

**MORAL INTENSITY AS CATALYST FOR OPPORTUNITIES FOR SUSTAINABLE  
DEVELOPMENT**

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# **MORAL INTENSITY AS CATALYST FOR OPPORTUNITIES FOR SUSTAINABLE DEVELOPMENT**

## **ABSTRACT**

How entrepreneurs develop opportunities for sustainable development represents an important question. Current conceptions based on prior knowledge tend to overlook the nature and magnitude of the sustainability problem that the entrepreneur is trying to solve. Using an experimental design, we demonstrate that the moral intensity (MI) of the sustainability issue in question plays an instrumental role in guiding perceptions and inspiring action. MI moderates the relationship between prior knowledge and opportunity intention; participants with prior knowledge intend to pursue an opportunity only to the extent that they faced high level of MI. This finding offers important insights for further theoretical development and empirical research.

## INTRODUCTION

Sustainability entrepreneurs are seen as key actors in facing contemporary structural problems and supporting the creation of a more sustainable society (Cohen and Winn 2007; Dean and McMullen 2007; Tilley and Young 2009). They can resolve the current divide between profit-oriented venturing and philanthropic, non-profit endeavors in favor of a new business approach that simultaneously creates value for the economy, the society and the environment while contributing to the well being of future generations (Parrish 2010). Key to this approach is one's awareness of and engagement with the broader context of business decisions, which can help frame those decisions in terms that go beyond narrowly defined profit considerations to include the ethical and sustainability challenges inherent to their systemic reverberations.

At the heart of entrepreneurship, be it social, environmental or commercial, is the notion of opportunity (Doyle and Ho 2010). Thus, a central question for the field pertains to how entrepreneurs recognize, develop and exploit venture opportunities (Patzelt and Shepherd 2010). So far, scholars in the realm of sustainability have answered this question by drawing direct analogies from models of "traditional" entrepreneurs (Cohen and Winn 2007; Dean and McMullen 2007; Patzelt and Shepherd 2010). Accordingly, they see prior knowledge and market imperfections residing in environmental degradation or social injustice as the key explanatory factors. Such crude translation, however, leaves a gap related to the role of non-economic considerations and of the sustainability problem itself in mobilizing entrepreneurial action in pursuit of sustainability-oriented outcomes (Hall et al. 2010).

This paper addresses this gap by highlighting the role of moral intensity (Jones 1991) in the recognition and intention to pursue entrepreneurial opportunities that contribute to sustainable development. Moral intensity (MI) is an issue-contingent construct that seeks to capture the

degree of moral imperative in a situation. Given that ethical decisions are situational or issue-related (Singhapakdi et al. 1996), Jones (1991) argues that MI influences the moral decision process at each stage, i.e. moral recognition, judgment, intent and behavior (Rest 1986).

We build on the current premise in the literature that entrepreneurs are more likely to recognize opportunities for sustainable development when they have greater knowledge of the ecological and social environments and thus stronger perceptions that the environment in which they live is threatened (Patzelt and Shepherd 2010). We argue that this conception overlooks the nature and magnitude of the sustainability issue in question. Indeed, mere recognition of an opportunity does not necessarily translate into intention to pursue it, i.e. opportunity intention (Dimov, 2007). In the context of ecological and social wicked problems, research on ethical decision-making suggests that the moral intensity of the sustainability problem at stake plays an instrumental role in guiding perceptions and inspiring action (Jones 1991; May and Pauli 2002). Following this line of reasoning, we suggest that the level of MI has a positive relationship with opportunity intention and that the relationship between prior knowledge and opportunity intention materializes only under conditions of high MI. In the absence of high enough levels of MI, entrepreneurs may not activate their knowledge relevant to the issue at hand and, furthermore, may not find it compelling to address the issue in the name of sustainable development.

We test these predictions in an experimental design. Based on Jones's (1991) issue-contingent model and by means of the Perceived Moral Intensity Scale (Singhapakdi et al. 1996; Frey 2000; McMahon and Harvey 2006), the purpose of the design is to examine opportunity intention in the different combinations of high/low MI and high/low prior knowledge of a sustainability issue. Results show that the MI of the sustainability issue moderates the relationship between prior knowledge and opportunity intention. Participants with prior

knowledge intend to pursue an opportunity only to the extent that they faced high level of MI.

Our work makes two contributions to the entrepreneurship literature. First, it opens the black box that lies between prior knowledge and opportunity intention by articulating some of the reasoning that occurs in between. Awareness and prior knowledge of ecological and social environments may be necessary to trigger perceptions of opportunity, but such perceptions by themselves do not warrant entrepreneurial pursuit. While prior work has established that prior knowledge needs to be complemented by financial rewards or certain cognitive processes to produce opportunity insight and intention (Corbett, 2007; Dimov, 2007; Shepherd and DeTienne, 2005), we highlight the importance of the moral significance of the problem the entrepreneur is trying to solve in inspiring a sense of urgency and commitment to the perceived opportunities. Second, our work helps draw a more explicit distinction between entrepreneurs driven exclusively by economic considerations and those driven by ecological or social consideration. Although interest in sustainability-oriented entrepreneurship has spiked in recent years, theoretical development has not yet translated differences in the goals pursued into differences in the processes that underlie these pursuits. Our work thus highlights the moral intensity of the source of opportunity as a central consideration in pursuing opportunities for sustainable development.

## **THEORY AND HYPOTHESIS**

### **Pursuing opportunities for sustainable development**

The central idea behind the development of sustainable ventures is that the activities performed by entrepreneurs in the pursuit of gains must not undermine the ecological and social environments in which they operate; when necessary, they must restore or nurture such

environments toward recovering the balance between nature, society and economic activity (Parrish, 2010). This approach transcends the business case for sustainable development (Dyllick et al. 2002; Young et al. 2006; Tilley et al. 2009b), which aims primarily at improving the eco-efficiency of businesses by reducing their negative impact on nature and people. Rather, it seeks to generate social and environmental goods toward satisfying society's most pressing quality-of-life needs (Parrish, 2010), which in turn constitute an extensive source of venture opportunities (Cohen and Winn, 2007; Dean and McMullen, 2007; Doyle et al. 2010).

