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Educating for self-interest or -transcendence? An empirical approach to investigating the role of moral competencies in opportunity recognition for sustainable development

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Abstract

Entrepreneurship education with a focus on sustainable development primarily teaches students to develop a profit-driven mentality. As sustainable development is a value-oriented and normative concept, the role of individual ethical norms and values in entrepreneurial processes has been receiving increased attention. Therefore, this study addresses the role of moral competence in the process of idea generation for sustainable development. A mixed method design was developed in which would-be entrepreneurs were subjected to a questionnaire (n = 398) and to real-life decision-making processes in a case assignment (n = 96). The results provide stepping stones for implementing (moral) competencies in entrepreneurship education as a possible avenue to move away from a sole focus on a profit-driven mentality.

1 | INTRODUCTION

Sustainable development has become one of the most prominent challenges of our time, and entrepreneurial action is increasingly seen as a promising way to preserve ecosystems, counteract climate change, reduce environmental degradation and maintain biodiversity (Dean & McMullen, 2007; Patzelt & Shepherd, 2011). The term "sustainable entrepreneurship" can therefore be seen as an overarching way of looking at the contribution of entrepreneurship to social, ecological and economic issues and has gained importance over the years (Schaltegger & Wagner, 2011). Nevertheless, entrepreneurship education is still mostly tailored towards a profit-first mentality, in which social and environmental outcomes are subordinate to economic gains (Lackéus, 2015). As a response to criticism of the "profit-first" mentality of business schools and increased attention to sustainable entrepreneurs as the change agents of our time, more and more higher education institutes are introducing sustainable entrepreneurship educational programmes in their curricula (Lackéus, 2015; Lourenço, Jones, & Jayawarna, 2013).

Whereas the focus in "traditional" entrepreneurship education (EE) is on the development of entrepreneurial intentions, competence, behaviour and culture, sustainable entrepreneurship seems to go further by also taking into consideration other effects and the complexity of behaviour and decisions in a future-oriented and global perspective of responsibility (Rieckmann, 2012). But what exactly makes "traditional" EE different from EE that integrates sustainable development? One distinct difference lies in the type of learning outcomes it aspires to; in other words, the competencies—that is, the integration of knowledge, skills and attitudes—that are central in such programmes or curricula. The key thing is that the concept of sustainability is value-oriented and normative since it addresses the question of how social-ecological systems *ought* to be developed in order to achieve a balance between economic, social and environmental aspects in (business) practices (Rockström et al., 2009; Swart, Raskin, & Robinson, 2004). The development of individual (ethical) values and norms related to others (either socially or environmentally oriented) is therefore considered as an essential outcome of EE that integrates sustainable development.

Nevertheless, there seems to be an inherent paradox when it comes to educating for sustainable entrepreneurship. Sustainable entrepreneurship requires individuals to be focused on gains that are oriented towards others (i.e., self-transcendence) while also

being oriented to gains for themselves (i.e., self-interest) (Blok, 2018; Lourenço et al., 2013). Although recent studies suggest that it is worthwhile introducing sustainable development content into entrepreneurship education programmes (Hall, Daneke, & Lenox, 2010; Kuckertz & Wagner, 2010), it is not clear how entrepreneurial learners (e.g., students) manage both interests related to sustainability and entrepreneurship (Gibb, 2002). This study will address the tension between self-transcendence and self-interest in the early stages of the entrepreneurial processes. One way of doing this is to take a competence perspective. In this stream of literature, there is increasing interest in competencies that emphasize reflection and tap into value systems (Delamare Le Deist & Winterton, 2005) and are often described and labelled as moral or ethical competence. As it is not clear how these moral competencies manifest themselves in the early stages of the entrepreneurial process, a competence perspective is used to investigate the role of moral competence in an activity that is characteristic for this early stage, namely that of idea generation for sustainable development.

The main research question of this article is therefore as follows: "What role does moral competence play in the process of opportunity recognition for sustainable development?"

To answer the main research question, a mixed method study design was developed and implemented at two different higher education institutions in the Netherlands. The first study addresses self-perceived levels of moral competence by means of a survey and the second study addresses the role of moral competence in the process of idea generation for sustainable development by means of a problem-based case assignment.

This is one of the first studies that empirically shows the significant role moral competencies play in the process of idea generation for sustainable development. Therefore, the outcomes of this study fuel the theoretical discussion on the strong need for higher education institutions to make a transition a profit-first mentality, towards a new logic in which sustainability is not seen as a loss. Furthermore, the mixed method study design can be seen as one of the contributions to the field of entrepreneurship education as well. Competence research mostly focuses on either conceptual contributions or on quantitative empirical work. By both quantitatively and qualitatively showing how the two moral competencies are employed within the opportunity recognition process, a unique insight into these competencies is revealed. For practice, better insight into the entrepreneurial process provides teachers with evidence-informed stepping stones for teaching, facilitating and developing sustainable entrepreneurship among latent, early stage and nascent entrepreneurs. The case study developed for this research could be used in different educational settings to bring real-life decision-making processes into the classroom.

2 | THEORETICAL FRAMEWORK

2.1 | Entrepreneurship education

Although entrepreneurship education has been around for a long time (according to some its intellectual underpinnings are more than 100 years old), the research field is very young (Kuratko, 2005). What is clear is that the offerings of EE worldwide have increased enormously over the last decades (in the USA, there were approximately 250 entrepreneurship programmes in 1985; in 2008, there were already over 5,000 programmes, with the numbers still increasing each year [Morelix, 2015]). Overall, practitioners, policy makers and also scientists seem to be convinced about the positive impact of EE; EE seems to be beneficial for the development of all sorts of early stage entrepreneurial outcomes, for instance entrepreneurial intentions, skills and attitudes (Bae, Qian, Miao, & Fiet, 2014; Martin, McNally, & Kay, 2013). However, meta-analyses and systematic reviews also highlight methodological weaknesses (e.g., lack of control groups) in EE studies and, from an educational sciences point of view, lack of detailed reporting on alignment between teaching/learning objectives, delivery mode and impact assessment mode (Kamovich & Foss, 2017). Moreover, Kamovich and Foss (2017) clearly conclude in their systematic review that research on the impact of EE has raced ahead of the theory necessary to confirm and explain it. One area—which informs EE on a practical as well as theoretical level—in which much progress has been made during the last 5 to 10 years is that of the development of competence frameworks. Such frameworks have been developed for general EE (e.g., Man, Lau, & Chan, 2002; Mitchelmore & Rowley, 2010; Morris, Webb, Fu, & Singhal, 2013) as well as for adjacent or more specific fields like intrapreneurship (Hayton & Kelley, 2006), corporate social responsibility (Osagie, Blok, Wesselink, & Mulder, 2016) and sustainable entrepreneurship (Lans, Blok, & Wesselink, 2014; Ploum, Blok, Lans, & Omta, 2017). What is important to note is that these competence frameworks stem from modern, integrative, comprehensive approaches to competence (Delamare Le Deist & Winterton, 2005; Mulder, 2014). "Integrated" refers to a cohesive and complex set of knowledge, skills, attitudes and their embeddedness within the context in which successful performance has to take place (Mulder, 2014). Within these modern competence frameworks, there is increasing interest in competencies that emphasize reflection and tap into value systems (Delamare Le Deist & Winterton, 2005) and in such studies are often described and labelled as moral or ethical competencies.

2.2 | The concept of moral competence

Moral competence, used interchangeably in the literature with ethical competence, has its roots in the business ethics literature (cf. Jones, 1991; O'Fallon & Butterfield, 2005). From this perspective, moral competence is described as "the sensitivity of managers and professionals to moral issues in their organizational structures followed by moral judgment and actions" (Pohling, Bzdok, Eigenstetter, Stumpf, & Strobel, 2016, p. 2). Specifically, it means the ability to consistently behave according to accepted ethical principles (Kim & Kim, 2013). Moral competence can help leaders gain a competitive advantage by motivating employees (Lennick & Kiel, 2005) because it enhances employees' perceptions of justice (Folger, 1998). Dopper, Interface and Impossible Foods Inc. (among many others) are positive

examples of how moral competencies can play an important role in "doing business" within entrepreneurial firms and how important it is to develop moral competence among individuals.

Pohling and colleagues explain moral competence in more detail based on six aspects: "Moral competence is about (1) conscious decisions and action within a given (2) situation of responsibility. It implies (3) feeling a duty towards one's own moral principles and (4) acting responsibly while taking into account legal standards as well as economical, ecological and social consequences. Moral competence (5) requires normative knowledge and (6) the ability to defend derived behavioural options against occurring resistance" (Pohling et al., 2016, p. 2). Nevertheless, moral competence in the business ethics literature is often "hidden" in larger multidimensional concepts like integrity, responsibility, compassion and forgiveness (Kim & Kim, 2013; Lennick & Kiel, 2005) and not further operationalized as a concrete tangible performance-based construct. As such, the applicability of moral competence as described in the business ethics literature can be questioned when considering using it in empirical research in the context of entrepreneurship education. Furthermore, where Pohling et al. (2016) and Morales-Sánchez and Cabello-Medina (2013) focus primarily on the ethical decision-making process and the moral competencies needed to manage this process, this research focuses on the entrepreneurial process and the moral competencies needed to manage this particular process. This particular focus requires a different interpretation of the concept of moral competence, as the entrepreneurial decision-making process differs significantly from the moral decision-making process. The entrepreneurial decision-making process revolves in this particular study around the recognition of new opportunities, which is slightly different from recognizing a moral dilemma, which would be the case for the moral decision-making process. The interpretation of moral competence in an entrepreneurial context is further explored below.

