

Master Thesis

The effect of Education for Sustainable Development on students' intention and behavior to pursue a career in a sustainability related profession

Can the Theory of Planned Behavior be applied to analyze business students' job search intention and behavior related to sustainability?



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Abstract

This study aims to apply the Theory of Planned Behavior (TPB) to explain students' intentions and behaviors towards working in a sustainability related profession. Furthermore, the effect of Education for Sustainable Development (ESD) on students is analyzed. It is proposed that ESD influences intention and job search behavior related to sustainability positively. 536 students from Maastricht University's School of Business and Economics were surveyed. For testing the effect of ESD, a new construct was developed based on key competencies in sustainability. The main finding is that the TPB has validity in this context and that ESD increases attitude, subjective norm and self-efficacy of students. Also, the TPB variables act as mediators between ESD and intention of working in a sustainability related profession. This intention then increases the actual job search behavior. Higher education institution leaders and governmental decision makers are encouraged to further implement ESD in universities to increase the relevance of universities and to produce responsible leaders. Furthermore, lifelong learning opportunities, more focus on sustainable consumption and the creation of shared value are practical implications.

Keywords: *Education for Sustainable Development, Key Competencies for Sustainability, Theory of Planned Behavior, Attitude, Subjective Norm, Self-Efficacy, Intention, Job Search Behavior*

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List of Abbreviations

ESD:	Education for Sustainable Development
DESD:	Decade of Education for Sustainable Development
TPB:	Theory of Planned Behavior
PBC:	Perceived Behavioral Control
CMV:	Common Method Variance

1. Introduction

The Stockholm Declaration argued as early as 1972 that sustainability in education is important to tackle environmental issues, such as pollution and the use of non-renewable resources (Sohn, 1973). The declaration consists of different principles, one of which states that “Education in environmental matters, for the younger generation as well as adults (...) is essential in order to broaden the basis for an enlightened opinion (...)” (Sohn, 1973, p.480). It was the first global conference held to discuss environmental policy goals and objectives. After the conference, global awareness regarding environmental issues and policies increased (Handl, 2012). Influenced by the Stockholm Declaration, the Brundtland report (WCED, 1987) introduced the concept of sustainable development: “Sustainable development is, in essence, development that meets the needs and aspirations of the present generation without destroying the resources needed for future generations to meet their needs.” (Keeble, 1988).

Since then, higher education institutions are seen as important contributors towards the transition to a sustainable society and should integrate issues of sustainability (Lambrechts et al., 2018). Furthermore, at the United Nations Conference of Environment and Development (UNCED) in Rio de Janeiro 1992, member states recognized that education, training and awareness are important for creating a sustainable future (Buckler & Creech, 2014). This line of thinking resulted in the concept of Education for Sustainable Development. “ESD is a holistic and transformational education which addresses learning content and outcomes, pedagogy and the learning environment. It achieves its purpose by transforming society.” (UNESCO, n.d./2020). Moreover, it covers all kinds of educational concepts to support the individual and collective contribution towards sustainable development (Hoffmann & Siege, 2018). The overall goal of ESD is to encourage people to think critically and reflect on decisions in a sustainable and future oriented way (Barth et al., 2007). Students should be empowered to take “responsible actions for environmental integrity, economic viability and a just society for present and future generations.” (Rieckmann, 2017, p.7). One such responsible action would be to pursue a career or enter into jobs that contribute to sustainable development.

Eventually, from 2005 until 2014, the UN Decade of Education for Sustainable Development (DESD) was launched and emphasized the role of universities in sustainable development (Bucker & Creech, 2014). The objective of the decade was to transform education to contribute more effectively “to the reorientation of societies towards sustainable development.” (Buckler & Creech, 2014, p.20).

The importance of ESD is reflected by the fact that it was included in the UN's 17 Sustainable Development Goals to create a better and more sustainable future (UN, n.d./2020a). Specifically, it is addressed in goal 4.7: "By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development (...)." (UN, n.d./2020b). After the DESD ended in 2014, the Global Action Programme was launched as a successor to continue promoting ESD and to accelerate progress in the field of sustainability (Bucker & Creech, 2014).