In this context, it is important to understand why particular individuals decide to pursue opportunities for sustainable development (Shepherd et al. 2011; Hall et al. 2010). This requires exploring what triggers the recognition of such opportunities and the intention to pursue them. Entrepreneurial intention, as a deliberate action (engagement in activities that follow the recognition of an opportunity) towards starting a new venture, is a central concept in entrepreneurship research. Intentions have proven the best predictor of planned behavior, in particular when this behavior emerge over time and involve considerable planning. In this vein, any planned behavior can be better predicted by observing intentions toward that behavior as opposed to attitudes, beliefs or personality (Krueger et al. 2000).

Extant models suggest that entrepreneurs vary in their ability to recognize opportunities for sustainable development based on their knowledge of ecological and social environments and the perceived threats to such environments (Patzelt and Shepherd, 2010). This argument is based on insights from studying “traditional” entrepreneurs, whereby opportunities arise from changes in the environment and their recognition is a function of the distribution of information in society and related to the information that entrepreneurs already possess (Shane, 2000). Thus, Patzelt and Shepherd (2010) argue that individuals who attend to the ecological environment are more likely to recognize changes in that environment and eventually the opportunities that arise from

environmentally relevant market imperfections. Likewise, individuals who attend to the social environment are more likely to recognize changes in that environment and eventually the opportunities that arise from socially relevant market imperfections. Therefore, compared to individuals whose attention is more focused on the business environment, those individuals are more likely to form beliefs about opportunities for sustainable development even if they show no intention to personally pursue such opportunities (Shepherd et al. 2011).

Conceptions based on prior knowledge tend to overlook the nature and magnitude of the sustainability issue in question. Although scholars recognize the relationship between the presence of entrepreneurial opportunities in environmentally relevant market failures and the magnitude of those environmental problems (Dean et al. 2007), they do not elaborate on the role that the variance in magnitude play in the recognition and intention of pursuing such opportunities, nor indicate the means by which the magnitude is perceived by potential entrepreneurs.

### **Entrepreneurial sustainability and moral cognition**

In advancing our understanding of the recognition of opportunities for sustainable development beyond the traditional notions of market failure (Cohen and Winn, 2007) and prior knowledge (Patzelt and Shepherd, 2010), considering the moral nature of decisions concerning sustainability (Dresner, 2008) provides a promising avenue. Environmental degradation, overpopulation, energy crisis and other sustainability problems represent serious threats to humans and other forms of life over the next decades (Bruntland 1987). Any endeavor aimed at solving these problems entails making decisions that involve two sometimes-conflicting dimensions: scientific facts and moral principles (Garvey 2008). Committing to sustainability is therefore not only about applying the right formulas and policies to help improve our current

wealth, but also about taking responsibility of equally distributing well-being, sacrifice and risks between rich and poor, humans and non-humans and present and future generations (Dresner 2008).

Incorporating the ideas of fairness, distributive justice and intergenerational equity in the equation of prosperity entails considering the possible consequences of our actions, and what we ought to do to foster our development without compromising the development of others; this falls within the scope of morality (Barry 1999). Given that acting upon environmental and social problems in the name of sustainability imposes moral dilemmas, sustainability problems necessarily constitute ethical issues. Facing them involves evaluating whether entrepreneurial agency is actually capable of addressing them without producing further harm. In light of the argument, we can assert that entrepreneurs act as moral agents facing a moral entrepreneurial imperative every time sustainability problems are considered or interpreted as venture opportunities.

In dealing with sustainability problems, entrepreneurs are therefore compelled to judge what course of action is morally right and which one is morally wrong, choose one and accept responsibility for its impacts. This means choosing, from among all possible courses of action in a given situation, the course of action that does not harm others but rather brings equal benefits to all social, economic and environmental actors. This has become a moral obligation (Beckerman 1999), and doing so requires using specific cognitive processes or decision-making patterns (Trevino 1992), different from the traditional protocols driven by utility and optimization (Dresner 2008). Entrepreneurial responses to social or environmental issues are therefore influenced to a great extent by moral reasoning patterns. This involves, in its first stages, the recognition of moral or ethical issues linked to these problems, and the evaluation of the potential positive or negative consequences that the new venture – emerging as a solution to



such problems - has for the well-being of others (Rest 1986; Trevino 1992).

Moral cognition is sensitive to the nature and severity of the sustainability problem at stake (Morris 1995). In this vein, entrepreneurial ethical decisions are primarily contingent upon the perceived characteristics of the sustainability issue in question, and therefore entrepreneurial ethical decision-making involves the collective assessment of those characteristics. Thus, the recognition of a business opportunity that leads to building a more sustainable society and the intention to pursue this opportunity are contingent on the nature of the sustainability problem under consideration. Drawing upon this argumentative line we propose a conceptual model of moral intensity and opportunity intention (Figure 1).