2.3 | Moral competence from a sustainable entrepreneurship perspective

More recently, scholars have tried to integrate (moral) competencies into context-specific business domains that deal with sustainable development, for instance in the field of corporate social responsibility (Osagie et al., 2016; Renouard & Ezvan, 2018; Wesselink, Blok, Leur, Lans, & Dentoni, 2015) and the field of sustainable entrepreneurship (Lans et al., 2014; Ploum et al., 2017). Within these fields, two distinct moral competencies are highlighted: normative competence and (strategic) action competence. Normative competence is about the ability to assess and improve the sustainability of social-ecological systems, on the basis of a set of values and principles (Gibson, 2006; Wiek, Withycombe, & Redman, 2011). Strategic action competence, on the other hand, is about the ability to actively involve oneself in responsible actions to improve sustainable business practices (de Haan, 2006; Schnack, 2003). They both concern norms, values and beliefs which define what is right and wrong concerning sustainability and enable professionals to take the right decisions and behave in a responsible way (Blok, Gremmen, & Wesselink, 2016). More specifically, Blok and colleagues (2016) argue that normative competence has to be understood as the application of values, principles and targets in order to establish sustainable practices, while strategic action competence is the internalization of this ability to develop and apply values and principles (Blok et al., 2016). As such, these two moral competencies encompass an element of sensitivity to moral issues (i.e., normative competence) and an element of the transformation of intentional behaviour into actionable behaviour (i.e., strategic action competence): elements that resonate with the general description of moral competence in the business ethics literature described earlier (e.g., Pohling et al., 2016).

2.3.1 | Normative competence in detail

The focus on normative competence in the CSR and sustainable entrepreneurship literature is not surprising. Normative competence is widely recognized as one of the key competencies for sustainable development. Table 1 provides an overview of the use of normative competence in leading literature on competencies for sustainable development and related fields of study. Normative competence comprises the knowledge, skills and attitudes that enable individuals to recognize moral issues related to sustainability and to make a moral judgement about the right thing to do, based on ethical norms and principles (de Haan, 2006; Rieckmann, 2012; Wiek et al., 2011). Blok and colleagues (2016) emphasize that normative competence concerns the ability to apply, negotiate and reconcile norms and principles based on the judgements of multiple stakeholders. Normative competence does not consist primarily in the application of pre-given norms, but in the ability to identify and generate norms that solve ethical conflicts and are acceptable to multiple stakeholders (Blok et al., 2016, p. 15). This process of development, negotiation and reconciliation of norms is unique in every situation. The norms and interests of multiple stakeholders have to be weighed and revised over and over again, and the individual involved in sustainable entrepreneurship is to decide which norms to work with within a given situation. Although conceptually the importance of normative competence for sustainable business practices (including entrepreneurship) is unquestionable, empirical studies on the importance and enactment of normative competence show a more complex picture. Rieckmann (2012) as well as Osagie et al. (2016) could not underpin the importance of normative competence from the empirical results of their studies, but do underpin the need for such competence. Nevertheless, Hesselbarth and Schaltegger (2014) did find positive reinforcement from their alumni of the MBA Sustainability Management programme with regard to the importance of normative competence in their work life. In addition, in the field of sustainable entrepreneurship, the importance of normative competence was also underpinned (Lans et al., 2014; Ploum et al., 2017). Here, normative competence usually surfaces as challenging the current business logic, by making decisions based on norms and values that are related to sustainable development.

TABLE 1 Overview of research that addresses normative competence

Authors	Year	Nature	Field	Label	Description of competence
De Haan	2006	Theoretical/ conceptual	Higher education for sustainable development	Capacity for empathy and solidarity	Acting and communicating in the spirit of international solidarity. It motivates and enables people to work together to find future-compliant solutions to shared problems and to find responsible ways to achieve more justice
Wiek et al.	2011	Theoretical/ conceptual	Higher education for sustainable development	Normative competence	Ability to collectively map, specify, apply, reconcile and negotiate sustainability values, principles, goals and targets. This capacity allows, first, for the collective assessment of the (un-) sustainability of current and/or future states of social-ecological systems and, second, the collective creation and crafting of sustainability visions
Rieckmann	2012	Empirical/conceptual	Higher education for sustainable development	Competency for empathy and change of perspective	See de Haan (2006)
Hesselbarth and Schaltegger	2014	Empirical/conceptual	Higher education for sustainable development	Normative competence	See Wiek et al. (2011)
Lans et al.	2014	Empirical/testing	Sustainable entrepreneurship	Normative competence	See Wiek et al. (2011)
Osagie et al.	2016	Empirical/conceptual	Corporate Social Responsibility	Ethical normative competence	The CSR professional is convinced of the urgency of CSR challenges and is intrinsically driven/motivated to address these challenges. This competence involves the ability to apply one's personal ethical standards and values while assessing CSR-related issues
Blok et al.	2016	Theoretical/ conceptual	Sustainable development as a wicked problem	Virtuous competence	The ability to apply, negotiate and reconcile norms and principles based on the judgements of multiple stakeholders. Normative competence doesn't consist primarily in the application of norms but in the ability to identify and generate norms that solve ethical conflicts and are acceptable to multiple stakeholders
Ploum et al.	2017	Empirical/testing	Sustainable entrepreneurship	Normative competence	See Wiek et al. (2011) and Lans et al. (2014)

2.3.2 | Strategic action competence in detail

The conceptualizations of normative competence do not necessarily say anything about moral *action and behaviour* of the individual. Another competence is needed in order to prevent the degeneration of normative competence into a purely instrumental conceptualization as the ability to develop, negotiate, reconcile and apply norms and principles together with multiple stakeholders (Blok et al., 2016). The moral competence that is related to the actionable phase of the decision-making process is described as "action competence" in education for the sustainable development literature and "strategic action competence" in the literature on sustainable entrepreneurship. Strategic action competence refers to the moral transformation from a passive attitude with respect to sustainability issues into an active and engaged attitude (Blok et al., 2016; Lans et al., 2014). Table 2 provides an overview of the leading literature on the concept of action competence. Sustainable development cannot be achieved merely through state intervention, legislation, new technologies and efficient economies, but requires passive and active support from the population (De Haan, 2006).

TABLE 2 Overview of research that addresses strategic action competence

Authors	Year	Nature	Field	Label	Description of competence
de Haan	2006	Theoretical/ conceptual	Higher education for sustainable development	Learning participatory skills	Sustainable development cannot just be achieved through state intervention, legislation, new technologies and efficient economies, but requires passive and active support from the population
Jensen and Schnack	2006	Theoretical/ conceptual	Environmental Education	Action competence	Besides skills at a more general level, such as the ability to cooperate, read and make oneself clear, elements of action competence are: knowledge/insight; commitment; visions; and action experiences
Mogenson and Schnack	2010	Theoretical/ conceptual	Higher education for sustainable development	The action competence approach	Action competence refers to an educational ideal. As such, it is not a goal that can be reached, and even if it is a competence, it is not a specific competence among many others. As an educational ideal, it is situated in a non-place, a utopia, where it maintains good company with such concepts as liberal education, democracy, human rights, sustainable development and equal communication
Almers	2013	Theoretical/ conceptual	Environmentally responsible action	Action competence for sustainability	Defined as a willingness and capability to influence living conditions and lifestyles, in a way that involves inter-generational and global responsibility. It includes acting from a knowledge base that is always incomplete, and being prepared to change decisions and actions related to new knowledge or insights
Lans et al.	2014	Empirical/testing	Sustainable Entrepreneurship	Action competence	The ability to actively involve oneself in responsible actions to improve the sustainability of social-ecological systems
Osagie et al.	2016	Empirical/ conceptual	Corporate Social Responsibility	Behaviour and Active Involvement	The ability to apply one's personal ethical standards and values. Feeling of personal responsibility. Active involvement in the implementation of CSR by being action-oriented and decisive
Blok et al.	2016	Theoretical/ conceptual	Sustainable development as a wicked problem	Virtuous competence	Concerns the ability to put virtues into practice by the personal engagement of the professional in the application of these virtues according to his or her practical wisdom, together with multiple stakeholders
Ploum et al.	2017	Empirical/testing	Sustainable Entrepreneurship	Strategic Action competence	Strategic action competence is the ability to actively involve oneself in responsible actions and concerns the ability to implement interventions, transitions and strategies towards sustainable development practices

Action competence is the ability to actively involve oneself in responsible actions to improve the sustainability of social-ecological systems (Mogensen & Schnack, 2010). Jensen and Schnack (2006) distinguish four components of action competence: "knowledge and insight" concerns knowledge about the problem of sustainable development and the ability to think critically about its possible solution; "commitment" relates to the motivation and drive to engage oneself in the solution of sustainability problems; "visions" concern the ability to conceptualize the future state of the world or the good life one wants to pursue; and "action experiences" finally stresses the importance of actual involvement in concrete sustainable actions.

The advantage of action competence is that it does not refer to absolutist principles and norms and stresses the importance of critical thinking and the reality of incomplete knowledge. Its point of departure is often found in conflicting interests and value frames regarding sustainable development (Jensen & Schnack, 2006). This conceptualization of action competence fosters a more open-ended approach in

which the complexity, instability and context dependence of ethical judgements is taken into account (Almers, 2013; Blok et al., 2016). Also when considering the more empirical-oriented studies, strategic action competence is indicated, alongside normative competence, as one of the moral competencies (Lans et al., 2014; Ploum et al., 2017). Even though the studies by Lans et al. (2014) and Ploum and colleagues (2017) include both normative competence and strategic action competence as two separate competencies, not all studies take into account both moral competencies. Some scholars stress the importance of normative competence, whereas others only focus on (strategic) action competence. Nevertheless, we would like to stress that there is a clear (conceptual) distinction between the two, but that the two moral competencies are also closely related. They could even be considered as two sides of the same coin (Blok et al., 2016).