Undoubtedly, universities and higher education institutions in general have a critical role for society. They generate shared value by creating human capital and through their 'third mission' – supporting the regional development (Porter & Kramer, 2011; Etzkowitz, 1998). Students who received ESD are aware of social problems and know how to tackle them (Lozano, 2006). Those leaders are sensitized to identify societal needs and can address them while simultaneously increasing corporate performance and social value. This is of utmost importance due to the challenges current and future generations face, like climate change, finite resources and social segregation (Lang et al., 2012).

In order to conduct research about the effect of ESD on students, the theory of planned behavior (TPB) is applied as a framework (Ajzen, 1991). The TPB is chosen because it is regarded as one of the most comprehensive theories to explain intentions and behaviors (Kolvereid, 1996; Wanberg et al., 2005). It has three main components (attitude, subjective norm and self-efficacy) which influence the intention of a person. The intention then influences the behavior (Ajzen, 1991). Examining the effect of ESD is a relevant task for filling the research gap related to it, since the actual effect of ESD on students' intentions and behavior, especially job intentions and job choice, has not been a major subject of research so far (Pauw et al., 2015; Tilbury, 2011; Uitto et al., 2015). Furthermore, the TPB has not been applied to analyze business students' job search intention and behavior to sustainability yet. Thus, another goal of the thesis is to validate the application of the framework.

For investigating the research topic, two surveys were designed, one for bachelor and one for master students. The surveys included questions about the TPB variables and ESD. Measuring the effect of ESD was done by a self-developed framework assessing the perceived sustainability competencies development of students during their education (Rieckmann, 2017). The surveys were developed in Qualtrics, an online survey creation tool. The data collection took around two weeks, from October 6th until October 18th, 2020. Afterwards, the datasets were integrated, and 536 responses of students were analyzed in SPSS.

Regressions were performed to analyze the direct relation of intention and job search behavior as well as the relation between the three TPB variables and intention. PROCESS Model 4 developed by Hayes (2013) was then used to investigate the mediation effects of intention on the relation on the TPB variables and job pursuit behavior. The model was also used for the main analysis, the mediation effect of the TPB variables on the relation between ESD and intention. For ESD, different constructs were used (ESD-current, -previous and an overall variable) which were derived from an UNESCO framework (Rieckmann, 2017).

The results of the survey analysis show that there is a direct effect of job search intention on job search behavior and that the TPB variables directly influence intention. Furthermore, intention mediates the relation between attitude, subjective norm and self-efficacy with job search behavior. Lastly, the TPB variables mediate the relation between ESD and intention of working in a sustainability related profession. The study makes several theoretical contributions. It closes the research gap related to ESD and confirms the application of the TPB in the job search context. Also, a new construct with high internal validity for measuring ESD was developed. Limitations of this thesis are among others the sampling method and common method variance. Recommendations for future research are to repeat a similar study in different circumstances, for instance in another country and at another faculty. It is proposed that higher education institution should strengthen their focus on ESD. This would make them more relevant for students and would increase the attractiveness of sustainability related jobs. As a result, better leaders will be developed. Moreover, offering online courses for lifelong learning, focus on sustainable consumption and creating shared value are recommended.

The thesis is structured into different sections. After the introduction in the first section, *section 2* introduces the theory of planned behavior and the hypotheses which will be tested. The methodology of the analysis will be further explained in *section 3*. In *section 4* the analyses results will be presented, followed by the discussion of those in *section 5*. The thesis is then finalized by a conclusion. References and appendices can be found in *section 7* and *8*.

2. Theoretical model

In this section, the theory of planned behavior is introduced and the reason for it to be used as the main framework throughout this paper is explained. Furthermore, the hypotheses for the study are developed.