-- Insert Figure 1 about here --

### **Moral intensity, opportunity recognition and opportunity intention**

Current conceptions of opportunity recognition in a sustainability context (e.g. Patzelt and Shepherd 2010) suggest that people with similar experience and prior knowledge would react in relatively similar ways regardless of the nature and magnitude of the sustainability issue at hand, for example the difference between someone throwing a plastic bottle into the ocean or an oil company spilling thousands of barrels into the ocean. Sustainability problems vary in intensity and individuals' perceptions of such problems vary accordingly, leading them to recognize different levels of severity in the threats to ecological and social environments. This intensity plays an instrumental role in guiding perceptions and inspiring action (May and Pauli 2002), especially when it comes to decide what we ought to do – or what is the right thing to do - when the magnitude of the problem is high and when the magnitude of the problem is low. Prior research on environmental ethical decision-making (Flannery and Douglas 2000) shows that the intensity of the effects of the US metal-finishing industry's operations indeed moderates the

relationships between attitudes and managers' environmental ethical decision intentions. Given the moral components involved in decisions regarding sustainability issues (Dresner 2008), how individuals respond to different problems can be explained by the moral intensity (MI) of the sustainability issues at stake, which can dominate our attention and evaluative reasoning due to its salience and vividness (May and Pauli 2002).

Moral intensity (Jones 1991) is a construct that captures the extent of issue-related moral imperative in a situation; it is contingent upon and defined by the specific characteristics of the issue. Jones draws upon previous models of moral cognition (Rest, 1986; Trevino, 1986; Dubinsky et al. 1989; Ferrell et al. 1985; Hunt et al. 1986) and argues that MI affects all stages of the ethical-decision making process, i.e. recognition of the moral issue, moral judgment, moral intent and moral behavior. The basic idea is that when it comes to ethical decision-making, the process is likely to vary for a dilemma involving issues of major importance as for another dilemma of lesser importance (McMahon and Harvey 2007). In other words, ethical recognition, judgment, intent and behavior will be observed more frequently where issues of high MI are involved than where issues of low MI are involved. MI is likely to vary substantially from issue to issue, with a few sustainability issues achieving high levels and many sustainability issues achieving low levels (Jones 1991). Consequently, issues of high moral intensity will be recognized as ethical issues more often than those of low moral intensity (Singhapakdi et al. 1996).

MI is multidimensional, and its component parts are characteristics of the moral issue at hand. Jones (1991) establishes six components. *Magnitude of consequences* (MC) is the sum of the harms - or benefits - done to victims - or beneficiaries - of the moral act in question. *Social consensus* (SC) is the degree of social agreement that a proposed act is evil (or good). *Probability of effect* (PE) is a joint function of the probability that the act in question will

actually take place and the act in question will actually cause the harm (or benefit predicted). *Temporal immediacy* (TI) is the length of time between the present and the onset of consequences of the moral act in question - shorter length of time implies greater immediacy. *Moral proximity* (MP) is the feeling of nearness - social, cultural, psychological, or physical - that the moral agent has for victims - beneficiaries - of the evil - beneficial - act in question. *Concentration of effect* (CE) is an inverse function of the number of people affected by an act of a given magnitude.

In explaining MI and its connection to sustainability we will use the case of the BP *Deepwater Horizon* oil spill in the Gulf of Mexico in 2010. We use this extreme environmental disaster for illustration purposes only. This oil spill, which has been recognized as the largest accidental marine oil spill in history, caused extensive damage to marine ecosystems, covering an estimate of 3850 square miles, killing nearly 7000 animals and risking the life of more than 8000 species (MC). There is an extensive agreement within the scientific community on the negative effects and aftermath of this oil spill (SC), as evidenced in reports of the National Oceanic and Atmospheric Administration (NOAA, 2012). The pollution caused by the BP oil spill is certain to affect not only the subsistence of marine ecosystems, but also the health of people who live along the Gulf of Mexico, particularly of those of Louisiana (PE). The effects on humans were felt quickly, 5 months after the accident, chemicals found in the BP crude oil and dispersants have been identified as causing several deaths and a significant decreased in the lung capacity of some people in the area (TI). Blood samples from individuals in Florida, Alabama and Louisiana (MP) support a rising concern for the well being of other communities; specific samples from a group of nearby residents and BP cleanup workers show an extremely high concentration of solvents, four times higher than the 95th percentile (CE).

Based on MI's six components, the moral imperative of the BP oil spill is perceived as

higher than other accidents of similar nature. An example of an oil spill with lower moral intensity is one by Exxon Mobil in March 2013 in a suburban neighborhood in Mayflower, Arkansas. The spill of about 5000 barrels contaminated 22 homes and forced residents to evacuate. We would expect that the higher moral imperative of the BP oil spill affects and triggers the intention of some entrepreneurs in Louisiana toward mobilizing efforts and developing new ventures in the name of sustainability; who together with taking responsibility for (e.g.) cleaning up the ocean, recovering affected species or protecting the health of nearby residents will seek to obtain monetary benefits.

Individuals' perceptions of MI impact their recognition of issues as posing moral dilemmas and also affect ethical judgments and behavioral intentions regarding such issues (Barnett 2001). An entrepreneur's reaction to sustainability problems will be therefore triggered to a great extent by the moral components involved in such reaction, comprising its sensitivity to the moral significance of the problem, moral reasoning and volition, and ultimately a personal and collective evaluation of the consequences of pursuing a particular venture opportunity. Thus, the moral intensity of the sustainability problem represents a motivational catalyst for entrepreneurial action. Because behavioral intention involves a configuration of beliefs and desires (Ajzen, 1991), the perceived desirability of the opportunity at hand is a key pillar to entrepreneurial intentions (Krueger, 2000; Krueger et al., 2000). With a stronger moral imperative, entrepreneurs would exhibit a greater willingness to bear uncertainty (McMullen and Shepherd, 2006). This leads us to the following hypothesis:

***Hypothesis 1:** There is a positive relationship between the perceived moral intensity of the sustainability issue at hand and the intention to pursue a sustainability-oriented venture opportunity.*

Bhal and Dadhich (2011) recognize moral intensity as a force that compels an individual to make a moral or ethical decision; in this vein sustainability issues of high intensity are likely to be perceived as requiring higher levels of ethical interpretation as compared to issues of low intensity. In the end, “people’s best moral behavior is inspired by issues of substantial importance” (Jones 1991:392). As previously stated, MI affects all stages of the ethical decision making process, hence all cognitive processes involved in choosing a particular path of action or what we ought to do in a given situation. Alongside influencing the recognition of sustainability issues, MI plays a role in the evaluation of possible courses of action, making moral reasoning issue dependent (Haines et al. 2007). Moral reasoning, which connects information with intention and subsequently with action, varies from one issue to the other in proportion to the level of MI of the sustainability issue at stake (Jones 1991).