To sum up, based on the more generic literature on entrepreneurship education and the more specific literature on competencies for sustainable entrepreneurship, moral competence can be further disentangled in two underlying competencies, namely normative and strategic action competence. The difference between the two moral competencies can be described as follows: "based on normative competence, actors can be *held responsible* for sustainability, while based on strategic action competence, actors can *take responsibility* for sustainability" (Blok et al., 2016, p. 2). Without normative competence, there is no reference to norms which should be acted upon. This has led to the following hypothesis:

> **H1.** *Normative competence and strategic action competence correlate with each other, but are two distinct constructs.*

2.4 | Enacting moral competence in the context of the entrepreneurial process

To understand the complexity and underpin the importance of moral competencies for entrepreneurship education, it is important to understand the entrepreneurial process and its underlying core concepts. Opportunity recognition lies at the heart of the entrepreneurial process: without opportunities there is no entrepreneurship. The entrepreneurial process always starts with the identification of a potential new business idea, an imagined future reality, that could be explored and further developed into a new product, service or process (Shane & Venkataraman, 2000). Although conceptually business ideas and entrepreneurial opportunities are distinct constructs, most scholars agree that opportunities are developed from an initial idea over time (Vogel, 2016). Not surprisingly, idea generation activity (either intentionally or accidentally) is at the heart of many entrepreneurship education programmes: it lays the foundation for further opportunity pursuit, it is a measurable construct and a learning activity that can be effectively manipulated (DeTienne & Chandler, 2004; Karimi, Biemans, Lans, Aazami, & Mulder, 2016). Therefore, in this study, the main focus is on idea generation as an important element of opportunity recognition for sustainable development.

As sustainable entrepreneurship deals with an inherent paradox between self-interest and self-transcendence, the process of recognizing opportunities for sustainable development is more complex. As a result, the specific role of the two moral competencies in identifying new ideas for sustainable development in an entrepreneurial context remains unclear. The moral competencies are always related to actual performance in the context of sustainable entrepreneurship. In the very early stages of the entrepreneurial process, performance can be measured by looking at the recognition of opportunities for sustainable development. Based on recent conceptual work on enablers of opportunity recognition for sustainable development (Patzelt & Shepherd, 2011), it is expected that moral antecedents play a direct role in idea generation. In their conceptual model, altruism towards others is mentioned as a motivational element that can be decisive in opportunity recognition for sustainable development and is also considered as a moral construct (Patzelt & Shepherd, 2011). A recent empirical study by Ploum, Blok, Lans, and Omta (2018) has empirically shown that altruism towards others does not significantly relate to idea generation for sustainable development. However, the same study shows that the two moral competencies do significantly relate to opportunity recognition for sustainable development (Ploum et al., 2018). Nevertheless, this study has an explorative nature and does not specifically dive in to the actual role of these two moral competencies in the process of recognizing opportunities for sustainable development. Ideally, research should be conducted on the structural relationship that shows the influence of entrepreneurial self-efficacy (ESE) on strategic action competence in the process of recognizing opportunities for sustainable development. Unfortunately, the data gathered are not sufficient to support this and therefore this is beyond the scope of this study. Nevertheless, the direct relationships between the two moral competencies and the output measure of opportunity recognition for sustainable development can be measured and has led to the third and final hypothesis:

> **H2.** *Individuals with high levels of moral competencies (normative and strategic action competence) recognize more opportunities for sustainable development.*

In addition, a classical entrepreneurial antecedent like self-efficacy might provide some additional information on how sustainable entrepreneurial individuals address this paradox in the opportunity recognition for sustainable development process. ESE could be a helpful construct that has been widely accepted as an important element of the opportunity recognition process in general (Davidsson & Honig, 2003; Ucbasaran, Westhead, & Wright, 2009) and for entrepreneurship education in particular (Bae et al., 2014). Meta-analyses show that ESE is one of the strongest individual-level predictors for entrepreneurial success in terms of start-up intentions as well as financial success (Rauch & Frese, 2007). Self-efficacy concerns an individual's belief in his own ability to perform well (Bandura, 1982). More specifically, ESE concerns an individual's belief in his or her own entrepreneurial competence to explore and exploit new business opportunities

and could be seen as a more motivational aspect. When looking at the descriptions of normative competence and action competence, it becomes clear that self-efficacy shows some overlap with the more transformational elements of strategic action competence, which has been highlighted by both Blok (2018) and Almers (2013). They state that feeling competent and confident about what one can contribute is considered as an important motivational element of action competence. ESE as such does not compromise a moral element, but strategic action competence does. It seems that strategic action competence, in combination with self-efficacy, fulfils the same role as ESE in the regular idea generation process (turning intentions into action), and therefore could be seen as ESE for sustainable development. Furthermore, when looking at the relationship between ESE and the two moral competencies, the explorative study by Lans et al. (2014) shows that ESE correlates significantly with action competence, but not with normative competence. Therefore, the following hypothesis will be tested:

> **H3.** *Entrepreneurial self-efficacy correlates higher with strategic action competence as compared to the relationship with normative competence.*

To test the three hypotheses mentioned above, the possible underlying relationships between the variables are visualized in Figure 1 and will be researched in more detail.

3 | METHODS

Two different studies were developed to examine how moral competencies play a role in idea generation for sustainable development of latent and early stage student entrepreneurs. The first study is more quantitative and aims at studying the relationship between normative competence, strategic action competence and ESE. The second study has a more qualitative nature, aiming at zooming in on the relationship between the two moral competencies, ESE and idea generation for sustainable development.

Both studies take place in entrepreneurship education. From a recent literature review on ethical decision making it can be concluded that ethical education does positively influence moral judgement and moral decision making (Lehnert, Craft, Singh, & Park, 2016). Both ethical theory and experiential pedagogy show a strong impact on ethical behaviour. This particular study puts normativity (i.e., ethics) at the centre of the entrepreneurial process, equipping students with experiences of including ethics in business practices. As Phatshwane, Mapharing, and Basuhi (2014) indicate, ethical behaviour can be learned, and starts developing in the early stages of life. The same holds for sustainable entrepreneurial competencies and entrepreneurial intentions; they are learnable constructs that have a strong foundation in the educational context and require higher order learning processes (Cope, 2005; Corbett, 2005). Therefore, in this study, we focus on students enrolled in entrepreneurship education.

3.1 | Setting and sample

Both studies were carried out at higher education institutes with a "green curriculum." A green curriculum means that they offer programmes which focus on nature, environment, human and animal health, nutrition and food production. The first study took place in a university of applied sciences in the Netherlands. Entrepreneurship education arrived here around 2005 and nowadays all Bachelor programmes have a compulsory part in entrepreneurship with increased attention towards sustainability. The participating students in study 1 did not specifically choose an entrepreneurship programme, but follow the entrepreneurship minor that is included as a standard component of their programme. The second study was carried out at a life sciences university in the Netherlands. Entrepreneurship

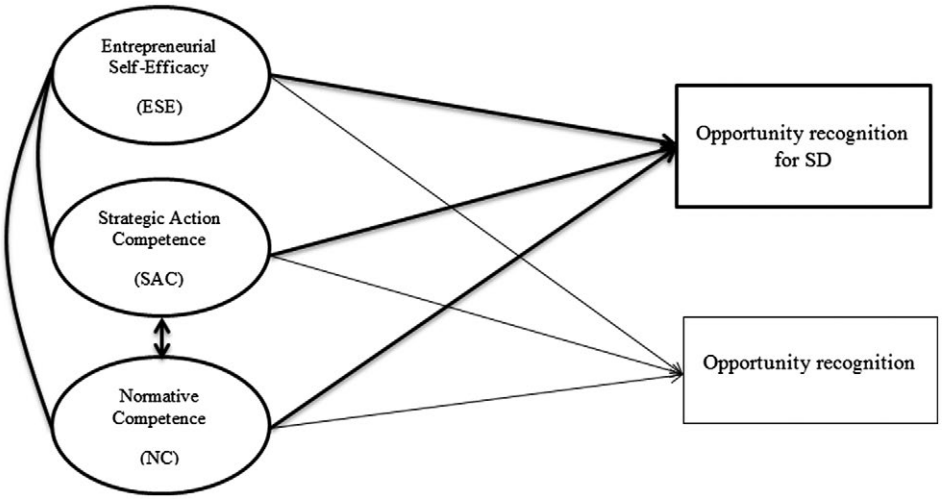

FIGURE 1 Conceptual framework including underlying relationships. In bold: zooming in on the process of recognizing opportunities for sustainable development, which is the main focus of this study

education here consists of an elective minor module, in which students can follow an entrepreneurship course in their free choice module in their educational programme. Therefore, both the studies can be considered as convenience samples.

3.2 | Study 1: Questionnaire

All students participating in study 1 were enrolled in entrepreneurship courses for a duration of six months (N = 438). The questionnaire was spread among the participants as an integrated part of their six-month entrepreneurship programme. The questionnaires were filled in during class after the students received a short introduction to the research and its intended learning outcomes for the respondents. The participants were asked to create a unique code to ensure the anonymity of the results. The students were not forced to take part in the study and it was made clear that their study results would not be influenced by participating or not. In the end, all students enrolled in the programme participated in the study.