2.1 Theory of Planned Behavior

For studying the job intentions of students, a theoretical model is needed. There are different models which aim to predict intentions and the theory of planned behavior (TPB) by Ajzen (1991) is believed to be the most useful one in this case. This is supported by the fact that the TPB has “become one of the most widely used psychological theories to explain and predict human behavior.” (Kolvereid, 1996, p.49). The theory states that an individual’s attitude, subjective norms and self-efficacy shape his/her intentions and behavior (Ajzen, 1991). The TPB serves as a leitmotiv for the study because values, attitudes and norms have proven to be important factors for pro-environmental behaviors according to psychological literature (Bamberg & Möser, 2007; Hungerford & Volk, 1990; Milfont & Duckitt, 2004; Wiseman & Bogner, 2003; as cited in Uitto et al., 2015).

The TPB has its origin in the theory of reasoned action (TRA) (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975) and was developed to explain human behavior. The TRA states that attitude and subjective norm influence an individual’s intention and ultimately behavior (Madden et al., 1992). The factor by which the TRA is expanded to form the TPB is ‘perceived behavioral control’ (PBC), also known as self-efficacy. The TRA was extended to more accurately predict the intentions and behaviors of individuals. The idea behind the theory is that the more favorable the attitude and subjective norm towards the behavior and the higher the self-efficacy, the stronger the intention of an individual to perform the behavior. Higher intention in turn leads then to the actual engagement in the respective behavior (Ajzen, 1991).

The theory of planned behavior is regarded as a comprehensive and broad-reaching theory which accurately captures the motivational factors driving a certain behavior (Wanberg et al., 2005). Armitage & Conner (2001) analyzed the TPB and their study “provides support for the efficacy of the TPB as a predictor of intentions and behavior.” (Armitage & Conner, 2011, p.489). Thus, the intention of a person to actually perform a certain behavior is a determinant of the behavior and therefore, intentions are important to measure.

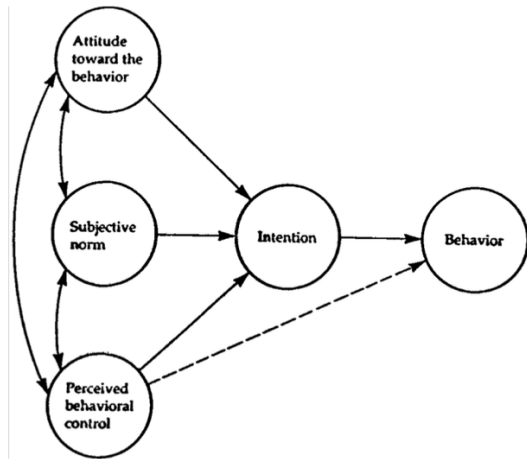


Figure 1: Theory of Planned Behavior (Ajzen, 1991)

Due to its accuracy, the theory was used in the past to explain a range of different kind of intentions and behaviors such as recycling (Davies et al., 2002), or counseling behavior (Watson et al., 2014). The TPB was also widely used in researching entrepreneurial intentions, for instance by Kautonen et al. (2009, 2010), Paço et al. (2011), Izquierdo & Buelens (2011), or Gorgievski et al. (2018). It is proven that it predicts entrepreneurial intention and that “Intentions are the single best predictor of any planned behavior (...)” (Krueger et al., 2000, p.412). In the context of this paper, the TPB is to be applied to study the intentions of students when it comes to their career choice after graduating from university. Since several authors have used the TPB in the context of job search intention and behavior (see for example Ryn & Vinokur, 1992; Van Hooft & De Jong, 2009; Powell and Goulet, 1996; Song et al., 2006), it is expected that the TPB is a suitable tool for this thesis. Moreover, it was also already used to analyze the effect of ESD on students (Uitto et al., 2015) and Swaim et al (2013) applied the TPB to predict sustainability intentions and behaviors.