Based on these notions, we argue that although prior knowledge can contribute to the recognition of and intention to pursue an opportunity for sustainable development, this knowledge is triggered when the intensity of the sustainability problem at stake surpasses certain threshold. Thus, in situations where the sustainability problem presents low MI, it is less likely that an individual will perceive the problem as morally significant, recognize opportunities associated with or emerging from such situations, and exhibit the intention to pursue them. Conversely, in situations where the sustainability problem presents high MI, it is more likely that an individual will recognize and pursue a sustainability-oriented opportunity. Therefore, the entrepreneur’s knowledge structure that is relevant to the sustainability issue at hand is more likely to be recalled when the level of MI of this issue is high than when the level is low. This leads us to the following hypothesis:

***Hypothesis 2:** The perceived moral intensity of the sustainability issue at hand moderates the relationship between the entrepreneur’s knowledge of sustainability and the intention*

*to pursue a sustainability-oriented venture opportunity, such that the relationship is stronger at high levels of moral intensity and weaker at low levels of moral intensity.*

## **METHOD**

We test these predictions in an experimental design. Its purpose is to examine the systematic variation in opportunity intention across different combinations of moral intensity and prior knowledge of a sustainability issue. Based on our proposed model, we expect that participants would show higher opportunity intention when their higher prior knowledge is accompanied by high level of MI.

### **Study procedure and participants**

We operationalize and manipulate MI using Jones's (1991) issue-contingent model. The six components of MI, i.e. magnitude of consequences, social consensus, probability of effect, temporal immediacy, concentration of effect, and moral proximity, were manipulated to create two scenarios (Appendix 1) that are aimed to trigger high and low MI perceptions of a given issue. The scenarios were created using Frey's (2000) protocol, i.e. full factorial manipulation of all six MI components; and based on an actual description of the development of an entrepreneurial opportunity pursued by the American firm One Degree Solar in Africa. Scenarios are generally used as part of research instruments in ethics studies and are considered to be a good mechanism to improve the quality of survey methods (Singhapakdi et al. 1996).

We operationalized and manipulated prior knowledge by giving some of the participants pertinent information about sustainability. The information package draws upon the most salient conclusions of the 1987 World Commission on Environment and Development: Our Common Future (Appendix 2). Each piece of information was followed by a piece of irrelevant

information that is intended to distract the participants and suppress the immediacy of the provided relevant information.

We created four versions of the experiment, based on the full 2x2 combinations of the manipulated MI and prior knowledge conditions. The experiment was conducted online by means of a survey whereby each of the potential respondents was randomly assigned to one of the four versions of the experiment. 87 business school students, from a population of 274 enrolled in four undergraduate and graduate entrepreneurship courses, took part in the experiment. The participants represented a diverse group of individuals: 48% women and 52% men, average age of 23 years, and 45% with prior entrepreneurial experience.

### **Manipulation check**

*Moral intensity.* We manipulated moral intensity by randomly assigning the participants to a scenario with high or low MI. In Jones's original conceptualization, MI does not include traits of moral decision makers, however, with the aim of operationalizing the construct, more recent studies (e.g. McMahon and Harvey 2006) treat MI as part of the perception of the moral agent. In line with these studies, we consequently assume that moral intensity is subjective and thus the evaluation of moral imperative is in the eye of the beholder. As such, we check this manipulation by means of a 12-item Perceived Moral Intensity Scale (PMIS) adapted from Singhapakdi et al. (1996), Frey (2000) and McMahon and Harvey (2006). It measures perception of the moral significance of a given situation. The perceptions of each of the six moral intensity components were measured using two items for each component. The items use a 5-point Likert scale (1 = strongly disagree; 5 = strongly agree). Six items (one for each MI component) were reverse scored. Given that the six components capture different facets of MI, the PMIS measure is formative rather than reflective in nature. We calculated an overall MI score based on the

average of the 12 items. Comparing the MI scores across the two scenarios revealed significant difference between the two (3.28 vs. 3.12,  $p < .05$ ), in line with our manipulation.

*Prior knowledge.* To check our knowledge manipulation, at the end of the survey we asked participants three questions regarding their degree of familiarity with three themes related to sustainability: (1) the main components of sustainable development, (2) the current and potential effects of an unsustainable development, and (3) the basic requirements to become a more sustainable society. This three-items had high reliability ( $\alpha=.88$ ). Comparing the scores on this scale across the two manipulated conditions revealed differences (4.58 vs. 4.16,  $p < .10$ ) in line with our manipulation.

### **Dependent variable**

We measured opportunity intention using the scale introduced by Dimov (2007). It consists of five items that record the likelihood of the respondents engaging in five activities that can immediately follow the recognition of an opportunity: (1) spend some time outlining a business plan for the pursuit of the opportunity; (2) discuss the opportunity with potential investors; (3) discuss the opportunity with friends, colleagues, or advisors; (4) seek potential partners for exploiting the opportunity; and (5) invest some of your own money in researching the viability of the opportunity. The scale exhibited high reliability ( $\alpha=.81$ ).

