the behavior in question: Immoral, Disgusting, Irresponsible, Dangerous, Common, Normal, Fun, Nobody Else's Business, and Harmless. These items very roughly map onto various philosophical and psychological accounts of morality and risk—e.g., hedonism ("fun"), libertarianism ("no one else's business"), fear of the unknown ("common," "normal"), and the "ethics of community and divinity" ("irresponsible" and "disgust", respectively; Rozin et al. 1999). Two terms ("immoral" and "dangerous") can be construed in either consequentialist or more symbolic terms and were included in order to examine their intercorrelations with the other 7 adjectives.

Results

Mean favorability ratings for prevalence reduction and harm reduction appear in Fig. 2. The results for teen sex and heroin injection were quite similar to Study 1. As in Study 1, overall, Californians were fairly supportive of harm reduction, but support varied by domain, with less support for psychoactive drug use (alcohol and tobacco) than the other domains. Within each strategy (PR and HR), some tactics were more popular than others. For prevalence reduction, respondents were more supportive of prevention than prohibition for alcohol (means of 3.37 vs. 2.41), but the reverse was true for illegal immigration (2.31 vs. 3.21). For harm reduction, soft approaches were preferred to hard approaches—most

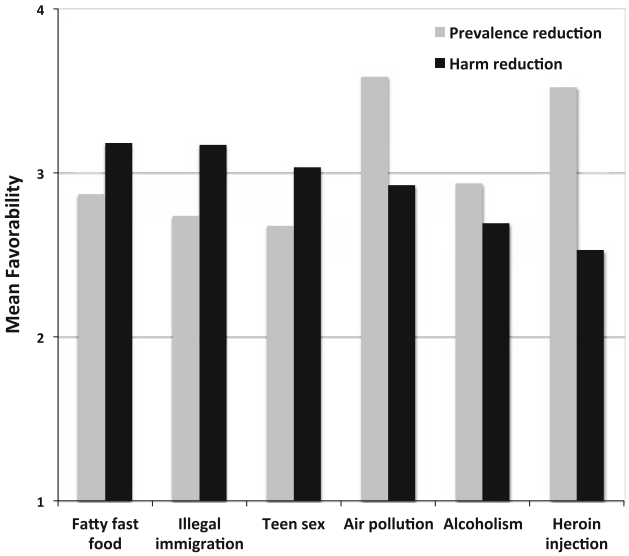

Fig. 2 Endorsement of prevalence reduction and harm reduction as responses to risky behaviors in Study 2. Behaviors are arrayed in decreasing order of support for harm reduction

notably in the case of air pollution, where teaching businesses to make their pollutants less hazardous was popular (mean = 3.70) but a cap-and-trade type system of pollution trading was not (1.94).

Table 1 presents a series of multiple regression models exploring the basis for citizens' attitudes. The first two equations examine attitudes toward prevalence reduction and harm reduction, respectively. Perhaps most informative is the third equation, which examines the relative preference for PR over HR; while such "difference scores" are less reliable than their components, this index has the advantage of capturing relative preferences net of any overall attitude toward government interventions, per se. The table entries are standardized regression coefficients, which can be interpreted much like a simple correlation coefficient (ranging from −1 to +1) but which represent the unique explanatory power of each item holding the other predictors constant. A caveat in interpreting these coefficients is that these equations account for only about a third of the variance in the policy preference measures, perhaps in part due to respondent fatigue given the length and heterogeneity of the survey in which this module was embedded (compare the much larger coefficients in Study 3, below).

The first set of predictor variables indicates that older respondents, African-American respondents, and self-identified conservatives were most likely to prefer PR to HR. The next two predictors show that holding other factors constant, the relative preference for PR was greater when PR was soft rather than hard, and when HR was hard rather than soft.

