Investigating moral intensity with the World-Wide Web: A look at participant reactions and a comparison of methods

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This paper reports the results of a vignette- and questionnaire-based research project over the World-Wide Web investigating the influence of moral intensity (MI) on decision making in a business context. A qualitative analysis of the feedback in terms of e-mail communications was used to provide insights into the reactions and responses of participants to both the research method and the topic of research. Implications are discussed, and some methodological recommendations are derived. Second, analysis of the quantitative results of the Web-based questionnaire administration indicated that three of the six MI components were particularly important determinants of several outcome variables. This pattern of results essentially replicated findings yielded by a previous mail administration of the survey, even though a smaller amount of variation in the outcome variables was accounted for. Neither occupational background nor the region of origin of participants measurably influenced the results.

The advent of a range of global computer networks has provided unique opportunities to researchers for the administration of surveys and experiments to large numbers of participants from around the world. In recent years, a number of studies using these media have been published. Some researchers took advantage of surveys administered via electronic mail (e.g., Mehta & Sivadas, 1995; Stern & Faber, 1997), and some required participants to connect to the host computer via Telnet protocol (e.g., Smith & Leigh, 1997). Yet others used the World-Wide Web (WWW; e.g., Krantz, Ballard, & Scher, 1997; Pasveer & Ellard, 1998; Welch & Krantz, 1996) or utilized a combination of e-mail and WWW (e.g., Michalak, 1998). Several of the studies provide evidence of comparability between results gained by traditional and Internet methods of administration (Krantz et al., 1997; Mehta & Sivadas, 1995; Pasveer & Ellard, 1998; Smith & Leigh, 1997). In addition, a number of articles have appeared that outline the advantages and disadvantages of the various methods of electronic survey and experiment administration (Hewson, Laurent, & Vogel, 1996; Schmidt, 1997a). Similarly, a number of writers provide software solutions to some of the identified tasks and problems (e.g., Chute & Westall, 1996; Morrow & McKee, 1998; Schmidt, 1997b), as well as guidelines for re-

search using this relatively novel research technology (Smith & Leigh, 1997).

The present paper reports the results of an experimental survey conducted via the WWW into issue-related determinants of ethical decision making in business. The qualitative responses of WWW users to both the research method in general and the survey in particular are discussed. Second, a quantitative analysis approach is used to compare the survey results with the outcome of a mail administration of the same survey to a random sample of New Zealand business people (Frey, 2000).

THE RESEARCH QUESTIONS

The primary aim of the present study was to extend the literature in which the construct of *moral intensity* (MI) in business-related decision making has been investigated. MI is a term coined by Jones (1991) to denote the underlying characteristics of an issue that may directly affect the ethical decision-making process at various stages. MI consists of six components, where a given issue may vary in the degree to which each of the components is represented. As the intensity or severity of one or more of the six components increases, the perceived total *ethical heat* of the issue increases. This, in turn, is hypothesized to have important consequences: People should become more likely to become aware of the ethical content of an issue, and less likely to engage in, condone, or continue with an ethically questionable course of action.

The individual components of MI are (1) the *magnitude or seriousness of potential consequences* (MC); (2) *social consensus* (SC), the degree to which other people are perceived to agree that an action is ethically questionable; (3) *likelihood of effect* (LE), the probability of a decision's actually resulting in the negative outcome; (4) *tem-*

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poral immediacy (TI), the period of time between the decision and the effect; (5) *concentration of effect* (CE), the number of affected people for an effect of constant size; and (6) *proximity* (PR), the physical, psychological, or social distance between the decision maker and the people who are likely to be affected by the decision.

A decision is *low* in MI if it has negligible negative consequences, if most people agree that the action is ethical, if the negative consequences are relatively unlikely to actually occur, if the time between the decision and the outcome is relatively long, if the negative outcome is spread over a large number of individuals, and if the decision maker is relatively removed from the affected individuals. In contrast, MI is *high* if the decision has very severe consequences, if everyone agrees that it is unethical, and if the negative outcome is certain to occur, is to occur in the immediate future, is to have a concentrated effect on a small number of individuals, and affects individuals that are close to the decision maker.