The two moral competencies are part of the six-factor competence framework initially developed by Lans et al. (2014). Ploum et al. (2017) redefined the framework and tested its validity by means of a Confirmatory Factor Analysis (CFA). The CFA led to six convergent and discriminant factors, based on several indicators (reliability measures, multicollinearity test, model fit indices, etc.). For this study, the two moral competencies with accompanying items were used as the foundation for the questionnaire. The questions used to analyse the integrated competence framework for sustainable entrepreneurship can be labelled as a competence self-report. Critique on using self-reports or self-assessments as a measurement tool is common and widely used to undervalue this type of research (Braun, Woodley, Richardson, & Leidner, 2012). Nevertheless, research shows that certain conditions make it possible to measure different kinds of competencies using self-reports (Braun et al., 2012). To do this, the self-report should first include multiple indicators per competency to address a competency's full complexity; second, context should be given for the competencies and instruments; and third, the indicators should describe concrete behaviour (Braun et al., 2012). To measure their competencies, respondents were asked to rate themselves according to their opinion about their performance at that moment for an item, by rating the item on a scale of 1 to 10 (1 = low and 10 = high). If some of the criteria had not yet been practiced in a study programme or learned in any other situation in the students' life (e.g., internship, work at home, holiday job), the students were asked to show this by giving a low score for these criteria. The items belonging to the two moral competencies are presented in Appendix and the complete questionnaire can be acquired by sending a request to the corresponding author.

Furthermore, to analyse the relationship between the moral competencies and the construct of ESE, a measure to capture ESE was added. The underlying questions for ESE are well described in the entrepreneurship education literature and were adopted from an existing and validated 5-point Likert scale (Liñán & Chen, 2009). To ensure the reliability of the measure, we used Cronbach's alpha. The measure for ESE performed above the threshold of 0.7.

The initial data set consisted of 438 responses (N = 438). Based on a missing value analysis, 40 cases were excluded from the data analysis, which led to n = 398 valid cases. The data gathered from the large-scale questionnaire were analysed by making use of descriptive statistical analyses and correlation coefficients between the constructs using IBM SPSS Statistics 23.

3.3 | Study 2: Case assignment

To further analyse the role of the two moral competencies and ESE in the process of recognizing opportunities for *SD*, a qualitative instrument was developed. Subjects for this second study followed a course called principles of entrepreneurship in May 2015 (N = 50) and in September 2015 (N = 55) as a free choice module in their educational programme. In total there were n = 96 valid cases, as 9 cases were excluded because of missing data. Furthermore, there were no differences in average scores between the first group in May and the second group in September (based on the independent samples t tests).

Research on opportunity recognition for sustainable development as a complex problem faces a number of methodological challenges, which are in line with the challenges of entrepreneurship education in general. For instance, several studies have relied on observations that are prone to retrospective and recall biases, self-reporting and censored data and selection biases. Grégoire, Shepherd, and Schurer Lambert (2010b) have formulated some guidelines which could help in developing better ways to analyse opportunity recognition empirically and as such develop entrepreneurship education that is focused on problem-solving. Features of their approach include for example: the use of research tasks and hypothetical exercises that showcase "real-time" efforts of individuals to recognize opportunities, a focus on opportunity beliefs, the modelling of research tasks and material on "real-life" events/"day-to-day" experiences of entrepreneurs in particular contexts and mobilizing and integrating different forms of data, data collection methods and analytical techniques. In line with these guidelines, a digitally scripted learning tool (Noroozi, Weinberger, Biemans, Mulder, & Chizari, 2012) was designed to actively engage the students in an online environment (over a period of 5 weeks) to critically engage in "real-life" decision-making processes in the field of sustainable entrepreneurship. In this way, participants experienced how difficult it can be to balance social, environmental and economic goals and values in a business context. The core task consisted of a case description of an existing company with accompanying assignments centred around opportunity recognition. Opportunity recognition was measured by identifying opportunity ideas. In line with other studies, it is argued that an essential part of the opportunity recognition process is the generation of opportunity ideas: initial ideas or envisioned futures in the mind of an individual (Wood & McKinley, 2010). Therefore, the participants had to indicate new ideas for the company described in the case description. The case description was based on the carpet company Interface, which is one of the first companies to adopt a sustainable business model (Stubbs

& Cocklin, 2008). In the learning tool, the original business model of Interface (before adopting a sustainability strategy) was used as a case description and the description was anonymized. The business model canvas (BMC) is seen as a useful tool with which to engage students in learning by doing and is seen as an effective way to teach entrepreneurship and develop entrepreneurial competencies (Lackéus, 2015). The BMC outlined by Osterwalder and Pigneur (2009) consists of nine basic building blocks needed when creating value for external stakeholders. This could be viewed as a simple checklist that students can use when planning their value creation attempts, asking them to provide answers to key value creation questions such as "Who do you help?", "How do you help?", "Who helps you?" and "What do you do?". The language is business-biased, but the principles are applicable to a wider context than venture creation. In fact, Osterwalder and his colleagues have written a book on how to apply these nine building blocks to personal development. For this specific case, a 10th block was added to the BMC, which is related to environmental and societal impacts. Using the BMC, the participants analysed the case description of the company. Based on this analysis, they chose which blocks of the BMC they believed could be improved by presenting new (innovative) ideas for the company. Based on valid argumentation and reasoning, the participants wrote a report on their business model innovations. Figure 2 shows an overview of the different tasks students needed to perform throughout the five weeks of participating in the course.

In this particular case, the focus lies on those arguments that can possibly be related to—and could be supportive of—the two moral competencies in relation to identifying opportunities for *SD*. The output measure (i.e., idea generation for *SD*) was based on the number of ideas proposed that were related to *SD*.

A distinction was made between those ideas related to sustainable development and those not, based on the eight archetypes of a sustainable business model (Bocken, Short, Rana, & Evans, 2014). If an idea could be assigned to one of the eight archetypes (maximize material and energy efficiency, create value from waste, substitute with renewables and natural processes, deliver functionality rather than ownership, adopt a stewardship role, encourage sufficiency, repurpose for society/environment and develop scale-up solutions), the idea was considered to be an idea that was related to sustainable development. Furthermore, the participants were queried on the competence framework and all other elements that were also queried in the large-scale questionnaire.

In addition to some quantitative analyses that were performed in IBM SPPS Statistics 23 to analyse the relationship between the competencies and opportunity recognition, the data were analysed by means of a content analysis. The 96 reports with arguments for innovating in a particular direction were coded in Atlas.ti. Codes for the moral competencies were developed mostly top-down, as they are based on the description and underlying items of normative competence and strategic action competence. Before the whole set of 96 reports was coded, a trial session based on 12 reports (12.5% of the total set) was held in order to finalize the codebook. Two raters were involved in the trial session and scored all the reports, which resulted in 87% agreement on core constructs. After intense discussion, the final codebook was developed and used for the analysis of the 96 reports (see Appendix).

4 | RESULTS

4.1 | Study 1: Large-scale questionnaire

In total, 398 cases were included in the analysis. The male–female division within the data set is 47.5% and 52.5%, respectively. Most respondents are, at the moment of participation, enrolled in their second year of education at the participating higher education institute (88.3%). Only a few respondents mention they already have their own company (6.7%) versus the majority (93.7%) who mention they do not have their own company. Nevertheless, all respondents indicate that they have the intention to become an entrepreneur within the next 5 years (based on a score of 3 or higher, measured on a 5-point Likert scale). No significant differences were found in the scores between the subsets of respondents, based on gender, age and experience.

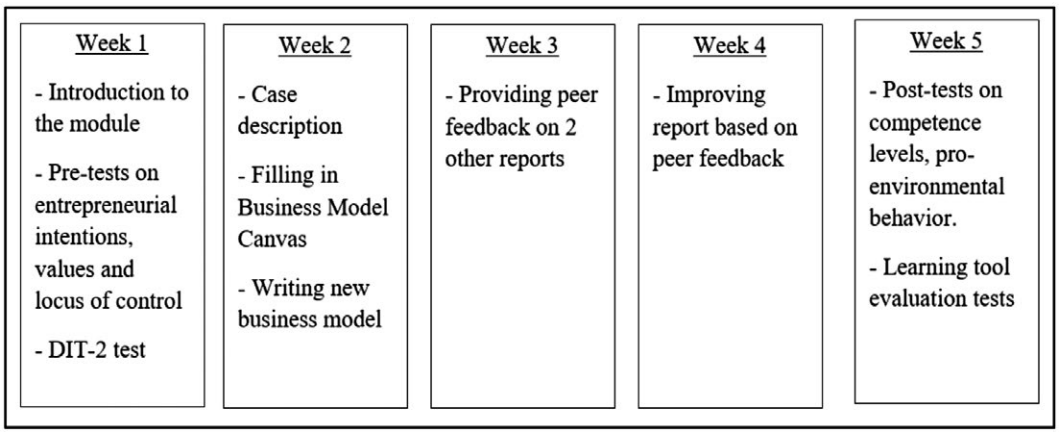

FIGURE 2 Overview of the tasks of the digitally scripted learning tool

4.1.1 | Descriptive statistics: Normative competence, strategic action competence and ESE

The relationship between the two moral competencies is assessed within the six-factor competence framework for sustainable entrepreneurship as they are an integrated part of the framework. Table 3 provides an overview of the correlations between the competencies and the correlation with ESE. There is a positive relationship between the six competencies: they all correlate with each other to a medium or high extent, as should be the case with an integrated competence framework. However, there are some differences between the correlation coefficients and the variances explained. The highest correlation exists between normative competence and strategic action competence ($r = 0.720$, $p < 0.01$). Also when looking at the variance explained (to measure the amount of variability in one variable that is shared by the other variable), it appears that 51.8% ($R^2 = 0.5184$) of the variance of strategic action competence is shared by the variability of normative competence. Compared to all the other competencies in the competence framework for sustainable entrepreneurship, normative competence and strategic action competence correlate most with each other.

When looking at the correlations between ESE and the competencies for sustainable entrepreneurship, it appears that strategic action competence correlates most with ESE compared to the other five competencies for sustainable entrepreneurship ($r = 0.317$, $p < 0.01$). Yet, the correlation can be considered as a moderate association between the two variables as $r = 0.317$ is not that high. Normative competence correlates least with ESE ($r = 0.169$, $p < 0.05$). The significance level is also different compared to the other five competencies ($p < 0.05$ compared to $p < 0.01$).