The next set of predictors consists of the nine ratings of the relevant risk behavior. Five of these made no independent contribution toward explaining policy preferences: whether the behavior is common, normal, fun, no one else's business, or harmless. In contrast, four ratings were significant predictors: the perception that the behavior was immoral,

Table 1 Predictors of policy preferences in Study 2

	Favorability toward prevalence reduction	Favorability toward harm reduction	Relative preference for PR over HR (PR–HR)	Using moral outrage index
Age	0.16***	−0.07	0.16***	0.15***
Black?	0.07*	−0.09*	0.11**	0.08*
Conservatism	0.05	−0.13**	0.13***	0.13***
"Hard" PR (prohibition)	−0.21***		−0.20***	−0.20***
"Soft" HR (information)?		0.29***	−0.10***	−0.09***
Common?	0.00	−0.04	0.03	0.04
Normal?	0.05	0.02	0.02	0.01
Fun?	−0.04	−0.04	0.00	0.00
Nobody else's business?	−0.09*	−0.03	−0.04	−0.03
Harmless?	−0.04	0.03	−0.05	−0.06
Immoral?	0.15***	−0.03	0.12**	
Disgusting?	0.13**	−0.09	0.16***	
Irresponsible?	0.15***	0.00	0.11**	
Dangerous?	0.15***	0.02	0.08*	
Moral outrage (4 items)				0.36**

Additional predictors that were not significant in the final model are not displayed here (gender, education, marital and parental status, religion, question order, and specific risk domain indicators)

* $p < .05$; ** $p < .01$; *** $p < .001$

disgusting, irresponsible, or dangerous. These items were highly intercorrelated, and the final model replaces them with a composite "moral outrage" index created by averaging them together. Nevertheless, disgust was the strongest of these four predictors; in separate analyses using "stepwise regression" I found that disgust was the first (and hence single best) predictor selected.

Discussion

Study 2 suggests that, to the extent that PR and HR are in tension, that tension reflects moral judgments that are either rooted in, or at least framed in, the terms "immoral," "disgust," "dangerous," and "irresponsible"—but not harmlessness, normality, or personal liberty. This complex might be characterized as "moral outrage" (Darley 2009). Disgust emerged as the most potent flavor in this stew, suggesting that the preference for PR over HR has more to do with visceral emotion than with any instrumental risk-management calculus.

Citizens generally preferred "soft" interventions to "hard" interventions (cf. Baron and Jurney 1993), but a notable exception was illegal immigration, where Californians preferred enforcing immigration laws (hard PR) over urging illegal immigrants to leave the country (soft PR)—an approach that may have simply sounded too naïve to work.

As in Study 1, conservatives were more likely than liberals to express a preference for PR over HR. The only domain where liberals strongly opposed harm reduction was for pollution trading credits, but this is a market-based solution that might not be expected to appeal to liberals. As Sandel (2005, p. 94) puts it: "…turning pollution into a commodity to be bought and sold removes the moral stigma formerly associated with it. If a company or a country is fined for spewing excessive pollutants into the air, the community conveys its judgment that the polluter has done something wrong. A fee, on the other hand, makes pollution just another cost of doing business, like wages, benefits, and rent."

Study 3 explored a non-market boundary condition on liberal support for harm reduction.

Study 3

There are numerous reasons why conservatives might be less receptive to harm reduction. There is considerable evidence that conservatives are less tolerant of outgroups that deviate from mainstream culture and practices (Duckitt 2001). Cognitively, conservatives are less tolerant of ambiguity, and have a greater need for order and structure (Jost et al. 2003). But while conservatives may display less cognitive complexity than liberals, recent work suggests they have a moral outlook that is rooted in a broader set of moral intuitions. Recent research suggests that liberal views on morality are mostly organized around harm/care and fairness/reciprocity, but that conservatives also invoke ingroup/loyality, authority/respect, and purity/sanctity (Graham et al. 2009; Rozin et al. 1999).