Accumulating evidence from a range of studies is generally supportive of the concept and indicates that SC and MC are of particular importance, followed by LE and—to a somewhat lesser extent—TI, PR, and CE (for a detailed literature review, see Frey, 2000).¹ Consequently, and on the basis of previously mentioned research into the validity of the methods of electronic experiment and survey administration (Krantz et al., 1997; Mehta & Sivadas, 1995; Pasveer & Ellard, 1998; Smith & Leigh, 1997), it was expected that the WWW administration would yield comparable results (strong effects for SC, MC, and LE). In addition, on the basis of Singer's (1996) investigation of MI, which found some differences between a managerial and a general public sample, it was expected that responses would vary with occupational background. Finally, Smith and Leigh noted the potential of electronic experiment and survey administration to investigate cross-cultural differences. To allow investigation of any such effects, the country of origin was included as one of the collected demographic variables. Ford and Richardson's (1994) review of studies relating to ethical decision making provides subject-specific information. Their results indicated only mixed support for the notion that nationality is related to ethicality. At the same time, theoretical work by Vitell, Nwachukwu, and Barnes (1993) suggests that a number of cultural dimensions are likely to affect perceptions of ethicality and norms for behavior, as well as ethical judgments. Nevertheless, keeping in mind that users of electronic communication devices are probably more homogenous than the populace at large (see http://www.cc.gatech.edu/gvu/user_surveys/ for a regularly updated site containing relevant survey data), the experimental survey was not expected to yield statistically significant differences along this dimension.

METHOD

Participants

The participants were recruited by sending a brief and polite invitation² to a random sample of e-mail addresses. Addresses were

collected from the publicly available address lists of list servers of two New Zealand Universities and the U.K. mailbase. To facilitate comparison with the results of the traditional mail survey, four to five responses for each of the 63 experimental cells of each of the two scenarios were required (see the subsequent section). In the event, 5,843 invitations reached the intended personal e-mail accounts, yielding 570 completed returns,³ or a mean of 4.5 responses per cell ($SD = 0.81$, min = 4, max = 10). The responses originated in 43 different countries, which were categorized into 11 regions (see Table 1 for more detail and additional demographic data). The average age of the respondents was 37 years ($SD = 11$, min = 18, max = 71).

By comparison, the survey mailed to a random sample of 1,844 New Zealand business people (Frey, 2000) generated 406 usable responses, with a mean of 6 responses per experimental cell ($SD = 1.5$, min = 4, max = 9). The average age of respondents was 46 years ($SD = 9.7$, min = 20, max = 74).

Scenarios and Design

The main WWW location consisted of an information page that provided a short outline of the purpose of the study, a set of brief instructions, and a statement relating to the issue of informed consent. The link at the end of this page led to the experiment proper. A short segment requesting some demographic information was followed by the scenarios and questionnaires. Two scenarios (see the Appendix) introduced by Frey (2000) were utilized, allowing independent manipulation of the six MI components (high or low) within each scenario. The questionnaires were constructed in hypertext markup language (HTML) so that the participants were presented with two versions of either the *time share* scenario or the *pollution* scenario. Each pair began with the low-MI version, followed by a version that could be high on one or more of the six components.⁴ All possible combinations were utilized, resulting in 63 different questionnaires for each scenario. A common gateway interface (CGI) script was used to randomly assign a pair of scenarios to each visitor. Finally, clicking the "Submit" button at the end of the questionnaire (see the Part II: Quantitative Analysis of Questionnaire Data section for a detailed description of the questionnaire items) prompted the CGI script to e-mail the data and to send the respondent to the final HTML page. Here, the participants could collect their reward (an executable file that generates a screenmate) and were given the opportunity to make additional comments via e-mail.

Table 1
Participant Characteristics and Response Rates (%)

Characteristics	Mail Sample (<i>n</i> = 406)	WWW Sample (<i>n</i> = 570)
Occupational class		
Business person/manager	100.0	13.9
Education/research sector employee		41.4
Student		15.1
Private/employee		29.6
Female	15.0	38.7
Region of origin		
Asia		2.7
Australia		7.3
Canada		4.2
Europe (middle)		3.5
Europe (southern and eastern)		3.5
New Zealand	100.0	31.9
U.K. and Ireland		25.1
Scandinavia and Iceland		3.4
South Africa		0.4
South America		1.6
U.S.A.		16.4
Response rate	22.0	9.8

RESULTS AND DISCUSSION

This section is divided into two parts. The first part deals almost exclusively with methodological considerations arising out of a qualitative analysis of the participants' e-mail responses. The second part focuses on the quantitative results relating to the concept of MI.

Part I: Qualitative Analysis of E-Mail Responses to the Survey

In their study of responses to "lost" e-mail messages, Stern and Faber (1997) noted that "the means of communication lead to changes in norms surrounding communication. Specifically, ... the behaviours and expectations are different from what we would expect from a traditional survey" (p. 262). In the present study, the WWW participants initiated and pursued communication to a much larger degree than did those from the mail sample (see also the good e-mail response Welch & Krantz, 1996, received from their research site). This raises a point with regard to the generally accepted assumption that WWW administration of surveys and questionnaires saves time (e.g., Schmidt, 1997a). First, the translation of

a survey or questionnaire into a suitable electronic format (e.g., HTML), as well as the creation of the administration- or experiment-controlling software (e.g., CGI script) can be rather time consuming. Of course, the actual administration is certainly more efficient than traditional mail administration. However, owing to the ease with which participants can make additional comments and/or ask questions, a considerable amount of time is spent replying to such messages. It is self-evident that each and every message must be answered—both for reasons of etiquette and in the interest of the future of the research method. Overall, my experience was that little (if any) time saving can be expected from WWW administration of surveys and/or questionnaires.