A partial correlation analysis was performed between normative competence and strategic action competence, while controlling for the effect of ESE, to assess whether the strong correlation between strategic action competence and normative competence was caused by a third variable. The correlation coefficient between the two moral competencies, while controlling for ESE, turned out to be slightly lower than without controlling for ESE ($r = 0.713$, $p < 0.01$). However, the correlation coefficient has not diminished substantially (decline of 0.007). In other words, the high correlation between normative competence and strategic action competence is not caused by ESE as a third variable.

In study 2, the relationship between the three variables and opportunity recognition for sustainable development was analysed both quantitatively and qualitatively.

4.2 | Study 2: Case assignment

In total, 96 cases were included in the analysis. The male–female division within the data set is 46.9% and 53.1%, respectively. Most respondents are, at the moment of participation, enrolled in their third year of education at the participating higher education institute (89.9%). Only a few respondents mention that they already have their own company (10.6%) versus the majority (89.4%) who say that they do not have their own company. Similar to study 1, students all indicate their intention to become an entrepreneur in the future (with an overall average score of 4.1 on a 5-point Likert scale).

In contrast to study 1, study 2 takes into account an output variable, namely idea generation (for sustainable development). Therefore, the statistical analysis concerning the relationship with idea generation was carried out with the smaller sample from study 2.

4.2.1 | Descriptive statistics: Opportunity recognition as dependent variable

Opportunity recognition was measured through an idea generation assignment. As for the number of identified ideas, a total of 427 ideas were generated, of which 200 were related to sustainable development (46.8%). On average, respondents identified 4.5 ideas in general and 2.1 ideas specifically related to *SD*. Sixteen of the respondents (16.7%) did not generate any ideas related to sustainable development; the other 80 respondents (83.3%) did identify new ideas ranging from 1 idea to 9, different ideas per respondent.

TABLE 3 Descriptive statistics: mean scores and correlation coefficients between competencies for sustainable entrepreneurship, including the moral competencies

Measure	*M*	*SD*	1	2	3	4	5	6	7
1. DC	5.71	1.58	–						
2. FC	6.31	1.11	0.515**	–					
3. SC	6.11	1.29	0.514**	0.613**	–				
4. IC	6.48	1.30	0.356**	0.367**	0.347**	–			
5. NC	6.20	1.29	0.479**	0.579**	0.571**	0.383**	–		
6. SAC	5.33	1.39	0.621**	0.553**	0.554**	0.478**	0.720**	–	
7. ESE	2.97	0.64	0.286**	0.230**	0.246**	0.195**	0.169*	0.317**	–

Note. DC = diversity competence, FC = foresighted thinking competence, SC = systems thinking competence, IC = interpersonal competence, NC = normative competence, SAC = strategic action competence, ESE = entrepreneurial self-efficacy, *M* = mean, *SD* = standard deviation, *N* = 402.
*$p < 0.05$. **$p < 0.01$.

TABLE 4 Overview of codes: frequencies and exemplary quotation

	Code	Frequencies	Exemplary quotation
Normative competence	1. Take initiative based on norms and values	36	"The current world population of 7.2 billion is projected to increase by 1 billion over the next 12 years and reach 9.6 billion by 2050. All these people demand resources of food, fuel, medicine, and energy. If we continue to demand and use more than the Earth can support, we will eventually use up available land and resources, especially drinking water. We should act upon this now." (R109)
	2. Knowledge about sustainability	45	"It's been shown that this is possible with the example of Green Floors Adhesives, which are 97% lower in emissions than current Carpet and Rug institute criteria. This should be applied within the company as well." (R112)
	3. Apply norms and values to own practice	42	"You wouldn't want your children to live in a planet that's depleted, full of smog and dying. Also because we are the market leader we can set an example of how it should be, if we show improvement others will follow and copy."(R32)
	4. Explaining impact of sustainability on BMC	18	"The introduction of a eco-carpet will affect not only key partnerships and the value proposition but will also affect the cost structure and revenue stream, by additional expenses for research and maybe new machines and employee training and create additional income by maintaining "old" customers that follow trends or by acquiring new customers which were not attracted by the "old" products. Additionally patents acquired through development of new glues or the usage of new materials (organic) can create additional income." (R39)
Total		141	
Strategic action competence	5. Involving other parties	38	"For this they might look for laboratory workers from companies who are specialized in glue and cooperate with them to make a glue that is not harmful to the environment. This will result in a key partner and the company does not have everything in their own hands anymore. Maybe they could even look for universities around the world who are able to conduct research on glue. With this initiative, you help students to do a research project and help yourself by getting a glue which is environmental friendly." (R95)
	6. Explanation of steps to be taken	22	"Year 1and2: Install solar panels and reach out to windmill manufacturers to see if making a deal with them is an option. Start market research to see if people are interested in a new type of floor. Look at competitor's products and hire experts to assess and look for options to improve their products. Start building concrete and laminate floors through outside manufacturer, also assess if producing these types of floors yourself can be profitable. Become eco neutral at the end of year 2. Year 3and4: Flood the market with your improved products and newly attained eco-friendly status. Take as many clients away from current competitors as possible. Continue to focus on ways to improve product development Year 5: Enjoy your strong position and constantly strive to improve your products. Take the best researchers from your competitors and get them to join your team. Profit." (R103)
	7. Strategic way of working	8	"Since there is a positive correlation between the material of the carpets and the need for glue to attach the carpets to the floor. By changing the material of the carpets it may reduce the need and use of glue or reduce the use of glue which can affect the type of material the carpet can be made of. The result of reducing the need for glue is the recycling of used carpets which thereby increases the secondary value of used carpets. The company can also use materials that extend the durability of the flooring products. Which can improve the company´s revenue streams as well as the cost structure." (R108)
	8. Monitor sustainability	4	"Nowadays many companies need to hire external environmental services to measure the impact of their businesses on the environment and if they can by modifying certain processes internally reduce this impact and achieve a greater sustainability as a company."(R30)
	9. Challenge not sustainable ways	14	"We should minimize our negative environmental impact. The company made a start by implementing solar panels to reduce the natural gas use, but this is not enough. More interventions should be applied in the company." (R21)

(*Continues*)

TABLE 4 (Continued)

	Code	Frequencies	Exemplary quotation
	10. Identifying opportunities for *SD*	82	"Elephant grass materials can be used for textile production which are biodegradable which means that the carpets could be recycled. Recycled carpet tiles made of elephant grass can be used for biofuel which can make the company more energy efficient and reduce their fixed costs in the production." (R12)
	11. Problem identification for *SD*	61	"Another weakness is the high energy requirement of factories, particularly needed for activities such as the production of glues and cleansers. Only 15% of the company's energy use is covered by renewable energy technologies including the application of solar panels. The remaining 85% consists of natural gas, brown electricity, propane, and steam. In addition to energy, also large amounts of raw materials are required for the production of yarn, chemicals, and backing material that make up the carpet tiles. When considering the entire life cycle of a carpet tile, the production of yarn has been determined to have the largest environmental impact, especially contributing to global warming. This yarn mostly consists of nylon, although wool and polypropylene are sometimes also used." (R8)
	12. Motivation for investment in sustainability	47	"For example, by using raw materials more efficiently, minimizing waste and reducing insurance risk, the business will increase its financial savings. Moreover, a different reputation will be able to raise trustworthiness among customers, suppliers, investors, staff and, more importantly, the public. Therefore, investing in sustainability will cost more in the beginning, but will be beneficial for the company in the long run. Also sustainability will become the norm, so it is better to invest now." (R3)
Total		276	

4.2.2 | Descriptive statistics: The relation between NC, SAC, ESE and opportunity recognition for SD

The regression analysis shows a significant positive relationship between the two moral competencies and the identification of new ideas for sustainable development. In predicting the number of ideas related to *SD*, normative competence seems to be a good predictor $F(1, 94) = 4.560$, $p < 0.05$ with $b(94) = 0.317$, $p < 0.05$. Also strategic action competence nicely predicts the number of ideas related to *SD* $F(1, 94)=3.904$, $p < 0.05$ with $b(94) = 0.335$, $p < 0.05$. However, ESE does not show a significant relationship with the number of identified ideas for *SD*. ESE does not show a significant relationship with opportunity recognition for *SD*, whereas normative competence and strategic action competence do have a positive relationship with the number of identified ideas for *SD*. When analysing the relationship between the three latent variables (i.e., normative competence, strategic action competence and ESE) and "regular" opportunity recognition in terms of identified ideas in general, no significant relationships were found. There appears to be no significant relationship between ESE and opportunity recognition for *SD*, but also not with opportunity recognition in general.

4.2.3 | Qualitative analysis: Moral competence on the surface in recognizing opportunities for SD

The coding scheme was used to identify elements of the two moral competencies within the cases. Within each case (1 report per respondent), the respondents identified opportunities that could enhance the business model and were asked to provide arguments to support their proposed changes to the business model. In turn, the arguments provided by the respondents were used as a source for exploring how the two moral competencies surface and which elements of the two moral competencies surface more than others. When looking at the codes used, it appears that out of the 96 included reports, 14 reports did not make any references to the two moral competencies (14.6%). In absolute numbers, codes that belong to normative competence were used 141 times (4 different codes) and codes that belong to strategic action competence 276 times (8 different codes), see Table 4. Table 4 also shows an exemplary quote per code to show how the elements of both moral competencies surface in identifying new ideas for sustainable development. The code that was used the most was "identifying opportunities for SD", being used 82 times; the second most used code was "identifying problems for SD" (61 times); both belong to strategic action competence. Note that the individual codes were only used once per report. The core of the assignment was centred around recognizing opportunities, which led to these two codes being used the most to a large extent. Therefore, this result has to be interpreted with caution. The code that was used the least in coding the reports was "monitor sustainability" (4 times). The codes "strategic way of working" and "challenge not sustainable ways" (respectively used 8 and 14 times) were also among the least used codes. All three least used codes belong to strategic action competence, just like the most used codes. The codes that are used the least really deal with actual behaviour, which do not easily surface within the hypothetical context of the assignment.