Do liberals ever oppose harm reduction? There is little indication of that in the 8 domains examined in Studies 1 and 2. For Study 3, I attempted to find a domain that might evoke a more hostile liberal response.

An article in the *New York Times* offered a plausible candidate (Bruni 2004). The article documented the efforts of Italian gynecologist Omar Abdulcadir to reduce the harmfulness of the cultural practice of female genital circumcision. "He publicly proposed that the hospital where he works let him perform a much less severe version of—or alternative to—

female genital cutting. …That alternative, as he described it, would be a piercing of the tip of the clitoris that would draw just a drop or two of blood and would be largely symbolic. He said he would use a topical anesthetic."

Therefore, in Study 3, I compared liberals' reactions to two harm reduction interventions, needle exchange for heroin use, and Dr. Abdulcadir's proposal for a less harmful form of female genital circumcision. The Italian debate about female genital circumcision has many parallels to debates over needle exchange and other harm reduction interventions. Dr. Abdulcadir's comments reflect the kind of reluctant pragmatism of harm reduction pioneers: "My proposal isn't ideal" he stated, "but is there a better answer for how to save the children?" Cristiana Scoppa, of the Italian Association for Women in Development, denounced his proposal: "It would undermine the fight of hundreds of thousands of women throughout Africa who have said that no form of genital manipulation can be permitted and that it symbolizes a culture that submits women to the control of men." The Times reports that other opponents felt that "his proposal tacitly approved genital cutting," quoting one immigrant woman who argued that ''We will teach our daughters that this doesn't have to be done and that's that.''

It should be noted that there are many potentially important disanalogies between this practice and heroin injection. Heroin use is, at least at the initiation stage, a voluntary activity; it is illegal; and it imposes harms on the user and on others (in part because of its illegality) (see MacCoun and Reuter 2001). Female genital circumcision is legal in most places where it is practiced, and it is imposed on young girls by the choice of their parents (Lewis 2009). But as with heroin injection, the behavior is likely to occur whether we like it or not, and if daughters are involuntary targets of this ritual practice, they would also be the primary beneficiaries of any steps that make it less harmful. And both behaviors—heroin injection and ritual circumcision—involve violations of the "body envelope"—the boundary between the body's interior and the external world, thought to play a significant role in the psychology of disgust reactions (Haidt et al. 1999).

Methodology

Fifty-eight graduate students in public policy at the University of California at Berkeley participated in the second study in 2004. This convenience sample is by no means representative of the general adult population, but it is quite suitable for the goal of exploring liberal views toward harm reduction. Compared to the population at large, the students are younger, more educated, disproportionately female (76 %), and disproportionately liberal. Although liberalism wasn't assessed in the study (to protect the anonymity of the few conservatives in the sample), a 2004 school survey found that 13, 60, and 22 % of students described themselves as "extremely liberal," "liberal," or "slightly liberal," respectively.

The procedure was closely modeled on Study 1. Half of the students were randomly assigned the "heroin injection" version of the Study 1 module. The other half were randomly assigned a new version, where the topic was female genital circumcision. They were told:

> I would like to ask you about different ways society can deal with risky physical behaviors. One such behavior is female genital circumcision. One way to deal with female genital circumcision is to try to make the behavior less dangerous so that there is less risk involved when people engage in it. For example, an Italian physician recently proposed a more symbolic version of the operation, involving the drawing of a drop or two of blood from the clitoris.

Attitudes toward prevalence and harm reduction were assessed using the same set of items (favorability, effectiveness, moral appropriateness) as in Study 1. For example, in the circumcision condition, the item assessing PR asked "How much would you favor government efforts to try to stop people from engaging in female genital circumcision?" and the item assessing HR asked "How much would you favor providing the option of this alternative procedure?" The list of behavior ratings was modified to clarify some ambiguity in the interpretation of the Study 2 results. Where appropriate, the items for female circumcision were worded with respect to the culture rather than the recipient (e.g., "Cultures that engage in female genital circumcision should quit the practice").