The final HTML page invited comments and feedback from the participants in e-mail format and, together with the initial e-mailed invitation, generated about 100 pages of one- and two-way communication. The information was subjected to a content analysis with the aim of identifying categories and themes, as well as the links between them. An overview of the results, together with quantitative information indicating the frequency of occurrence is presented in Table 2.

Table 2
Content Analysis of E-Mail Responses
to the World-Wide Web (WWW) Survey

Response Category	Number of Text Units	Number of Lines	Lines/Unit
Pollution scenario			
Additional information	16	198	12
Inquiry	3	13	4
Positive feedback	5	15	3
Critique	13	103	8
Subtotal	37	329	9
Time share scenario			
Additional information	23	195	8
Inquiry	2	8	4
Positive feedback	5	17	13
Critique	14	127	9
Subtotal	44	347	8
Subtotal for the scenario content category	81	676	8
WWW method			
Inquiry	44	150	3
Inquiry/positive feedback	15	66	4
Positive feedback	43	111	3
Critique/technical	22	75	3
Critique/method	11	244	22
Reward/inquiry	7	19	3
Reward/positive feedback	7	14	2
Subtotal for the WWW method category	149	679	5
Questionnaire			
Critique	12	50	4
Positive feedback	1	6	6
Subtotal for the questionnaire format category	13	56	4
Other			
Refusal	14	48	3
Result inquiry	15	26	2
Chat/professional	7	68	10
Chat/other	5	54	11
Subtotal for the other category	41	196	5
Total	284	1,607	6

Note—A text unit is defined as any piece of text that relates to a particular response category. As such, it can have any number of words, lines, and paragraphs.

All communication episodes fell into four major categories, each capturing a different dimension of the participants' concerns. The first category was related to the content of the scenarios, the second to the method of administration, and the third to the questionnaire format of the investigation. The final category captured a variety of responses, ranging from refusals to participate, to requests for various aspects of the study's results, to more informal episodes of information exchange.

Responses related to scenario content. Communication episodes in this first category fell into four subcategories (*additional information*, *inquiry*, *positive feedback*, and *critique*). A number of participants felt the need to expand on their responses given in the questionnaire. These were classified into the additional information subcategory. The following response is typical for this category (pollution scenario):

My responses to the questions would have been affected greatly by knowing about the product. It might be worth some minor risk for a great benefit, but not say for a cosmetic.

Web Responses, lines 2192–2194

Episodes classified into the inquiry subcategory were requests for clarification, ranging from such general questions as, for example,

What is it [the study] about?

Web Responses, line 3119

to more specific ones—for example,

What difference does the location make? ... I assume the varied questions were meant to determine that the reader really understood the scenario?

Web Responses, lines 4025–4027

All requests for information were satisfied once the respondent had either completed the questionnaire or decided not to participate.

The scenarios also resulted in a number of positive responses with regard to their content (positive feedback subcategory). For example,

Your questionnaire was interesting to probe the many levels of grey surrounding all ethical, political and personal decision making.

Web Responses, lines 2806–2809

On the other hand, it was exactly that level of uncertainty and “grayness” that led a number of respondents to question the validity of the scenarios (critique subcategory). For example,

Phrases like “near future” are difficult to judge. Does that mean next week, or can near future include soon after the scheme opens (in a year's time)?

Web Responses, lines 630–634

In addition, a small number of respondents also felt that the scenarios were somewhat unrealistic and that the grammatical structure and phrasing were too complicated.

Responses related to World-Wide Web method of administration. Most of the communication episodes fell into this category (see Table 2 for details).

Again, a number of subcategories were defined to account for the range of issues raised by the respondents (inquiry, positive feedback, critique, and reward). The majority of responses in the inquiry were concerned with the method of participant selection. The following is typical:

I'd be pleased to participate in your research, but perhaps you could let me know a little more about the project; I am curious about the origin of the eclectic set of e-mail addresses in the header of your message. How were we selected?

Web Responses, lines 1867–1877

All but one of the inquirers were satisfied with the explanation that was provided in response.⁵ The inquiry/positive feedback subcategory contains the reactions of those who actually conveyed their satisfaction with the provided explanation; others simply either proceeded to complete the questionnaire or decided not to participate. The positive feedback subcategory predominantly contains expressions of interest and support.