When zooming in on the use of the two moral competencies, it appears that for normative competence the most often used codes/

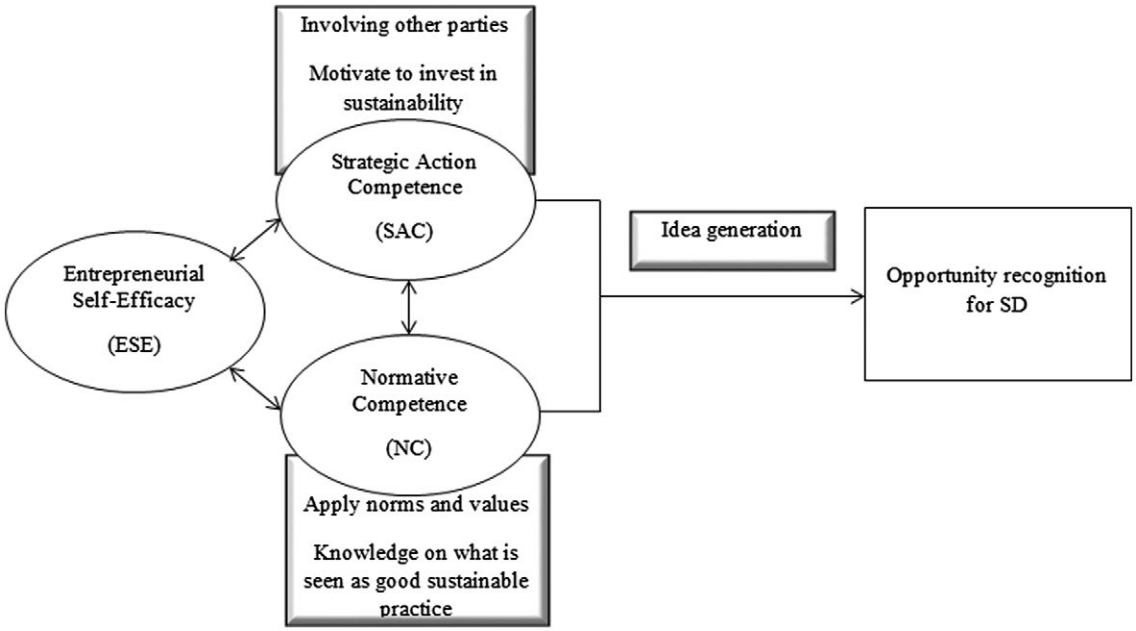

FIGURE 3 Revised conceptual model with significant relations, including the elements of moral competence that surface the most in this early phase of the entrepreneurial process

items are "knowledge about sustainability" (45 times) and "apply norms and values to own practice" (42 times). These two underlying items of normative competence seem to surface the most in the process of recognizing opportunities for sustainable development. Putting aside "recognizing opportunities for SD" and "recognizing problems for SD" for the reasons mentioned above, the items that surface the most for strategic action competence within the argumentation of respondents are "motivation for investment in sustainability" (47 times) and "Involving other parties" (38 times).

5 | DISCUSSION AND CONCLUSION

In answering the main research question: "What role does moral competence play in the process of opportunity recognition for sustainable development?", it can be stated that the two studies show that the moral competencies of entrepreneurship students play a significant role in idea generation for sustainable development, and *especially* emphasize the general importance of moral competencies in the context of higher entrepreneurship education. This is fuel for the researchers who argue that there is a strong need for higher education institutions and business schools to make a transition from the logic of a profit-first mentality, towards a new logic in which sustainability is not seen as a loss (the losing logic), but as a positive outcome. As such, entrepreneurship education should nourish and further strengthen moral competencies as a basic requirement for sustainable entrepreneurship. This research is one of the first to establish empirical results that further strengthen this notion and provides stepping stones for further theoretical contributions on anchoring moral competencies in entrepreneurship education.

Three main conclusions can be drawn and will be discussed below before the overall conclusion is drawn. Firstly, based on our theoretical framework, we concluded that in the context of sustainable entrepreneurship, moral competence should consist of normative competence and strategic action competence. From the empirical results, it can be concluded that even though both competencies are very distinct, they share a strong mutual orientation and correlate strongly with each other, leading to the confirmation of hypothesis 1. It could even be argued that without normative competence, strategic action competence would not be meaningful and vice versa within a sustainable entrepreneurial context. Nevertheless, they are not the same and both competencies serve a different purpose. Normative competence deals with the application of values, principles and targets and identifying what these values, principles and targets are in different contexts. It is not about actually acting upon these values or principles, but merely enables the students to map different perspectives on this matter. Strategic action competence on the other hand focuses more on how to transform these values, principles and targets into actions towards sustainable development. This confirms the theoretical findings proposed by Blok et al. (2016).

Secondly, both normative competence and strategic action competence have a significant relationship with the number of identified ideas for *SD* and do not show a significant relationship with students' idea generation in general. They appear to be distinctive for the very first stages of the sustainable entrepreneurial process. This fully supports hypothesis 2; the higher the scores on the moral competencies, the more ideas for sustainable development are identified. More specifically, the qualitative study shows that considering normative competence, the students mostly apply norms and values

and use knowledge for what is seen as good sustainable practice in the field in the process of recognizing opportunities for sustainable development. In short, values and knowledge appear to be the most important elements of normative competence in the very first phase of the entrepreneurial process, namely in identifying opportunities for *SD*. When looking at strategic action competence, it seems self-evident that the most important elements are problem identification and opportunity identification. The assignment entailed identifying new ideas for an existing business plan, so it is not surprising that these two elements surface the most when looking at strategic action competence. Also the underlying items that were identified the least belong to strategic action competence. This has to do with the fact that a hypothetical case study like the one used in this research leaves little room for "actual" behaviour. As strategic action competence is merely focused on this actionable aspect, it is not surprising that the least used codes are also part of this competence. Nevertheless, when setting aside these more extreme outcomes, it seems as if involving other parties or stakeholders and motivations for investing in sustainability surface the most within the process of recognizing opportunities for *SD*. A recent study by Cetindamar and Ozkazanc-Pan (2017) shows that the latter, investment for impact, has also become a more important factor for investors. Focusing on this in the early phase of the entrepreneurial process might increase the chances of getting funding. Furthermore, Cetindamar and Ozkazanc-Pan (2017) focus on a strong mission drift, which relates to the two moral competencies as well, since normative competence plays an important role in developing a mission based on norms and values that are usually related to creating impact that is not necessarily related to economic impact.

Thirdly, since strategic action competence is about taking responsibility for sustainability in an entrepreneurial context, the relationship with students' ESE was examined. It appeared that ESE correlated the least with normative and the most with strategic action competence, compared to the relationship of ESE with the other competencies for sustainable entrepreneurship. Even though the relationship between ESE and strategic action competence is not very strong, it can be concluded that out of all the competencies for sustainable entrepreneurship, strategic action competence has the strongest relationship with ESE. This supports hypothesis 3. Nevertheless, more research is needed to fully grasp the influence of ESE on strategic action competence in relation to opportunity recognition for sustainable development.

However, the results also show that the students' ESE did not have a significant relationship with the number of ideas generated for sustainable development nor with the number of ideas generated in general. This is a rather surprising result and is not in line with what was expected from the literature. However, it does substantiate the idea that strategic action competence more or less fulfils the role of ESE within a sustainable entrepreneurial context (i.e., turning intentions into action). Furthermore, this rather surprising result could also be caused by the fact that idea generation is one of the very first steps within the entrepreneurial process. A construct like ESE might play a bigger role in later stages of the entrepreneurial process. Another explanation can be found in the way opportunity recognition was measured in this study. In most studies, opportunity recognition is measured by self-perceived assessments. In our study, opportunity recognition was measured by a performance-based assessment, and could therefore be seen as a more reliable measurement of ESE in an actual entrepreneurial context. This could indicate that there is a gap between self-assessment of self-efficacy and actual enactment of self-efficacy, as in this case ESE only relates to self-perceived opportunity recognition (competence), rather than to actual opportunity recognition for *SD*.

Overall, the results support a revised, more specified conceptual model of the role of moral competence in the early entrepreneurial process (Figure 3). This model has not been tested as such in this paper, and more research is needed to test the overall model.

In conclusion, the overall results show a strong relationship between the two moral competencies of entrepreneurship students. The two moral competencies share a mutual moral orientation, but serve a different goal. It can be concluded that they are two sides of the same coin. Furthermore, normative competence and strategic action competence bridge competencies between the two worlds that sustainable entrepreneurship inhabits and are strengthened by the motivational construct of ESE. By taking into account normative values and norms (normative competence) and transforming them into sustainable actions (strategic action competence), the sustainable part within sustainable entrepreneurship is united with the entrepreneurship part of sustainable entrepreneurship. In addition, when looking at their role in the entrepreneurial process of recognizing opportunities for sustainable development, it appears that in the very first step of this process, namely idea generation, some elements of the moral competencies are more important than others. For normative competence, these elements are applying norms and values to your own practice and knowing what is a good sustainable practice in the field. For strategic action competence, these elements are involving other parties and motivating them to invest in sustainability. With this, the main research question on the role that moral competencies play in the early phase of the entrepreneurial process is answered.