2.2 Hypotheses development

2.2.1 The direct effect of intention on behavior

Intention – Behavior

The TPB has the individual’s intention to perform a certain behavior as its central factor: “Intentions are assumed to capture the motivational factors that influence a behavior (...)” (Ajzen, 1991, p.181). Its principle is that the stronger the intention to perform a behavior, the more likely it is that individuals actually carry it out (Ajzen, 1991).

Furthermore, self-efficacy and behavioral intention are proposed to directly predict behavioral achievement (Ajzen, 1991). Nonetheless, Ajzen added that self-efficacy has no additional value when

an individual has complete control over the behavior. Hence, it is not subject of this study to measure self-efficacy in direct relation to behavior, as a student normally has full control over his/her job application behavior. Therefore, according to Ajzen, “intentions alone should be sufficient to predict behavior (...).” (Ajzen, 1991, p.185). This is in line with research findings by Van Hooft et al. (2004) and Van Hooft & De Jong (2009) who studied the effect of both, job search intention and self-efficacy on job search behavior. They reported that intention is positively related to job search behavior while the effect of self-efficacy was not significant.

Within this study, intention represents the motivation of students to work in a profession associated with sustainability. According to the TPB, intention directly affects the actual behavior, meaning that if a student has a high intention to work in sustainability, he/she is expected to show signs of increased job pursuit behavior. This could be expressed in different ways, for example if the students apply for a sustainability related job, or regularly screening job opportunities in sustainable branches like renewable energy.

Regarding job search behavior, a study by Powell & Goulet (1996) showed that job choice intentions are indeed a predictor of later job choice. In studies by Van Hooft & De Jong (2009) and Van Hooft et al. (2004), job search intention was positively related to job search behavior. The link between intention and behavior was also positive in the study by Swaim et al. (2013) in that sustainability intention serves as a precursor to pro-environmental behavior, like waste and energy reduction (Swaim et al., 2013). The results of these studies implicate that ESD could lead to a higher intention of working in a sustainability related profession. In turn, this higher intention in could lead to higher job search behavior in the field. Testing this assumption is in line with the recommendation stated by Arnold et al. (2005). In a study about how well the TPB can account for occupational intentions, they concluded that the theory has utility but noted that further research is necessary to understand the true relation to occupational intention. Furthermore, Schreurs et al. (2009) used the TPB as well and concluded that it was successful in explaining job pursuit intention. Yet, they did not find a significant relationship between intention and behavior, which contradicts the findings of the studies previously mentioned.

In accordance with Powell & Goulet (1996), Van Hooft & De Jong (2009), Van Hooft et al. (2004) and Swaim et al. (2013) it is assumed that the more a student intends to work in a profession associated with sustainability, the more likely it will be that he/she actually applies for an appropriate job. Thus,

a positive intention to work in a sustainability related profession could influence the actual job search behavior positively, which is reflected in the following hypothesis:

Hypothesis 1: The intention of working in a sustainability related profession has a positive direct effect on the actual job search behavior.

2.2.2 The direct effect of the TPB variables on intention

Attitude

In the TPB, attitude describes the degree to which an individual has a favorable or unfavorable evaluation towards the behavior in question (Ajzen, 1991). In the context of job choice intention, attitude towards a sustainable job represents the favorable or unfavorable evaluation of working in a sustainability related profession. For example, one student might find the idea of working in such a job fulfilling while others may dislike it and do not think it has any benefits to work in this field.

Different studies related to sustainability and job search found that attitude is an important variable in explaining intentions. For example, Swaim et al. (2013) found that attitude is the strongest predictor of student's intention to behave sustainably in a study about the intention of students towards environmental sustainability. Additionally, in the context of sustainable behavior, in a study about Iranian students' intention to purchase organic food the TPB was applied by Yazdanpanah & Forouzani (2015). Again, attitude was the strongest variable and predicted nearly 56% of variance of the intention.

Moreover, according to a study conducted by Van Hooft & De Jong (2009), attitude predicts a significant portion of the variance in job search intention for temporary employment. These findings are underlined by Schreurs et al. (2009), Van Ryn & Vinokur (1992) and Van Hooft et al. (2006), who have shown that attitude is the strongest predictor for job search intention for other job seekers, specifically applicants for the military, the unemployed and people of different nationalities. This broad application of the theory emphasizes the importance of testing the effect also in the context of job search behavior among students.