Considering that the WWW administration technique is relatively novel, the critique subcategory holds considerable interest. It contains messages that were critical of at least one aspect of the administration method. Generally, messages within this subcategory fell into two further readily discernable subsets. The critique/technical subset contains messages from people who experienced technical difficulties in attempting to participate in the study. Five of the respondents simply had no, or only limited, access to the WWW. In addition, even though care was taken in the design stages to try several versions of the two most commonly used browsers (Explorer and Netscape), a further 6 were unable to properly access the HTML pages. The remainder of messages in this category reported being unable to reach the HTML pages for a variety of reasons (e.g., DNS lookup failure).

The second subset (critique/method) contains messages from people who were, to varying degrees, critical of the method of recruitment. Even though this category contains responses from only 9 people, the fact that they generated the largest number of lines per text unit (see Table 2 for details) is indicative of the strength of their conviction that posting to randomly selected personal e-mail addresses (known as *spamming*) is not appropriate. For reasons of research ethics, it was not considered appropriate to include illustrative quotations. Suffice it to say that the responses ranged from something like “I don't mind myself, but other people might,” to something like “How dare you write to me like that?” to one official complaint to the University's network administrators. Importantly, however, it must be noted that these respondents represent only a very small, if vocal, minority of respondents. The reaction of the overwhelming majority of respondents was decidedly positive. It seems reasonable to

assume that a similar percentage of recipients of traditional mail surveys also feels somewhat irate at receiving unsolicited survey material. It is further suggested that the comparative ease with which e-mail messages can be responded to was one of the deciding factors that prompted these communications.

Several writers have addressed this issue to some extent. Schmidt (1997a) notes that posting to a random sample of news groups may be stressful and lead to less motivated respondents. Michalak (1998) also presents a range of arguments against using news/discussion groups as subject pools. In contrast, Hewson et al. (1996) do advocate posting to discussion or disciplinary news groups and list servers as a whole, but not to individual e-mail addresses (see Smith & Leigh, 1997, for a more in-depth discussion of this and related issues). From an empirical perspective, Mehta and Sivadas' (1995) study seems to be the only presently available investigation that used a recruitment method similar to the present one for one of their experimental groups (posting to randomly selected individual e-mail addresses gained from list servers). However, they report abandoning the attempt because of adverse reactions from recipients. Importantly, it must be noted that in contrast to Mehta and Sivadas, who sent a voluminous (300-line) questionnaire directly to the selected addresses, the present investigation issued only a very short and polite invitation to participate by visiting a Web site. Overall, the nature and frequency of responses yielded by the present study is taken to indicate that, at least at present, random sampling of individual e-mail addresses is acceptable to the large majority of recipients, provided the message is short, polite, and to the point (see also the summary and recommendations section).

In line with the finding that monetary incentives increase response rates for traditional surveys (Church, 1993), an electronic reward in the form of an executable file was offered. Although it was not possible to evaluate the impact of this measure on response rates, all the responses relating to the reward were positive (reward/inquiry and reward/positive feedback subcategories).

Responses related to questionnaire format. The structure of the questionnaire and the response options also encouraged a small number of comments. The following two excerpts are representative of the content of these response categories (critique and positive feedback, respectively—note that the second excerpt was taken from a message sent in response to a detailed explanation of the experimental design).

I have just completed your survey, which was interesting, but am a bit worried by the ambiguity of some of the response options.

Web Responses, lines 880–895

I like your methodology of randomly assigning or manipulating quanta of information along various dimensions. I have thought of doing this in simulations using MPEG video clip components which might be combined to give various

scenarios. This can now be done "on the fly" so—assuming a valid set of rules and a bounded knowledge domain—quite complex branching scenarios might be created.

Web Responses, lines 282–287

Overall, a number of very useful suggestions were made with regard to a variety of details of the questionnaire's format. Even though—in the interest of constancy across participants—none was incorporated into the present administration, all the suggestions were duly noted, and the participants were accordingly informed.

Remaining responses. Communications in this category fell into three discernible subcategories (refusal, result inquiry, and chat). A number of recipients of the invitation thought it polite and/or prudent to convey their decision not to participate. These messages are contained in the refusal subcategory. A similar number of respondents specifically requested to be sent details of the outcome of the study (result inquiry subcategory).