This study makes several important scientific and practical contributions to the field of entrepreneurship education in general and competencies for sustainable entrepreneurship in particular. A first contribution can be found in the bridging character of the two moral competencies in the paradox between self-interest and self-transcendence in the context of sustainable entrepreneurship. A second contribution lies in the fact that, up until now, competence research mostly focused on either conceptual contributions or on quantitative empirical work. By qualitatively showing how the two moral competencies are employed within the opportunity recognition process, a unique insight into these competencies is revealed. Research can built on these insights and further unravel the important role of

moral competencies in the entrepreneurial process. Here, a link with studies that focus on moral decision making in a business context (e.g., Pedersen, 2009) could be made to look for synergies between these fields. A third, more practical contribution relates to the field of entrepreneurship education at higher education institutes. The results of this study help open up the black box that entrepreneurship education currently is. This can be done by implementing new pedagogies that focus on value creation that moves beyond profit maximization. In this process, it is important to keep track of the competencies for sustainable entrepreneurship and to foster them within the teaching cases. Lackéus (2015) provides stepping stones for teaching cases that enable learning by doing and the possibility to integrate moral obligations into entrepreneurial practices. An example is the triple-layered BMC (Joyce & Paquin, 2016). Sustainability is therefore not just an add-on to the entrepreneurship programmes that already exist. It has to be implemented at the core of entrepreneurship education, focusing on the development of competencies for sustainable entrepreneurship and teaching methods that enable students to move away from a sole focus on profit maximization but leave room for the triple bottom line (e.g., Lourenço, 2013).

Finally, some limitations and future research directions should be mentioned. First of all, the output measure in this research (i.e., opportunity recognition) was based on a hypothetical case description and only measured by the number of ideas. Ideally, this output measure should be as closely related to actual behaviour as possible since research in the field of competence could really benefit from empirical research that would address this. Another limitation concerns the testing of the hypothesis. Ideally, the underlying relationships should be tested in a (structural) model. Nevertheless, the results give an indication of the underlying relationships. Future research can build on this. In addition, this study focuses on only two particular higher education institutes. Future research could focus on comparing these results with other (European) cases. Furthermore, future research should embrace new and innovative research methods to be able to monitor and measure actual opportunity recognition among students and sustainable entrepreneurs, in order to substantiate the conclusions of this study. In addition, future research could take into account different institutional factors as well as a focus on the financial aspects (e.g., Aparicio, Urbano, & Audretsch, 2016). In line with this, future research should also focus on nascent and established sustainable entrepreneurs as this study only includes would-be entrepreneurs in an educational context.

CONFLICTS OF INTEREST

All authors declare that there are no conflicts of interest.

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REFERENCES

Almers, E. (2013). Pathways to action competence for sustainability—Six themes. *The Journal of Environmental Education*, *44*(2), 116–127. https://doi.org/10.1080/00958964.2012.719939

Aparicio, S., Urbano, D., & Audretsch, D. (2016). Institutional factors, opportunity entrepreneurship and economic growth: Panel data evidence. *Technological Forecasting and Social Change*, *102*, 45–61. https://doi.org/10.1016/j.techfore.2015.04.006

Bae, T. J., Qian, S., Miao, C., & Fiet, J. O. (2014). The relationship between entrepreneurship education and entrepreneurial intentions: A meta-analytic review. *Entrepreneurship Theory and Practice*, *38*(2), 217–254. https://doi.org/10.1111/etap.12095

Bandura, A. (1982). Self-efficacy mechanism in human agency. *American Psychologist*, *37*, 122–147. https://doi.org/10.1037/0003-066X.37.2.122

Blok, V. (2018). Information asymmetries and the paradox of sustainable business models: Towards an integrated theory of sustainable entrepreneurship. In L. Moratis, F. Melissen, S. Idowu (Eds.), *In Sustainable Business Models* (pp. 203–225). Cham: Springer.

Blok, V., Gremmen, B., & Wesselink, R. (2016). Dealing with the wicked problem of sustainability. *Business and Professional Ethics Journal*. https://doi.org/10.5840/bpej201621737

Bocken, N. M. P., Short, S. W., Rana, P., & Evans, S. (2014). A literature and practice review to develop sustainable business model archetypes. *Journal of Cleaner Production*, *65*, 42–56. https://doi.org/10.1016/j.jclepro.2013.11.039

Braun, E., Woodley, A., Richardson, J. T. E., & Leidner, B. (2012). Self-rated competences questionnaires from a design perspective. *Educational Research Review*, *7*, 1–18. https://doi.org/10.1016/j.edurev.2011.11.005

Cetindamar, D., & Ozkazanc-Pan, B. (2017). Assessing mission drift at venture capital impact investors. *Business Ethics: A European Review*, *26*(3), 257–270. https://doi.org/10.1111/beer.12149

Cope, J. (2005). Toward a dynamic learning perspective of entrepreneurship. *Entrepreneurship Theory and Practice*, *29*, 373–397. https://doi.org/10.1111/j.1540-6520.2005.00090.x

Corbett, A. C. (2005). Experiential learning within the process of opportunity identification and exploitation. *Entrepreneurship Theory and Practice*, *29*, 473–491. https://doi.org/10.1111/j.1540-6520.2005.00094.x

Davidsson, P., & Honig, B. (2003). The role of social and human capital among nascent entrepreneurs. *Journal of Business Venturing*, *18*, 301–331. https://doi.org/10.1016/S0883-9026(02)00097-6

De Haan, G. (2006). The BLK '21' programme in Germany: A 'Gestaltungskompetenz' based model for education for sustainable development. *Environmental Education Research*, *12*, 19–32. https://doi.org/10.1080/13504620500526362

Dean, T. J., & McMullen, J. S. (2007). Toward a theory of sustainable entrepreneurship: Reducing environmental degradation through entrepreneurial action. *Journal of Business Venturing*, *22*, 50–76. https://doi.org/10.1016/j.jbusvent.2005.09.003

Delamare Le Deist, F., & Winterton, J. (2005). What is competence? *Human Resource Development International*, *8*, 27–46. https://doi.org/10.1080/1367886042000338227

DeTienne, D. R., & Chandler, G. N. (2004). Opportunity identification and its role in the entrepreneurial classroom: A pedagogical approach and empirical test. *Academy of Management Learning & Education*, *3*(3), 242–257. https://doi.org/10.5465/amle.2004.14242103

Folger, R. (1998). *Fairness as moral virtue. In Managerial ethics* (pp. 23–44). Psychology Press.

Gibb, A. (2002). In pursuit of a new 'enterprise' and 'entrepreneurship' paradigm for learning: Creative destruction, new values, new ways of doing things and new combinations of knowledge. *International Journal of Management Reviews*, *4*(3), 233–269. https://doi.org/10.1111/1468-2370.00086

Gibson, R. (2006). Sustainability assessment: Basic components of a practical approach. *Impact Assessment and Project Appraisal*, *24*, 170–182. https://doi.org/10.3152/147154606781765147

Grégoire, D. A., Shepherd, D. A., & Schurer Lambert, L. (2010b). Measuring opportunity recognition beliefs: Illustrating and validating an experimental approach. *Organizational Research Methods*, *13*(1), 114–145.

Hall, J. K., Daneke, G. A., & Lenox, M. J. (2010). Sustainable development and entrepreneurship: Past contributions and future direction. *Journal of Business Venturing*, *25*(5), 439–448.

Hayton, J. C., & Kelley, D. J. (2006). A competency-based framework for promoting corporate entrepreneurship. *Human Resource Management*, *45*(3), 407–427. https://doi.org/10.1002/hrm.20118

Hesselbarth, C., & Schaltegger, S. (2014). Education future change agents for sustainability – Learnings from the first sustainability management master of business administration. *Journal of Cleaner Production*, *62*, 24–36.

Jensen, B. B., & Schnack, K. (2006). The action competence approach in environmental education. *Environmental Education Research*, *12*(3), 471–486. https://doi.org/10.1080/13504620600943053

Jones, T. M. (1991). Ethical decision making by individuals in organizations: An issue-contingent model. *Academy of Management Review*, *16*(2), 366–395. https://doi.org/10.5465/amr.1991.4278958

Joyce, A., & Paquin, R. L. (2016). The triple layered business model canvas: A tool to design more sustainable business models. *Journal of Cleaner Production*, *135*, 1474–1486. https://doi.org/10.1016/j.jclepro.2016.06.067

Kamovich, U., & Foss, L. (2017). In search of alignment: A review of impact studies in entrepreneurship education. *Education Research International*, *2017*, 1–15. https://doi.org/10.1155/2017/1450102

Karimi, S., Biemans, H. J., Lans, T., Aazami, M., & Mulder, M. (2016). Fostering students' competence in identifying business opportunities in entrepreneurship education. *Innovations in Education and Teaching International*, *53*(2), 215–229. https://doi.org/10.1080/14703297.2014.993419

Kim, T. Y., & Kim, M. (2013). Leaders' moral competence and employee outcomes: The effects of psychological empowerment and person–supervisor fit. *Journal of Business Ethics*, *112*(1), 155–166. https://doi.org/10.1007/s10551-012-1238-1

Kuckertz, A., & 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. https://doi.org/10.1016/j.jbusvent.2009.09.001

Kuratko, D. F. (2005). The emergence of entrepreneurship education: Development,trends,andchallenges.*EntrepreneurshipTheoryandPractice*, *29*(5), 577–598. https://doi.org/10.1111/j.1540-6520.2005.00099.x

Lackéus, M. (2015). *Entrepreneurship in education: What why, when how. Entrepreneurship360 background paper.* Retrieved from OECD website https://www.oecd.org/cfe/leed/BGP_Entrepreneurship-in-Education.pdf

Lans, T., Blok, V., & Wesselink, R. (2014). Learning apart together: Towards an integrated framework for sustainable entrepreneurship competence in higher education. *Journal of Cleaner Production*, *62*, 37–47.