Attitude is not only one of the most important variables in regard to sustainability intentions. It further plays a crucial role in career choice intentions. Looking at this paper, it is therefore essential to determine students' attitude towards sustainability when studying the intention of students to work in a sustainability related profession. It is expected that a positive attitude towards sustainability

positively influences the intention to work in a related field. Thus, the following hypothesis can be derived:

Hypothesis 2a: Attitude has a positive direct effect on the intention of working in a sustainability related profession.

Subjective norm

According to Ajzen, subjective norm “refers to the perceived social pressure to perform or not perform the behavior.” (Ajzen, 1991, p. 188). In other words, subjective norm deals with what others think a certain person should do or what a person thinks others want him/her to do (Song et al., 2006). In the context of this thesis, subjective norm describes the social pressure of working in a sustainability related profession. It could be the case that some students are for example influenced by family members who do not want them to work in a job associated with sustainability because they rather have them working in another field.

Similar to attitude, subjective norm has been shown to positively predict job search intentions (Song et al., 2006; Van Hooft et al., 2004; Arnold et al., 2006). Van Ryn & Vinokur (1992) also found subjective norm along with attitude to be the strongest predictor. Arnold et al. (2006) noted that “in contrast with some other TPB research (...) but consistent with Van Hooft et al.’s (2004) analysis of job search intentions (...), it appears that subjective norm plays a significant role in occupational intentions.” (Arnold et al., 2006, p.387). This implies that in the field of job choice, the effect of subjective norm is significant to understand intentions and behaviors, while it may only play a diminishing role in other fields. However, since Van Hooft, Arnold and their colleagues did their research in similar conditions, it is believed that their findings can be used as an indicator for this study. They analyzed the job choice intentions and behavior of young people, mean age of 29.6 and 27.24, respectively in the Netherlands and the UK. Similarly, the participants of the study conducted in this paper will be students of slightly older age studying at a university in the Netherlands. Furthermore, Swaim et al. (2013) showed that subjective norm has a positive link to intention of sustainable behavior among students. Thus, subjective norm plays a role in both, job search and sustainability related intentions.

Therefore, it can be said that subjective norm is an important variable to measure in addition to attitude. It is expected that a favorable subjective norm will lead to higher intentions to work in a sustainability related field because the opinion of others might be influential for most students. Consequently, the following hypothesis represent this theoretical implication:

Hypothesis 2b: Subjective norm has a positive direct effect on the intention of working in a sustainability related profession.

Self-efficacy (PBC)

Perceived behavior control (PBC) describes the degree to which an individual possesses the resources necessary to successfully perform a certain behavior (Madden et al., 1992) and it is based on the concept of self-efficacy introduced by Bandura (1977, 1982). Self-efficacy “is concerned with judgements of how well one can execute courses of action required to deal with prospective situations.” (Bandura, 1982, p.122, as cited in Ajzen, 1991, p.184). Some authors argued that PBC is actually comprised of two different constructs, self-efficacy and controllability. Controllability describes the perception of control over the environmental constraints on behavior (e.g. Conner & Armitage, 1998; Terry & O’Leary, 1995, as cited in Schreurs et al., 2009). However, since controllability showed unreliable effects as a predictor for intention and behavior (Amritage & Connor, 2001), only the impact of self-efficacy will be used to analyze job intention in this study.

Here, self-efficacy describes having the confidence in the ability to perform well at a sustainability related job. When a student has high self-efficacy it could be said that he/she feels ready for a job in sustainability. However, low self-efficacy can be interpreted as perceived lack of skill necessary for a sustainability related profession. Those skills could be for instance strategic and critical thinking competencies (Wiek et al, 2011; Rieckmann, 2017).