Results

Policy ratings for Study 3 appear in Fig. 3. There is a crossover interaction in which harm reduction was preferred to prevalence reduction for heroin, but prevalence reduction was preferred to harm reduction for female circumcision.[2]

Interestingly, for heroin, the pattern of results from these predominantly liberal students was the mirror image of the views of California adults in Studies 1 and 2 (left and middle panels of Fig. 1): Where the general population preferred prevalence reduction to needle exchange, the students preferred needle exchange to prevalence reduction. Indeed, the pattern of student results for female circumcision look strikingly similar to the pattern of general population results for heroin. The fact that these students were relatively more tolerant of the latter suggests that our reactions to body-envelope violations (Haidt et al. 1999) are influenced by the meanings we give to them.

Five of the behavioral ratings formed a coherent scale: "{Behavior} is immoral," "People have a moral right to engage in {Behavior} if they choose to do so," "{Behavior} makes me feel angry," "{Behavior} makes me feel sad," and "{Behavior} makes me feel disgusted." These items were averaged to form a composite index labeled "Moral Outrage." Three other items formed a consistent scale: "{Behavior} is harmful for the {female, user}," "{Behavior} harms other people," and {Cultures, Heroin users} that engage in {Behavior} should quit the practice." These items were averaged to form a composite index labeled "Risk Management."[3] Both indices revealed more extreme reactions toward female circumcision than toward heroin use.[4]

Table 2 presents regression analyses for favorability toward prevalence reduction, favorability toward harm reduction, and the relative preference (PR–HR). For each outcome criterion, one equation examines the effects of Gender and Topic, and a second equation adds the Moral Outrage and Risk Management ratings as predictors. Support for PR did not vary by topic and was largely explained by Moral Outrage. Support for HR was significantly lower for female circumcision than for heroin use (as seen earlier), but the Topic effect is eliminated when Moral Outrage is added to the equation. This suggests that a sense of moral outrage might be the reason why harm reduction for female circumcision is opposed (by the logic of statistical mediation; Baron and Kenny 1986). Similarly, the third set of equations suggests that moral outrage mediates the general preference for prevalence reduction over harm reduction in the domain of female circumcision.

[2] $F(1, 49) = 10.80$, $p < .002$.

[3] The coefficient alphas were 0.839 for "moral outrage" and .789 for "risk management".

[4] For Outrage, $F(1, 53) = 8.44$, $p < .005$; for Risk Management, $F(1, 53) = 5.78$, $p < .05$.

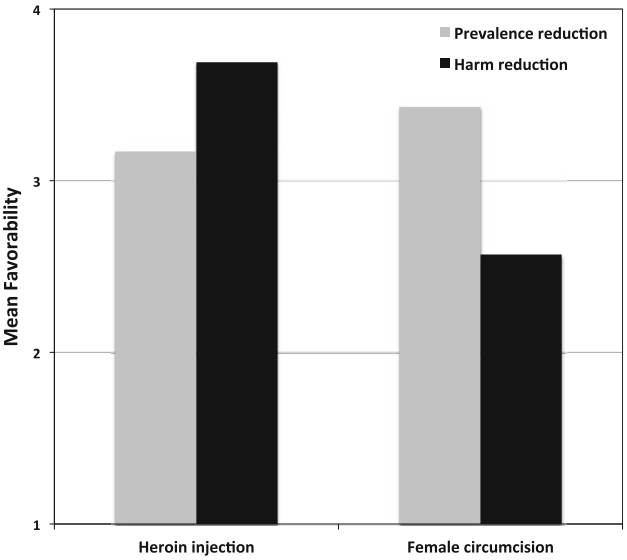

Fig. 3 Endorsement of prevalence reduction and harm reduction as responses to risky behaviors in Study 3. Behaviors are arrayed in decreasing order of support for harm reduction