Lehnert, K., Craft, J., Singh, N., & Park, Y. H. (2016). The human experience of ethics: A review of a decade of qualitative ethical decision-making research. *Business Ethics: A European Review*, *25*(4), 498–537. https://doi.org/10.1111/beer.12129

Lennick, D., & Kiel, F. (2005). *Moral competence: Enhancing business performance and leadership success*. New Jersey: Wharton School Publishing.

Liñán, F., & Chen, Y. W. (2009). Development and cross-cultural application of a specific instrument to measure entrepreneurial intentions. *Entrepreneurship Theory and Practice*, *33*, 593–617. https://doi.org/10.1111/j.1540-6520.2009.00318.x

Lourenço, F. (2013). To challenge the world view or to flow with it? Teaching sustainable development in business schools. *Business Ethics: A European Review*, *22*(3), 292–307. https://doi.org/10.1111/beer.12021

Lourenço, F., Jones, O., & Jayawarna, D. (2013). Promoting sustainable development: The role of entrepreneurship education. *International Small Business Journal*, *31*(8), 841–865. https://doi.org/10.1177/0266242611435825

Man, T. W. Y., Lau, T., & Chan, K. F. (2002). The competitiveness of small and medium enterprises: A conceptualization with focus on entrepreneurial competencies. *Journal of Business Venturing*, *17*, 123–142. https://doi.org/10.1016/S0883-9026(00)00058-6

Martin, B. C., McNally, J. J., & Kay, M. J. (2013). Examining the formation of human capital in entrepreneurship: A meta-analysis of entrepreneurship education outcomes. *Journal of Business Venturing*, *28*(2), 211–224. https://doi.org/10.1016/j.jbusvent.2012.03.002

Mitchelmore, S., & Rowley, J. (2010). Entrepreneurial competencies: A literature review and development agenda. *International Journal of Entrepreneurial Behaviour & Research*, *16*, 92–111. https://doi.org/10.1108/13552551011026995

Mogensen, F., & Schnack, K. (2010). The action competence approach and the 'new' discourses of education for sustainable development, competence and quality criteria. *Environmental Education Research*, *16*, 59–74. https://doi.org/10.1080/13504620903504032

Morales-Sánchez, R., & Cabello-Medina, C. (2013). The role of four universal moral competencies in ethical decision-making. *Journal of Business Ethics*, *116*(4), 717–734. https://doi.org/10.1007/s10551-013-1817-9

Morelix, A. (2015). *The evolution of entrepreneurship on college campuses*. Retrieved from https://www.kauffman.org/blogs/growthology/2015/10/the-evolution-of-entrepreneurship-on-college-campuses

Morris, M. H., Webb, J. W., Fu, J., & Singhal, S. (2013). A competency-based perspective on entrepreneurship education: conceptual and empirical insights. *Journal of Small Business Management*, *51*(3), 352–369.

Mulder, M. (2014). Conceptions of professional competence. In S. Billett, C. Harteis, & H. Gruber (Eds.), *International handbook on research into professional and practice-based learning* (pp. 107–137). Dordrecht, the Netherlands: Springer.

Noroozi, O., Weinberger, A., Biemans, H. J., Mulder, M., & Chizari, M. (2012). Argumentation-based computer supported collaborative learning (ABCSCL): A synthesis of 15 years of research. *Educational Research Review*, *7*(2), 79–106. https://doi.org/10.1016/j.edurev.2011.11.006

O'Fallon, M. J., & Butterfield, K. D. (2005). A review of the empirical ethical decision-making literature: 1996–2003. *Journal of Business Ethics*, *59*(4), 375–413. https://doi.org/10.1007/s10551-005-2929-7

Osagie, E., Blok, V., Wesselink, R., & Mulder, M. (2016). Contextualizing individual competencies for managing the corporate social responsibility adaptation process: The apparent influence of the business case logic. *Business and Society*, 1–35. https://doi.org/10.1177/0007650316676270

Osterwalder, A., & Pigneur, Y. (2009). *Business model creation*. Amsterdam, the Netherlands: Modderman Drukwerk.

Patzelt, H., & Shepherd, D. A. (2011). Recognizing opportunities for sustainable development. *Entrepreneurship Theory and Practice*, *35*(4), 631–652. https://doi.org/10.1111/j.1540-6520.2010.00386.x

Pedersen, L. J. T. (2009). See no evil: Moral sensitivity in the formulation of business problems. *Business Ethics: A European Review*, *18*(4), 335–348. https://doi.org/10.1111/j.1467-8608.2009.01567.x

Phatshwane, P., Mapharing, M., & Basuhi, E. (2014). Attitudes towards business ethics held by accountancy and finance students in the University of Botswana. *International Journal of Business and Management*, *9*(2), 17–29.

Ploum, L., Blok, V., Lans, T., & Omta, O. (2018). Exploring the relation between individual moral antecedents and entrepreneurial opportunity recognition for sustainable development. *Journal of Cleaner Production*, *172*, 1582–1591. https://doi.org/10.1016/j.jclepro.2017.10.296

Ploum, L., Blok, V., Lans, T., & Omta, S. W. F. (2017). Toward a validated competence framework for sustainable entrepreneurship. *Organization and Environment*, *31*(2), 113–132. https://doi.org/10.1177/1086026617697039

Pohling, R., Bzdok, D., Eigenstetter, M., Stumpf, S., & Strobel, A. (2016). What is ethical competence? The role of empathy, personal values, and the five-factor model of personality in ethical decision-making. *Journal of Business Ethics*, *137*, 1–26. https://doi.org/10.1007/s10551-015-2569-5

Rauch, A., & Frese, M. (2007). Born to be an entrepreneur? Revisiting the personality approach to entrepreneurship. In J. R. Baum, M. Frese, & R. A. Baron (Eds.), *The psychology of entrepreneurship* (pp. 41–65). New Jersey: Lawrence Erlbaum.

Renouard, C., & Ezvan, C. (2018). Corporate social responsibility towards human development: A capabilities framework. *Business Ethics: A European Review*, *27*(2), 144–155.

Rieckmann, M. (2012). Future-oriented higher education: Which key competencies should be fostered through university teaching and learning? *Futures*, *44*, 127–135. https://doi.org/10.1016/j.futures.2011.09.005

Rockström, J., Steffen, W., Noone, K., Persson, Å., Chapin, F. S., Lambin, E. F., … Nykvist, B. (2009). A safe operating space for humanity. *Nature*, *461*(7263), 472–475.

Schaltegger, S., & Wagner, M. (2011). Sustainable entrepreneurship and sustainability innovation: Categories and interactions. *Business Strategy and the Environment*, *20*, 222–237. https://doi.org/10.1002/bse.682

Schnack, K. (2003). Action competence as an educational ideal. In D. Trueit, W. E. Doll, H. Wang, & W. F. Pinar (Eds.), *The internationalization of curriculum studies* (pp. 271–291). New York, NY: Peter Lang Publishing.

Shane, S., & Venkataraman, S. (2000). The promise of entrepreneurship as a field of research. *The Academy of Management Review*, *25*, 217–226. https://doi.org/10.5465/amr.2000.2791611

Stubbs, W., & Cocklin, C. (2008). An ecological modernist interpretation of sustainability: The case of Interface Inc. *Business Strategy and the Environment*, *17*(8), 512. https://doi.org/10.1002/bse.544

Swart, R. J., Raskin, P., & Robinson, J. (2004). The problem of the future: Sustainability q science and scenario analysis. *Global Environmental Change*, *14*(2), 137–146.

Ucbasaran, D., Westhead, P., & Wright, M. (2009). The extent and nature of opportunity identification by experienced entrepreneurs. *Journal of Business Venturing*, *24*, 99–115. https://doi.org/10.1016/j.jbusvent.2008.01.008

Vogel, P. (2016). From Venture Idea to Venture Opportunity. *Entrepreneurship Theory and Practice*, *41*, 943–971. https://doi.org/10.1111/etap.12234

Wesselink, R., Blok, V., van Leur, S., Lans, T., & Dentoni, D. (2015). Individual competencies for managers engaged in corporate sustainable management practices. *Journal of Cleaner Production*, *106*, 497–506. https://doi.org/10.1016/j.jclepro.2014.10.093

Wiek, A., Withycombe, L., & Redman, C. L. (2011). Key competencies in sustainability: A reference framework for academic program development. *Sustainability Science*, *6*, 203–218. https://doi.org/10.1007/s11625-011-0132-6

Wood, M. S., & McKinley, W. (2010). The production of entrepreneurial opportunity: A constructivist perspective. *Strategic Entrepreneurship Journal*, *4*, 66–84. https://doi.org/10.1002/sej.83

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APPENDIX

TABLE A1 Overview of codes and signalling words related to the items belonging to the two moral competencies

	Original item	Code	Signalling words
Normative competence	1	Take initiative based on norms and values	Importance, should do something, should take action, norms, values, feeling responsible
	2	Knowledge about sustainability	Facts and figures, sources, knowing
	3	Apply norms and values to own practice	Importance, feelings, moral standards, ethical value, responsibility, values, norms
	4	Explaining impact of sustainability on BMC	Integration BMC, impact on other blocks, impact on stakeholders
Strategic action competence	1	Involving other parties	Stakeholders, collaboration, working together
	2	Explanation of steps to be taken	Future plans, next steps
	3	Strategic way of working	Designing, testing, implementing, evaluating, integration BMC
	4	Monitor sustainability	Keep track, monitor, reflection
	5	Challenge non-sustainable ways	Examples of behaviour, personal experience,
	6	Identifying opportunities for *SD*	Opportunity, idea, chance
	7	Problem identification for *SD*	Problem, challenge, issue
	8	Motivation for investment in sustainability	Finance, influence on cost structure, framing *SD* in terms of money