### **Control variables**

We collected information on five individual characteristics in order to deal with unobserved heterogeneity among the participants and thus rule out other possible explanations, particularly related to the role of experience and connection to sustainability in guiding the intention of starting a new business based on the identified opportunity. In addition to the age



and gender of the participants, we measured their *entrepreneurial experience* by whether the respondent had started a new business in the past. *Prior work experience* was measured by the sum of indicators for work experience in different types of organizations: public sector or government organization, private sector organization, [SEP]cooperative, social/civic organization, charity, and [SEP]other not-for-profit organization. We measured *prior sustainability experience* by whether the respondents had work experience and formal training in 9 key areas: corporate sustainability, corporate social responsibility, environmental management, social entrepreneurship, renewable energy, environmental law, triple bottom line accounting, earth and environment, socioeconomic development. Finally, we measured the respondent's entrepreneurial intention – the general desire to start a business (at some point in time), as distinguished from the intention to pursue a particular opportunity (Dimov 2007) – using the scale by Liñán and Chen (2009). The scale exhibited high reliability ( $\alpha=.93$ ).

Given the random assignment of respondents to one of four scenarios, all these characteristics except entrepreneurial intention were evenly distributed across the manipulated scenarios (i.e. there were no statistically significant differences in these characteristics across the scenarios). However, in view of the systematic variation in entrepreneurial intention, we included entrepreneurial intention as covariate in our analyses in order to tease out its possible interference with opportunity intention.

## RESULTS

The descriptive statistics and correlations are shown in Table 1. We used OLS regression for our estimation of opportunity intention as a function of prior knowledge, MI, and entrepreneurial intention. All the assumptions for the unbiasedness and efficiency of OLS estimation – such as homoscedasticity and normal distribution of errors, and lack of collinearity

– were met. The OLS estimation results are shown in Table 2. In Model 1 we enter the three main effects and in Model 2 we add the interaction effect of prior knowledge and MI. None of the effects of interest in Model 1 and 2 are significant.

Although our manipulation check showed that the perceived MI of the high-intensity scenario was higher overall, the closeness of the two scores (3.28 vs. 3.12) suggests variability within the scenario. Indeed, some of the participants perceived the issue that we presented under low moral intensity to be of high moral intensity; and vice versa. This interspersed high and low scores for moral intensity across the two scenarios effectively suppresses the effect of moral intensity as represented by the respective scenario. In this regard, our measure of moral intensity contains much more information than revealed through the scenarios themselves.

In order to make full use of this information, in Models 3 and 4 we used the actual score on MI from the PMIS measure as the MI variable and re-estimated the results. In Model 3, the main effect of prior knowledge was positive and marginally significant ( $\beta = 0.28, p < .10$ ) while the main effect of MI was positive but not significant. This result provides no support for Hypothesis 1. In Model 4, the interaction effect of prior knowledge and MI was positive and significant ( $\beta = 1.66, p < .01$ ); it increased the explanatory power of the model ( $\Delta R$ -square = 0.07,  $p < .01$ ). In order to understand the nature of the interaction, we plotted the effect of prior knowledge on opportunity intention under high and low MI (one deviation above and below the mean, respectively). Figure 2 illustrates the interaction plot. As the plot shows, the effect of prior knowledge on opportunity intention is relatively flat (and even negative) under low MI and positive under high MI. This provides support for Hypothesis 2.

-- Insert Table 1,2, and Figure 2 about here --

## DISCUSSION

In this paper, we sought to refine existing conceptions of opportunity recognition in relation to sustainable development. Moving from economic to non-economic goals brings to the fore the moral considerations in regard to the business choices and actions at hand. We therefore introduce and highlight the role of moral intensity (MI) in the recognition and pursuit of sustainability-oriented entrepreneurial opportunities. Building on existing work that links opportunity recognition and intention to awareness and prior knowledge of ecological and social environments and thus stronger perceptions of environmental threats (Patzelt and Shepherd 2010), we argue that the perceived MI of the sustainability issue moderates the relationship between prior knowledge and opportunity intention. We test this relationship in an experimental setting and find some support for the hypothesis that prior knowledge is positively associated with opportunity intention only under high levels of MI.

Our contribution to the entrepreneurship literature lies in opening the black box that lies between prior knowledge and opportunity recognition and intention. Awareness and prior knowledge of ecological and social environments may be necessary to trigger perceptions of opportunity but they alone are not sufficient to inspire entrepreneurial action in pursuit of such opportunities. While prior work has established that prior knowledge needs to be complemented by financial rewards or certain cognitive processes to produce opportunity insight and intention (Corbett 2007; Dimov 2007; Shepherd and DeTienne 2005), we highlight the importance of moral considerations in inspiring commitment to opportunities that entrepreneurs may face. Such considerations have lied at the boundary of current work because this work has dealt mostly with “traditional” entrepreneurs oriented towards economic returns.

In the context of diversity of motivations for becoming an entrepreneur (Carter et al. 2003), our work shifts attention to the motivational processes that underlie opportunity intention in the context of sustainability. Because sustainability problems vary in their intensity, the severity of

the threats to ecological and social environments plays an instrumental role in guiding perceptions and inspiring action (May and Pauli 2002). In this regard, the action considerations of sustainability entrepreneurs have a moral component that informs the urgency and potential impact of entrepreneurial action. Although moral intensity is largely seen as an exogenous factor related to the issue at hand, our results raise the possibility of endogenous determination. In our empirical setting, what we presented as an issue of low moral intensity stirred stronger moral judgments in some of the respondents and thus inspired intentions to act entrepreneurially in behalf of its alleviation. This raises speculation about the personal baseline against which perceptions of moral intensity. As designers of the study, we were privy to the existence of an issue of higher moral intensity. But the respondents who were presented only with the low moral intensity scenario might have seen it against the backdrop of their personal circumstances, in which the described issues are non-existent. Against such background, even minor moral dilemmas can appear compelling and inspiring of entrepreneurial action. This represents an exciting opportunity for further research into this topic.