In some studies, self-efficacy (or PBC) was found to not be significant in explaining intention (Van Hooft & De Jong, 2009; Van Hooft et al., 2004; Caska, 1998; Song et al., 2006). On the other hand, studies for example by Zikic & Saks (2009) found that all of the three TPB variables have significance and that job search self-efficacy is an essential variable when analyzing job search intention. Moreover, in studies about ecological intentions and behavior, it was also demonstrated that self-efficacy is an important predictor for intentions (Uitto et al., 2014, 2015; Meinhold & Malkus, 2005). Furthermore, the variable has a crucial role in the field of educational psychology and environmental education (Anderson & Betz, 2001; Bandura, 1997; Usher & Parjares, 2008; as cited in Uitto et al., 2015). In this field, the perceived skill in using environmental action strategies is one of the best predictors for environmental intention and behavior (Hungerford & Volk, 1990). This point emphasizes that self-efficacy has proven to be an important and accurate variable in a field related to sustainability.

Consequently, since this study wants to measure the intention of students for a specific profession, their perceived level of skill related to it needs to be examined. It is assumed that a higher self-efficacy increases the intention to work in sustainability due to the student's increased confidence. The following hypothesis can be derived from this reasoning:

Hypothesis 2c: Self-efficacy has a positive direct effect on the intention of working in a sustainability related profession.

2.2.3 The mediating effect of intention

Intention as Mediator

The TPB states that three independent determinants – attitude, subjective norm, self-efficacy (PBC) – predict intention (Ajzen, 1991). These intentions, in turn, predict the actual behavior of an individual. This explanation suggests that intention acts as a mediator in the relationship between the three TPB variables and behavior. That means that the three TPB variables indirectly influence the actual job search behavior of students through their intention to work in a sustainability related profession. For instance, as described above, attitude has a direct effect on the intention to work in the field. Intention and the actual behavior are also directly related and thus, attitude has an indirect effect on the job pursuit behavior. The same principle applies for subjective norm and self-efficacy.

Various studies (see for example Zikic & Saks, 2009; Schreurs et al., 2009; Van Hooft et al., 2004) investigated this mediating role of job search intention on the relationship between attitude, subjective norm and self-efficacy and actual job search behavior. For instance, Van Hooft et al. (2004) discovered that “job search attitude (...) and subjective norm significantly correlated with both intention and behavior, and intention significantly correlated with behavior. Self-efficacy, however, did not correlate significantly with either intention or behavior.” (p.379). In another study conducted by Van Hooft & De Jong (2009), they also found that intention acts as a mediator in the indirect relationship of attitude and subjective norm with job search behavior. Again, no significant indirect relationship between self-efficacy and behavior was detected. In contrast, Schreurs et al. (2009) did not find a mediation effect of intention on the relationship between the three TPB variables and job search behavior in a study about applicants' job search behavior for the Belgian military at all. Furthermore, Zikic & Saks (2009) as well as Song et al. (2006) found no support for the TPB mediation hypothesis in the context of occupational intention and behavior.

These contrary research findings regarding the mediating effect of intention are puzzling. Hence, the mediation effect of intention will be studied in this thesis to understand the indirect effect of the TPB variables on students' job search behavior better.

Hypothesis 3: Job search intention mediates the relationship between a) attitude; b) subjective norm and c) self-efficacy with job search behavior, such that a positive attitude/ subjective norm/ self-efficacy has a positive effect on intention, which in turn affects the behavior positively.

2.2.4 The mediating effect of the TPB variables

Education for Sustainable Development

The actual effect of ESD on students' intention and behavior is unclear as research is lacking in this field (Pauw et al., 2015; Tilbury, 2011; Kagawa, 2007). It is evident that "a detailed study on the learning experiences of learners is lacking, and more importantly, the question of whether ESD efforts make a difference is not commonly dealt with in the literature." (Uitto et al., 2015, p.62).