A further category of communication episodes was related to the subject matter of the research. The chat/professional subcategory contains responses from a variety of people interested in discussing the general topic of ethics, decision making in general, or ethical decision making in particular. The comments and suggestions in this section were probably fewer than one might have expected on the basis of the reportedly good response to Welch and Krantz's (1996) experimental site. However, unlike the site maintained by these authors, the present site did not contain instructional and demonstration material. Similarly, the present site was not registered with any search engines. Consequently, people with subject-specific interests were not able to locate the site. Nevertheless, the communications contained in this category were particularly gratefully received and provided the basis for a number of interesting and useful discussions.

Finally, the chat/other subcategory contains a small number of communications from people who were curious about a range of things unrelated to the administration method or the focal area of the experimental survey. For example, some respondents were piqued about New Zealand as the country of origin of the study.

Summary and recommendations. The qualitative analysis of the participants' e-mail communications provided valuable insights into several aspects of the research method. More specifically, it was observed that considerable time and effort is involved in diligently responding to a relatively voluminous flow of e-mail communications. This, in combination with the time investment associated with the construction of electronic experiments or surveys, led to the argument that, in many instances, there will only be small, if any, time savings. Second, the quality and increased flow of communication associated with the method was argued to be beneficial in terms of the feedback gained. Finally, in contrast to what appears to be currently accepted opinion, the data showed that the method of randomly selecting

individual e-mail addresses to receive invitations to participate in research is both successful and acceptable to all but a very small minority of recipients.

Researchers intending to utilize this method should take care to include the following details: a short invitation, an outline of selection procedures, and relevant contact details. In addition, a note regarding ethics approval from relevant research committees (including appropriate contact details) is essential and will help to prevent unnecessary stress. Similarly, emphasizing the one-off nature of the invitation message, as well as reminding participants that they can simply ignore and delete the message, is recommended. Note also that the method utilized in the present study of posting a single invitation to multiple recipients at the same time may have—quite apart from potentially depressing the response rate—engendered some adverse reactions. Individually addressed invitations should lead to more positive results. Finally, care must be taken to answer each and every message in a polite and professional manner. The relaxed nature of e-mail communications may engender a style of responding that may be perceived as somewhat offhand. A little time and effort spent at this stage will be of benefit to all concerned.

Part II: Quantitative Analysis of Questionnaire Data

This section focuses on the quantitative responses of the participants to the experimental vignettes in relation to the concept of MI and the research questions outlined in the introduction.

Questionnaire items and preparation of data. Each of the two scenario versions within a questionnaire was followed by an identical series of questions, beginning with an item assessing the “the level of your support for the project,” and an item requiring a categorical response as to whether, if a decision had to be made, “you would go ahead with the project as it is.” This was followed by two items (one inverted) for each of five of the MI components (with the exception of CE; see below for more detail) and the perceived number of affected people. In addition, one item each was used to assess the degree to which (1) a go-ahead decision is (would be) “ethically correct,” and (2) the scenario “involves an ethical (moral) issue.” All the items were operationalized as pull-down menus and, other than the one categorical response item, were on 9-point anchored scales (for a complete demonstration of the experiment, see http://www.massey.ac.nz/~bffrey/information_page_start.htm).

The dependent variables arose out of the differences between the responses to the two versions of each scenario (see the Appendix). There were two classes of dependent variables. The primary response variables were *change in level of opposition* (▲OPPOSE), *change in the decision (not) to go ahead* (▲NOGO), *change in recognition of ethical content* (▲ISSUE), and *change in perceived ethical incorrectness of decision* (▲WRONG). The values for each variable were calculated so that positive values corresponded to changes to greater opposition, greater

reluctance to go ahead, better recognition of ethical content, and greater perceived incorrectness of a go-ahead decision.

The second class of variables was used as a predictor for the first class. There was one dependent variable for each of the MI components (▲MI = ▲MC, ▲SC, ▲LE, ▲TI, ▲CE, and ▲PR).⁶ Two 9-point items were used to assess each of the MI components. The final ▲MI scores were calculated by subtracting the sum of the scores for the two MI items relating to the first version of a scenario from that relating to the second version. Again, values were calculated so that positive values correspond to high ▲MI. Consequently, scores on any ▲MI component could range from –16 (indicating a change from very high to very low perceived MI) to 16 (change from very low to very high perceived MI).

Note that the use of difference scores is by no means always considered appropriate (Peter, Churchill, & Brown, 1993). Consequently, the validity of all regression equations was confirmed by also analyzing the raw scores.

Survey results. Separate regression equations were constructed for each of the four primary response variables, with the six ▲MI scores as predictor variables. Subsequently, a dummy variable was introduced for scenario (0 or 1, for time share or pollution) to see whether it would add significantly to the amount of variation already explained by the equation. This procedure was repeated for all the possible two-way interactions and the demographic variables (age, occupational group, sex, and region of origin). Following inspection of appropriate residual plots, the data set was randomly divided into two halves. The previously derived equations were then independently fitted to both halves of the data set, thus testing for the stability of the equations. The resulting equations, along with adjusted R^2 values, as well as the relevant equations obtained from the mail survey (Frey, 2000), are presented in Table 3. For comparison purposes, the equations resulting from the analysis of the raw scores are also included, where independent regression equations were constructed for responses to low- and high-MI scenarios. Note that nonsignificant predictors were eliminated from Table 3.