Table 2 Predictors of policy preferences in Study 3

	Support for prevalence reduction		Support for harm reduction		Relative preference (PR–HR)	
	Eq. 1	Eq. 2	Eq. 1	Eq. 2	Eq. 1	Eq. 2
Gender	−0.05	0.04	−0.03	−0.08	−0.01	0.08
Domain	0.15	−0.05	−0.62***	−0.36***	0.51	0.22
Moral outrage (immoral, angry, sad, disgusted)		0.56***		−0.44***		0.61***
Risk management (harmful to self, harmful to others, should quit)		0.27		0.13		0.06

* $p < .05$; ** $p < .01$; *** $p < .001$

General Discussion

The results of these studies suggest that opposition to harm reduction is less prevalent (at least in California) than "culture wars" media reports might lead one to expect. Nevertheless, it is also clear that there is a sizeable minority for whom harm reduction is objectionable, and prevalence reduction is greatly preferred, at least for some risk domains.

While previous surveys have examined support for harm reduction in particular domains, to my knowledge no previous study has examined these attitudes in as much depth as these studies. Nevertheless, there is little doubt that the standardized response scales used in the present studies probably fail to probe the full complexity and nuance of citizens' thoughts and feelings about harm reduction. But they do suggest that these

reactions appear to involve symbolic, expressive, and emotive considerations to a greater degree than instrumental, consequentialist, and deliberative considerations. And as suggested by other recent studies, policy preferences were influenced by moral judgments suffused with feelings of disgust and anger—a sense of moral outrage.

When participants verbally agree that they feel "disgust", is this the same somatic experience as the visceral feeling of disgust when we respond to, say, putrid rotting food or a decayed animal corpse? The survey methods used here are not well suited for answering that question, but there are several lines of research suggesting continuity between verbal expressions and visceral experiences of disgust. First, verbal disgust ratings in response to moral violation vignettes correlate with facial expressions that are known to indicate disgust (Chapman et al. 2009; Rozin et al. 1999). Images of homeless people and drug addicts are associated with reduced mPFC activity (a region associated with social cognition) and increased left insula and right amgydala activity (regions associated with disgust)—patterns that are also triggered by non-human images of an overflowing toilet or vomit (Harris and Fiske 2006). Many authors propose that the moral evaluation system essentially hijacked a pre-existing mechanism that evolved to avoid disease and contaminated food (Chapman et al. 2009; Oaten et al. 2009), and across cultures, disease prevalence predicts local patterns of sociosexual behavior as well as the personality traits of extraversion and openness to experience (Schaller and Murray 2008). And the somatic and moral disgust systems seem to have reciprocal effects on each other. There is evidence that lifestyle changes motivated by health beliefs (e.g., giving up meat or cigarettes) over time begin to mobilize feelings of disgust toward the previous lifestyle (Rozin 1999). And effects in the opposite direction also occur: Extraneous triggers of physical disgust can increase the severity of moral reactions, and the act of washing one's hands can increase moral leniency (Schnall et al. 2008a, 2008b).

From a political perspective, these findings help to explain why empirical evidence on the efficacy of harm reduction, and its benefit-to-cost ratio, may fail to overcome opposition to interventions like needle exchange, condom distribution, or safe sex messages. Opponents may be motivated to dismiss such evidence as biased (MacCoun and Paletz 2009), but more fundamentally, they may not frame the issue in the consequentialist terms that would make such evidence probative. For example, when "protected values" are threatened, people tend to show "quantity insensitivity"—a general imperviousness to the consequences of their preferences for the extent of harm that gets produced (Bartels and Medin 2007). Still, it is clear that even the most seemingly deontological partisans (libertarians and legal moralists) tend to invoke consequentialist arguments for rhetorical purposes.[5] While prevalence and harm reduction are sometimes in tension, it may be the overt acknowledgment of tradeoffs that is more unsettling to some than the existence of the tradeoffs per se (Fiske and Tetlock 1997).