Different studies focusing on students' attitudes towards sustainability were conducted so far. For example, Lambrechts et al. (2018) investigated business students' attitude towards sustainability and came to the result that there is no universal perspective on sustainability. The students' interest ranges from 'not being interested' to students that want to take initiative to tackle environmental issues. In contrast, other studies reported that ESD has a general and overall positive effect on students' pro-environmental attitude. Zsóka et al. (2013) found that environmental education has an important role in shaping the attitudes about sustainable consumption. According to the study, "the level of environmental knowledge, commitment, and environmentally conscious action are found to be strongly interrelated and they significantly correlate with the intensity of environmental education." (Zsóka et al., 2013, p.136). Findings by Kagawa (2007) support this assumption, as he reported that students generally have a positive attitude towards sustainability. Moreover, as reported by Meinhold & Malkus (2005), high school students' attitudes towards environmental issues can predict their pro-environmental intention and behavior. Additionally, Coertjens et al. (2010) showed that schools play a role in shaping the attitude of their students towards pro-environmental behavior. Also, "environmental learning activities are associated with more pro-environmental attitudes among students." (Coertjens et al., 2010, p.497). Through ESD, students ideally learn about sustainability issues and would start to have a stronger positive attitude to pursue a career in such. Hence, it is expected that ESD impacts the attitude towards working in sustainability positively, which in turn increases the students' intention.

Hypothesis 4a: Education for Sustainable Development has a positive effect on intention and this effect is mediated by attitude.

Subjective norm is expected to be positively influenced by ESD because it is probable to be surrounded by people in a class about sustainability that take a positive stance towards the topic. If fellow students think positively about sustainability, it is likely that an individual is influenced by that and affects him/her in a way that he/she wants to work in sustainability. One of the goals of ESD is to convey collaborative competency (Rieckmann, 2017). That means learning to understand other's needs, empathic leadership and facilitating a collaborative environment. The increased focus of job seekers on socially and environmentally responsible organizations also plays a role in the effect of ESD on subjective norm. Organizations which focus on sustainability are perceived as more favorable by students (Turban & Greening, 1997; Greening & Turban, 2000; Backhaus et al., 2002). This fundamental ideal of most students, that sustainability is an important factor in job choice, is transmitted to other students which increases the social pressure to work in a sustainability related profession. Furthermore, responsibility for others is a cornerstone of ESD (Uitto & Saloranta, 2010). In this respectful environment created and nurtured by ESD related courses, subjective norm among students will be higher than it would be without ESD. Moreover, it is expected that the opinion of family or close friends is important for students' opinion formation. For example, according to a study by Bratt (1999), social pressure exercised by family members influenced the recycling behavior of individuals. Attending a course related to ESD puts a student in a social context with fellow students and during this time they may talk to their family about the course content – hence, the course directly enhances intention to pursue a career in sustainability through subjective norm.

Hypothesis 4b: Education for Sustainable Development has a positive effect on intention and this effect is mediated by subjective norm.

Lastly, self-efficacy will be strengthened because ESD provides students with knowledge and skills needed for working in a sustainability related profession. Studies show that the more students know about a topic, the more they think they possess the skills necessary to succeed in a certain job. For example, a study by Zikic & Saks (2009) found that job seekers who attended more training programs have a higher job self-efficacy. Translated to the topic at hand it means that the more ESD studies a student attended, the higher his/her self-efficacy. According to Bandura (1977, 1982), if an individual persistently masters a skill, the greater the level of self-efficacy. If students have ESD in their curriculum, they learn to master its concepts and get better in addressing for example social and

environmental needs. As a result, they have higher self-efficacy for working in a sustainability related job. Furthermore, Uitto et al. (2014) studied the contribution of ESD on students' self-efficacy regarding their ability and competence to contribute to sustainable development. They found that if a school has ESD implemented, their students show a higher self-efficacy. Mintz & Tal (2014) also found that "In the case of higher education courses, we can assume that when students believe they have the skills that are required to promote sustainability it promotes their motivation of acutely doing it." (p.121). Thus, a student who learns new knowledge, frameworks and analytical skills is expected to have a higher intention to pursue a career in a sustainability related job through an increased level of self-efficacy. *Figure 2* illustrates all the hypotheses which were proposed in this section.