As was expected, three of the six MI dimensions (MC, SC, and LE) were particularly influential determinants of ethical perceptions and intention to act. The striking similarity in the pattern of responses for both the mail and the WWW samples is of central importance for the present purpose. Both constants and coefficients are always in the same direction, and almost always of the same magnitude. The only coefficients that were found to differ in magnitude (as evidenced by nonoverlapping 95% confidence intervals) indicate that the WWW sample's level of opposition and reluctance to go ahead with the given course of action may have been relatively less influenced by MC and LE, respectively.⁷ Note that the stability of the weakest equation in terms of the amount of variance explained (▲ISSUE; change in recognition of ethical content) was not confirmed for the random halves of the

Table 3
Regression Equations and Adjusted R^2 Values for the Four Primary Response Variables

Regression Equations and Adjusted R ² Values for the Four Primary Response Variables							
Predicted Variable	Survey Type	Regression Coefficients					Adjusted R ²
		Constant	▲MC	▲SC	▲LE	▲PR	
▲OPPOSE	mail	.592	+.364*	+.173	+.142		.61
	WWW	.767	+.210*	+.174	+.140		.52
OPPOSE (raw scores)	low-MI versions	-1.251	+.292	+.114	+.127	+.032	.60
	high-MI versions	-0.361	+.258	+.160	+.131		.51
▲NOGO	mail	.034	+.057	+.031	+.045*		.51
	WWW	.072	+.047	+.024	+.018*		.40
NOGO (raw scores)	low-MI versions	-0.560	+.051	+.022	+.022		.50
	high-MI versions	-0.186	+.045	+.032			.43
▲ISSUE	mail	-.067	+.163*	+.110*			.25
	WWW†	-.028	+.056*	*	+.057		.09
ISSUE (raw scores)	low-MI versions	3.805	+.142		+.089	+.060	.16
	high-MI versions	3.788	+.222			+.038	.19
▲WRONG	mail	.276	+.223	+.175	+.137		.63
	WWW	.350	+.226	+.148	+.130		.54
WRONG (raw scores)	low-MI versions	-.516	+.268	+.096	+.156		.55
	high-MI versions	-.241	+.272	+.153	+.104		.50

Note—The symbol ▲ indicates “change” from the first to the second version of a scenario. MC, magnitude of consequence; SC, social consensus; LE, likelihood of effect; PR, proximity; positive values indicate greater perceived moral intensity; for all displayed coefficients, $p < .01$. OPPOSE, level of opposition; NOGO, decision (not) to go ahead; ISSUE, recognition of ethical content; WRONG, perceived ethical incorrectness of decision; positive values indicate greater opposition, greater reluctance to go ahead, better recognition of ethical content, and greater perceived incorrectness of a go-ahead decision. *95% confidence intervals for the coefficients of the two survey types do not overlap. †The stability of this equation was not confirmed by its independent fitting to two random halves of the data set.

WWW sample. Consequently, it is not appropriate to discuss differences between the two samples in terms of the magnitude of the corresponding regression coefficients.

Confirming the above results, the analysis of the raw scores showed only minor variations from that of the difference scores, at least as far as three of the four primary outcome variables are concerned (Table 3). Analysis of WRONG, the perceived ethical incorrectness of the decision, showed no variation at all. Analysis of OPPOSE, the level of opposition against a go-ahead decision, showed an additional influence of the perceived degree of proximity in the low MI version, and NOGO, the likelihood of a go-ahead decision, failed to show an influence of the perceived LE in the high-MI version. As above, analysis of ISSUE, the recognition of ethical content, yielded the least stable and weakest equation. The only stable result for this outcome variable seemed a strong influence of the perceived MC. In sum, analysis of the raw scores by and large confirmed the results achieved by analysis of the difference scores.

Finally, the pattern of means and standard deviations of all the primary variables, compared across the two administration methods, provides additional support for the position that the two methods yielded practically identical results (see Table 4).