Another contribution of our work pertains to drawing a more explicit distinction between entrepreneurs driven exclusively by economic considerations and those driven by ecological or social consideration. Although interest in social and sustainability-oriented entrepreneurship has spiked in recent years, theoretical development has not yet translated differences in the goals pursued into differences in the processes that underlie these pursuits. Our work has highlighted the moral intensity of the source of opportunity as central consideration in pursuing opportunities for sustainable development.

There are limitations of our work as well as opportunities for further research. First, the experimental design of the study implies that no direct generalizations can be made from the study. Rather, our main contribution is to theory of opportunity recognition and intention, which

can in turn be applied to understand particular cases in real settings. Second, given that we test the effect of all factors simultaneously, some of the manipulations of dimensions of moral intensity may have also created variance in the quality of the opportunity in terms of traditional entrepreneurial concerns. In this sense, for example, concentration of effect may also impact the size of the potential market for the opportunity under consideration. Opening up Jones's model and testing the interaction effect of each of the six factors on the relationship between knowledge-intention offers opportunities for future research. Isolating the variables can certainly provide a deeper understanding of the determinants of sustainable entrepreneurial action. Third, our experimental manipulation of moral intensity did not create a sharp enough distinction between the high- and low-intensity scenarios. This suggests that moral intensity is a function not only of the objective characteristics of the social or ecological problem, but also on the individual perceptions of the potential entrepreneurs facing them. These perceptions can in turn be driven by the particular reference points – emerging from personal experience or concurrent issues– that individuals have in judging a problem to be of high or low moral intensity. Thus, different individuals may judge the same issue differently. Future research can explore the nature and determinants of the reference points for moral intensity.

In conclusion, sustainability entrepreneurship as a research field is in its beginnings and it is our hope that this paper helps to advance its development. This model brings to light the relevance of the sustainability issue in itself in producing variance across entrepreneurs in their ability to recognize opportunities for sustainable development. By incorporating moral intensity into the discussion, we encourage explicit recognition and theorizing around the moral aspects of entrepreneurship, in which sustainability entrepreneurs are most likely to differ from their “traditional” counterparts.



## REFERENCES

- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50, 179–211.
- Barnett, T. (2001) Dimensions of moral intensity and ethical decision making: An empirical study. *Journal of Applied Social Psychology*, 31(5), 1038–1057.
- Barry, B. (1999) Sustainability and Intergenerational Justice. In Dobson, A. *Fairness and Futurity: Essays on Environmental Sustainability and Social Justice*. Oxford: Oxford University Press. 93-117.
- Beckerman, W. (1999) Sustainable Development and Our Obligations to Future Generations. In Dobson, A. *Fairness and Futurity: Essays on Environmental Sustainability and Social Justice*. Oxford: Oxford University Press. 71-92.
- Bhal, K. and Dadhich, A. (2011) Impact of Ethical Leadership and Leader–Member Exchange on Whistle Blowing: The Moderating Impact of the Moral Intensity of the Issue. *Journal of Business Ethics*, 103(3), 485–496.
- Bruntland, GH (1987) *Our Common Future*. Oxford: Oxford University Press.
- Carter, N. M., Gartner, W. B., Shaver, K. G., and Gatewood, E. J. (2003) The career reasons of nascent entrepreneurs. *Journal of Business Venturing*, 18, 13-39.
- Cohen, B. and Winn, M. (2007) Market imperfections, opportunity and sustainable entrepreneurship. *Journal of Business Venturing*, 22(1), 29-49.
- Corbett, A.C. (2007). Learning asymmetries and the discovery of entrepreneurial opportunities. *Journal Business Venturing*, 22(1), 97–118.
- Dean, T. and McMullen, J. (2007) Toward a theory of sustainable entrepreneurship: Reducing environmental degradation through entrepreneurial action. *Journal of Business Venturing*. 22(1), 50-76.
- Dimov, D. (2007). From opportunity insight to opportunity intention: The importance of person-situation learning match. *Entrepreneurship Theory and Practice*, 31(4), 561-583.
- Doyle, P. and Ho, M. (2010) How Opportunities Develop in Social Entrepreneurship. *Entrepreneurship Theory and Practice*, 34(4), 635–659.
- Dresner, S. (2008) The Ethics of Sustainability In Dresner, S. *The Principles of Sustainability*, 2nd edition. London: Earthscan. 129-144.
- Dubinsky, A. and Loken, B. (1989) Analyzing ethical decision making in marketing. *Journal of Business Research*, 19(2), 83-107.
- Dyllick, T. and Hockerts K. (2002) Beyond the business case for corporate sustainability. *Business Strategy and the Environment*, 11(2), 130-141.
- Eckhardt, J. and Shane, S. (2003) Opportunities and entrepreneurship. *Journal of Management*, 29(3), 333-349.
- Ferrell, O. and Gresham, L. (1985) A contingency framework for understanding ethical decision making in marketing. *Journal of Marketing*, 49(3), 87-96.
- Flannery, B.L. and Douglas, R. 2000. Environmental ethical decision making in the U.S. metal-finishing industry. *Academy of Management Journal*, 43(4), 642–662.