The examination of female genital cutting rituals (Study 3) suggests that discomfort with harm reduction is not the exclusive province of the right. It may be that each of us has "sacred" domains where the cold calculus of harm reduction (making an objectionable behavior safer) is unpalatable. But the status of disgust as a normative foundation for risk policy is controversial (see Kahan 1999, 2007; Miller 1998; Nussbaum 2006). In a 1999 essay, Dan Kahan sought to:

> redeem disgust in the eyes of those who value equality, solidarity, and other progressive values. It would certainly be a mistake—a horrible one—to accept the

[5] For evidence on this point, see MacCoun and Reuter (2001, Chapters 3 and 4).

> guidance of disgust uncritically. But it would be just as big an error to discount it in all contexts. There are indeed situations in which properly directed disgust is indispensable to a morally accurate perception of what's at stake in the law (p. 63).

This argument brings to mind a related debate about the normative implications of evidence that conservatives tend to prefer rhetorically and cognitively simple political arguments (Jost et al. 2003). As academics, we tend to associate complexity and nuance with intellectual rigor, so it is a useful corrective to contemplate Tetlock et al.'s (1994) finding that abolitionists used significantly simpler arguments than did apologists in the pre-Civil War debate over slavery.

But as Nussbaum (2006, p. 14) suggests, "a clear understanding of disgust's thought-content should make us skeptical about relying on it as a basis for law. …Disgust is rooted in magical thinking rather than ordinary causal assessment, and it fails to distinguish the act from the actor, undermining respect for the actor's basic dignity." It is notable that Nussbaum's account is by no means anti-emotional; she offers a detailed defense of the merits of anger and fear (and, to a much lesser extent, shame) as more reliable normative guideposts for law.

The responses to the cases in these studies suggest that illegality per se is not necessary for opposition to harm reduction, as seen in reactions to controlled drinking and emissions trading in Study 2. And in general, Study 2 showed that people preferred persuasion to prohibition as a method of discouraging stigmatized risk behaviors. Nevertheless, many people preferred discouraging some behaviors even when it is feasible to make those behaviors significanlty safer. Previous research suggests that our attitudes toward crime are more influenced by perceived wrongs than perceived harms (Darley 2009). These new studies offer a corollary: People are even willing to keep some behaviors harmful if those behaviors are seen as wrong.

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Appendix

See Table 3.

Table 3 Experimental variations in Study 2

Domain	Prevalence reduction		Harm reduction	
	Persuasion	Prohibition	Informational	Technical
Heroin injection	Urge users to quit using heroin	Enforce the law against heroin use	Educate users about how to clean needles to make injection less risky	Provide users with clean needles to make injection less risky
Alcoholism	Urge alcoholics to quit using alcohol	Pass new laws against alcohol use	Teach alcoholics who won't quit how to better control their drinking	Provide alcoholics with monitoring meters to assess their own alcohol level
Illegal immigration	Urge illegal immigrants to leave the country	Enforce the law against illegal immigration	Teach illegal immigrants about the importance of educating their children	Make sure that the children of illegal immigrants are enrolled in public schools

Table 3 continued

Domain	Prevalence reduction		Harm reduction	
	Persuasion	Prohibition	Informational	Technical
Teenage sex	Urge teenagers to abstain from oral sex and intercourse	Pass new laws against oral sex and intercourse between minors	Teach teenagers safe-sex practices	Provide free condoms at schools and other gathering places
Air pollution	Urge businesses to refrain from polluting	Enforce laws against air pollution	Teach business how to make their pollutants less hazardous to health	Allow a business to keep polluting if it pays a second business to pollute less
Fast food	Urge consumers to avoid eating fatty fast foods	Pass legal limits on the amount of permissible fat in restaurant food	Require fast food restaurants to provide nutrition labels on containers	Require fast food restaurants to provide a low-fat alternative on the menu

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