The overall similarity between the two administration methods accords well with reported findings of previous cross-method investigations (Krantz et al., 1997; Mehta & Sivadas, 1995; Pasveer & Ellard, 1998; Smith & Leigh, 1997). The generally lower adjusted R^2 values for all WWW equations, in combination with the above-mentioned instability of the WWW equation for ▲ISSUE, also

suggests that the influence of MI on the primary response variables was less pronounced for the WWW sample. Note that, owing to the within-subjects/within-scenarios research design introduced by Frey (2000), even the lower adjusted R^2 values of the WWW sample still compare favorably with previous more traditional investigations of MI (Jones & Huber, 1992; Morris & McDonald, 1995; Singer, 1996; Singer et al., 1998; Singer & Singer, 1997).

Unexpectedly, responses did not vary with occupational background—that is, no significant increase in adjusted R^2 values was observed owing to the introduction of the relevant dummy variables (the business person/manager category was used as the standard). This stands in contrast to Singer's (1996) observations, which indicated that even though the MC was important for both a managerial and a general public sample, it tended to be more so for the general public. Conversely, managers were more likely to be guided by peer evaluations and prevailing business practices (SC). The divergent finding of the present study—in combination with virtually identical adjusted R^2 values across the two studies—indicates that Singer's findings may not be particularly stable.

Finally, in line with expectations, the pattern of responses did not vary with the region of origin (again, no significant increase in adjusted R^2 values was observed owing to the introduction of the relevant dummy variables; New Zealand was used as the standard). As was suggested in the introduction, this may be due to the relatively greater homogeneity of users of electronic communication devices. Alternatively, one of the paper's reviewers noted that it is possible that the cultures represented in the study are relatively homogeneous (cf. Table 1).

Table 4
Means and Standard Deviations for All Variables

Variable	Survey Type	Scenario 1		Scenario 2		Difference (▲)	
		M	SD	M	SD	M	SD
MC	mail	8.77	4.37	13.78	3.74	5.01	4.67
	WWW	8.63	3.80	13.47	3.62	4.84	4.29
SC	mail	7.85	3.44	12.32	3.58	4.47	4.46
	WWW	7.21*	3.02	11.89*	3.40	4.68	4.39
LE	mail	10.33	3.58	14.19	3.05	3.86	3.97
	WWW	10.38	3.45	14.04	3.03	3.66	3.83
TI	mail	7.75	3.64	12.38	4.00	4.63	4.54
	WWW	7.59	3.32	11.96	3.85	4.37	4.29
CE	mail	10.46	1.86	10.93	2.00	0.47	2.37
	WWW	10.48	1.79	10.87	2.26	0.39	2.44
PR	mail	10.22	3.44	12.81	3.44	2.59	3.79
	WWW	10.24	3.47	12.61	3.45	2.37	3.79
OPPOSE	mail	3.84	2.49	7.01	2.36	3.17	2.64
	WWW	3.78	2.35	6.89	2.22	3.11	2.55
NOGO	mail	0.30	0.46	0.82	0.39	0.52	0.50
	WWW	0.37*	0.48	0.85	0.36	0.48	0.51
ISSUE	mail	6.11	2.44	7.32	2.02	1.21	2.41
	WWW	7.21*	1.94	7.74*	1.59	0.53*	1.62
WRONG	mail	4.07	2.40	6.75	2.39	2.68	2.65
	WWW	4.31	2.42	6.88	2.29	2.57	2.48

Note— Means and standard deviations for the six moral intensity variables stem from the sum of two 9-point items (positive values indicate greater perceived moral intensity). Those for the four primary response variables stem from one 9-point item (positive values indicate greater opposition, greater reluctance to go ahead, better recognition of ethical content, and greater perceived incorrectness of a go-ahead decision). MC, magnitude of consequence; SC, social consensus; LE, likelihood of effect; PR, proximity; OPPOSE, level of opposition; NOGO, decision (not) to go ahead; ISSUE, recognition of ethical content; WRONG, perceived ethical incorrectness of decision. *Difference between administration methods, $p < .05$.

Summary. In combination, the subject-specific quantitative findings confirm that variations in MI (in particular, MC, SC, and LE) have a very strong and consistent impact on several outcome variables associated with the ethical decision-making process in a business context. These results are essentially in accord with previous research employing more traditional research methods. Thus, the present study contributes to a growing body of evidence indicating that experiments and surveys administered via the WWW can yield valid and valuable results. In addition, the data indicate that MI consistently influences people from a range of occupational and cultural backgrounds. Note that, in view of the relatively homogenous sample, generalization of the latter finding beyond a WWW population requires additional supporting evidence using cross-cultural research that employs different methods of participant selection and experiment administration.

Conclusion

This paper reported the results of a WWW study investigating the influence of the concept of MI (Jones, 1991) on ethical decision making in a business context. A thematic analysis of e-mail responses sent in reaction to the questionnaire yielded a number of methodological insights and recommendations. Quantitative analysis of

the questionnaire scores showed negligible variations from a previous mail administration of the instrument. In addition, neither occupational background nor region of origin had an appreciable effect on scores.