- Frey, B. (2000) The impact of moral intensity on decision making in a business context. *Journal of Business Ethics*, 26, 181–195.
- Garvey, J. (2008) *The Ethics of Climate Change: Right and Wrong in a Warming World*. London: Continuum International.
- Gregoire, D. Shepherd, D. and Schurer Lambert, L. (2010) Measuring Opportunity-Recognition Beliefs: Illustrating and Validating an Experimental Approach. *Organizational Research Methods*, 13(1), 114–145.
- Haines, R. Street, M. and Haines, D. (2007) The Influence of Perceived Importance of an Ethical Issue on Moral Judgment, Moral Obligation, and Moral Intent. *Journal of Business Ethics*, 81(2), 387–399.
- Hall, J. Daneke, G. and Lenox, M. (2010) Sustainable development and entrepreneurship: past contributions and future directions. *Journal of Business Venturing*, 25(5), 439-448
- Harris, J. Sapienza, H. and Bowie, N.E. (2009) Ethics and entrepreneurship. *Journal of Business Venturing*, 24(5), 407–418.
- Hunt, S. and Bitell, S. (1986) A general theory of marketing ethics. *Journal of Macromarketing*. 6(1), 5-16.
- Jones, T. (1991) Ethical Decision Making by Individuals in Organizations: An Issue-Contingent Model. *Academy of Management Review*, 16(2), 366–395.
- Krueger, N.F. (2000). The cognitive infrastructure of opportunity emergence. *Entrepreneurship Theory and Practice*, 24, 5–23.
- Krueger, N.F., Reilly, M.D. and Carsrud, A.L., (2000) Competing models of entrepreneurial intentions. *Journal of Business Venturing*, 15(5), 411–432.
- Kuckertz, A. and Wagner, M. (2010) The influence of sustainability orientation on entrepreneurial intentions - investigating the role of business experience. *Journal of Business Venturing*, 25(5), 524-539
- Liñán, F. and Chen, Y-W. (2009) Development and Cross-Cultural Application of a Specific Instrument to Measure Entrepreneurial Intentions. *Entrepreneurship Theory and Practice*, 33(3), 593-617.
- May, D. and Pauli, K. (2002) The Role of Moral Intensity in Ethical Decision Making: A Review and Investigation of Moral Recognition, Evaluation, and Intention. *Business & Society*, 41(1), 84-117.
- McMahon, J. and Harvey, R. (2006) An Analysis of the Factor Structure of Jones' Moral Intensity Construct. *Journal of Business Ethics*, 64(4), 381–404.
- McMahon, J. and Harvey, R. (2007) The Effect of Moral Intensity on Ethical Judgment. *Journal of Business Ethics*, 72(4), 335–357.
- McMullen, J.S. and Shepherd, D.A. (2006). Entrepreneurial action and the role of uncertainty in the theory of the entrepreneur. *Academy of Management Review*, 31, 132–152.
- Morris, S. (1995) The role of moral intensity in moral judgments: An empirical investigation. *Journal of Business Ethics*, 14, 715–726.



- NOAA (2012) NOAA Deepwater Horizon/BP Oil Spill Archive. National Oceanic and Atmospheric Administration. Available at <http://response.restoration.noaa.gov/deepwaterhorizon>.
- Patzelt, H. and Shepherd, D. (2010) Recognizing opportunities for sustainable development'. *Entrepreneurship Theory and Practice*, 35(4), 631-652.
- Rest, J. (1986) *Moral Development: Advances in Research and Theory*. New York: Praeger.
- Shane, S. (2000) Prior knowledge and the discovery of entrepreneurial opportunities. *Organization Science*, 11(4), 448-469.
- Shepherd, D. and DeTienne, D. (2005) Prior knowledge, potential financial reward, and opportunity identification. *Entrepreneurship Theory and Practice*, 29(1), 91-112.
- Shepherd, D. and Patzelt, H. (2011) The new field of sustainable entrepreneurship: studying entrepreneurial action linking "what is to be sustained" with "what is to be developed". *Entrepreneurship Theory and Practice*, 35(1), 137-163.
- Singhapakdi, A. Vitell, S. and Kraft, K. (1996) Moral Intensity and Ethical Decision-making of Marketing Professionals. *Journal of Business Research*, 36, 245-255.
- Tilley, F. and Young, W. (2009b) Sustainability entrepreneurs: could they be the true wealth generators of the future? *Greener Management International*. 55, 79-92.
- Trevino, L. (1992) Moral reasoning and business ethics: Implications for research, education, and management. *Journal of Business Ethics*, 11, 445-459.
- WCED (1987) *Report of the World Commission on Environment and Development: Our Common Future*. New York: United Nations
- Young, W. and Tilley, F. (2006) Can businesses move beyond efficiency? the shift toward effectiveness and equity in the corporate sustainability debate. *Business Strategy and the Environment*, 15(6), 402-415.

## **APPENDIX 1: Experimental vignettes**

Two scenarios were created allowing independent manipulation of the six components of MI. For the high MI components, the text in square brackets replaced the corresponding italicized text. The capital letters at the end of each square bracket denote the manipulated MI component.

### *Changing the lighting system*

Rural customers around the world spend a considerable amount of their monthly income on traditional replacement lighting systems, primarily based on kerosene. It is an interesting market but this source of energy is sometimes dirty and inefficient, and the alternative of building a grid extension is extremely expensive. It seems that there is a space in the market to offer rural households a better deal for their money.

You are business graduate looking for a career path that allows you to have flexibility, do something important and be financially independent; and overall this seems to be the opportunity you have been looking for. One day, you come across the chance of offering an alternative lighting system that can answer this need. You have been told that there are customers in a *large rural region* [small town: CE] that *is unknown to you* [you know because some of your friends come from there: PR] willing to change their current lighting system. After considering a few possible routes, you come to the conclusion that offering a renewable energy lighting system and an improved kerosene lighting system are equally attractive alternatives.

In thinking about these circumstances you decide to make some additional inquiries. After a

while you find that the situation with the current energy source affects *a large group of people* [among others, a small group of people who are known by your friends, CE], and that the gases produced by kerosene have a *very mild and short-lived* [very severe and long-lasting; MC] effect, which might occur *only after long-term exposure (several years, possibly decades)* [even after brief exposure (few months, even weeks): TI]. *In some cases it is even unlikely to occur* [This is highly likely to occur: PE]. The evidence on which this information is based is reliable, and accepted by most of the experts in the area. The people in the *region* [town: CE] have been fully informed. They are aware of this situation, and there *are still some doubts about* [is an overwhelming agreement on: SC] the urgency and relevance of considering different alternatives.

## **APPENDIX 2: Information of sustainability**

Sustainability and sustainable development finally came to prominence in 1987, when the United Nations World Commission on Environment and Development published its report ‘Our Common Future’. The central recommendation of this document was that the way to square the circle of competing demands for environmental protection and economic development was through a new approach: sustainable development.

They define sustainable development as the development that meets the needs of the present without compromising the ability of future generations to meet their own needs. This definition contains within it two key components: (1) the concept of needs, in particular the essential needs of the world’s poor, to which overriding priority should be give; and (2) the idea of limitations imposed by the state of technology and social organization on the environment’s ability to meet present and future needs.

The concept of sustainable development can be interpreted in many different ways, but at its core is an approach to development that looks to balance different, and often competing, needs against an awareness of the environmental, social and economic limitations we face as a society. All too often, development is driven by one particular need, without fully considering the wider or future impacts. We are already seeing the damage this kind of approach can cause, from large-scale financial crises caused by irresponsible banking, to changes in global climate resulting from our dependence on fossil fuel-based energy sources. The longer we pursue unsustainable development, the more frequent and severe its consequences are likely to become, which is why we need to take action now. Living within our environmental limits is one of the central

principles of sustainable development. One implication of not doing so is climate change.

But the focus of sustainable development is far broader than just the environment. It's also about ensuring a strong, healthy and just society. This means meeting the diverse needs of all people in existing and future communities, promoting personal wellbeing, social cohesion and inclusion, and creating equal opportunity.

In order to become more sustainable, it is important to have an agreed set of principles that can be used as a basis for co-ordinated policies, strategies and action plans. Two areas are relevant for securing the future: (1) Living within environmental limits: respecting the limits of the planet's environment, resources and biodiversity – to improve our environment and ensure that the natural resources needed for life are unimpaired and remain so for future generations. (2) Ensuring a strong, healthy and just society: meeting the diverse needs of all people in existing and future communities, promoting personal wellbeing, social cohesion and inclusion, and creating equal opportunity.

**TABLE 1: Descriptive Statistics and Correlations (N = 87)**

	Mean	St. Dev.	1	2	3	4
1 Opportunity Intention	3.72	0.76	1.00			
2 Prior Knowledge	0.38	0.49	0.09	1.00		
3 Moral Intensity (score)	0.41	0.50	0.10	0.06	1.00	
4 Moral Intensity (scenario)	3.19	0.31	0.08	-0.11	0.25	1.00
5 Entrepreneurial Intention	3.54	0.99	0.37	-0.21	-0.07	0.08

Note: correlations with an absolute value greater than 0.2 are significant at  $p < .05$

**TABLE 2: OLS Estimation of Opportunity Intention**

	MI based on Scenario				MI based on Score			
	Model 1		Model 2		Model 3		Model 4	
	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.
Constant	2.39	(0.32) ***	2.41	(0.33) ***	1.96	(0.84) *	3.25	(0.93) ***
Entrepreneurial Intention	0.32	(0.08) ***	0.32	(0.08) ***	0.32	(0.08) ***	0.27	(0.08) ***
Prior knowledge	0.27	(0.16)	0.23	(0.22)	0.28	(0.16) +	-4.97	(1.90) *
Moral Intensity (MI)	0.19	(0.15)	0.15	(0.20)	0.17	(0.25)	-0.18	(0.27)
Prior knowledge x MI			0.09	(0.32)			1.66	(0.60) **
R-square	0.18		0.18		0.17		0.25	
$\Delta$ R-square			0.00				0.07 **	
N	86		86		86		86	

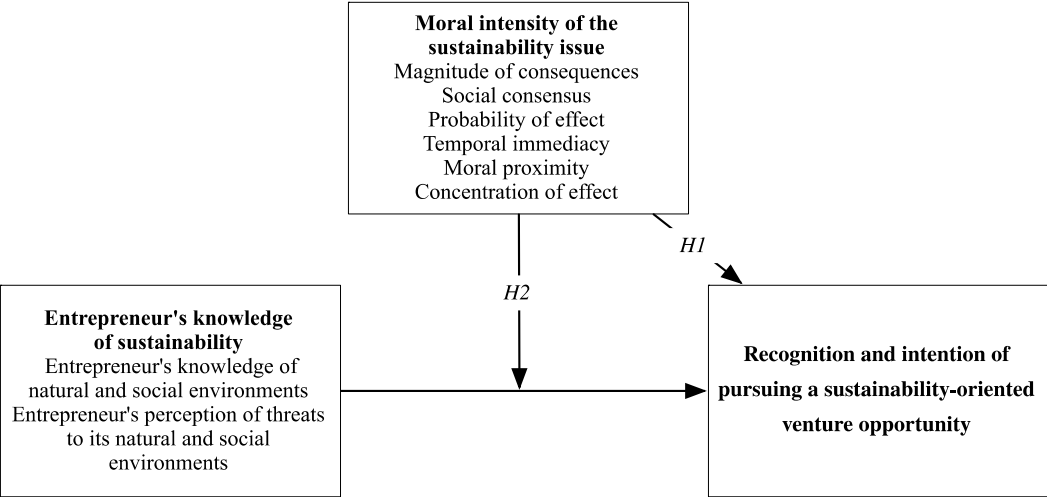
+ p < .10

\* p < .05

\*\* p < .01

\*\*\* p < .001

**FIGURE 1: Conceptual model of moral intensity and opportunity intention**





**FIGURE 2: Interaction Effect of Prior Knowledge and Moral Intensity (MI) on Opportunity Intention.**