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NOTES

1. Since then, a further study providing support for the concept of MI in the context of whistle blowing has appeared (Singer, Mitchell, & Turner, 1998). See also Franke, Crown, and Spake (1997) for an investigation of MI in the context of gender differences and social role theory and Bowes-Sperry and Powell (1996) for the application of an ethical decision-making perspective incorporating MI to the issue of sexual harassment.

2. The message contained full contact details and credentials and read as follows: "Dear friends/colleagues/acquaintances/Web Citizens—You are invited to participate in an Internet-based research project into certain aspects of decision making. I would be grateful if you were to spend about 15 minutes of your time to complete an experimental survey at http://www.massey.ac.nz/~btfrey/information_page.htm. As a small reward for your efforts, you will be able to collect the virtual equivalent of the New Zealand version of a chocolate fish at the end. I hope that you will lend me your support."

3. The low response rate of 9.8% may be partly attributable to the method of mailing (10 addresses per post); individually addressed invitations may be more effective.

4. Methodologically, this design feature raises the possibility of an order effect. There were two reasons for proceeding without counterbalancing for this possibility: First, with regard to complete counterbalancing, it was suspected that the use of high-MI versions as a base line for even higher MI versions might lead to ceiling effects. Second, given the low likelihood of an order effect across all different story pairs and two different scenarios, even partial counterbalancing would have increased the required number of participants to unacceptable levels.

5. The communication episode involving the one remaining dissatisfied respondent was reclassified into the appropriate subcategory (critique/method).

6. CE is a function of the MC and the number of affected people (NA), so that CE is high if a small number of people are affected strongly and low if a large number of people are affected slightly (Jones, 1991). Consequently, Δ CE was calculated by subtracting Δ NA from Δ MC and dividing the result by two.

7. Analysis of the raw scores afforded the opportunity to test more directly for the differences in the coefficients between the two administration methods by introducing relevant interaction terms into the equation (administration method $\times$ MI variables). Neither of the previously observed differences was found to be significant. In addition, even though the coefficients associated with two of the interaction terms were significant predictors of NOGO—administration method $\times$ TI (low-MI versions) and $\times$ PR (high-MI versions)—the additional explained amount of variation was negligible at only 1.10% and 0.20%, respectively.

APPENDIX

Experimental Vignettes

The scenarios were taken from Frey (2000). For the high-MI components, the text in square brackets replaced the corresponding underlined text or was inserted, as appropriate. The capital letters at the end of each square bracket denote the manipulated MI component: Number of affected people (NA) was used in combination with MC to calculate the CE.

Time Share Scenario

A good friend offers you the opportunity to become a partner in a very lucrative business venture that is to be set up in a town that is unknown to you [in your home town; PR]. It involves the marketing of 1-week time share holiday accommodation at a popular tourist destination. You are enthusiastic and decide to accept the offer. Initial sales go well [(even some of your friends buy into the scheme); PR] and you are beginning to make a considerable profit. However, you discover that most of the profit has been due to a certain amount of over-booking. You know that this is unlikely to be a problem, since there are often cancellations in this sort of venture [cancellations are relatively rare in this sort of venture, and that there is a good chance that the problem won't just go away; LE]. Even though the first guests are not expected to arrive at the resort for at least another 12 months [Since the first guests are expected to arrive at the resort within 2 weeks; TI], you decide to look into the matter. You find that if there are no cancellations, a very small [large; NA] number of your customers will face a small [very substantial; MC] additional payment on arrival at the resort. On the other hand, if the over-bookings are corrected now and there are additional cancellations, you are likely to suffer a serious loss. You also find that your customers were [not; SC] informed of the practice, and that the extent of overbooking is legal and part of accepted industry practice [according to industry standard, the extent of overbooking is indeed "way over the top"; SC].

Pollution Scenario

You have been hired by a large organization to help with the implementation of a new production facility in a town that is unknown to you [your home town; PR]. This is THE career opportunity you have been waiting for. However, a month before the operation is due to go ahead, you come across an internal report which could spell the end of the project and your job. The report suggests that long-term exposure (several years, possibly decades) [even brief exposure; TI] to the by-products of the production process may cause very mild and short-lived [very severe and long-lasting; MC] skin irritations in a very small [large; NA] number of individuals. You decide to make some additional inquiries, and find that the evidence on which this suggestion is based is very controversial, and questioned [reliable, and accepted; LE] by most experts in the area. You also find that the community of the town has been fully informed. There have been extensive and reliable local and national surveys, as well as several council meetings. The results have convinced you that there is still overwhelming support for [opposition against; SC] the planned operation to go ahead.

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