Hypothesis 4c: Education for Sustainable Development has a positive effect on intention and this effect is mediated by self-efficacy.

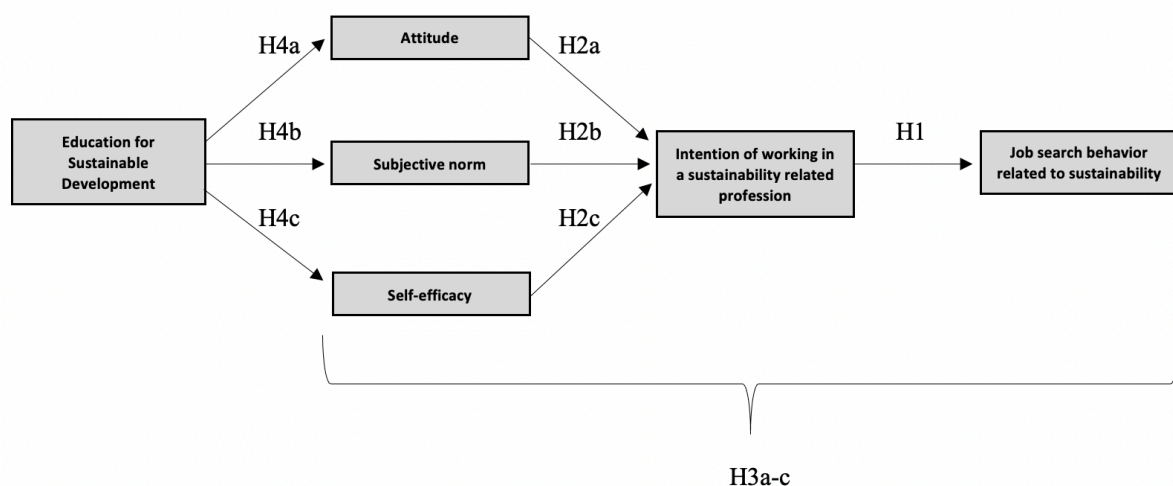


Figure 2: Theoretical framework

Note: This figure illustrates the proposed hypotheses based on the theory discussed in this section. The explanatory variable is "Education for Sustainable Development" and refers to the perception of students how ESD-competences are to be developed in their current and past study programs (Rieckmann, 2017). The theory of planned behavior (Ajzen, 1991) serves as the core construct in this study. It is expected that attitude, subjective norm and self-efficacy have a positive effect on intention of working in a sustainability related profession and that they also mediate the relationship between ESD and intention. In turn, intention has a positive direct effect on the job search behavior related to sustainability. Furthermore, intention has a mediation effect on the relationship between the TPB variables and job search behavior.

3. Methodology

This section deals with the methodical approach to examine the previously discussed hypotheses. Firstly, the design of the survey is explained. Secondly, the measures of the study are described, followed by the sampling approach. After that, the actual sample is provided and lastly, the analytical strategy is illustrated.

In the following study, a quantitative research approach is taken using primary data collected in surveys. In order to examine the effect of ESD on students' intention to pursue a career in a sustainability related profession, the target group – bachelor and master students from Maastricht University School of Business and Economics – were surveyed. Two similar surveys were developed for bachelor and master students. The survey for master students included 88 and for bachelor students 85 items and an integrated set of the questions asked can be found in **Appendix A**. Both questionnaires took around nine minutes to complete and were created in Qualtrics. They were sent to 5450 students, 3612 of those are bachelor and 1838 master students. Participating in the surveys was voluntary and no reward was given to the participants. The data was collected from October 6th, 2020 until October 18th, 2020. In total, 536 valid responses were recorded. The responses from bachelor and master students were integrated into one dataset since this study is concerned with the ESD-effect on intention and behavior of business students in general.

3.1 Survey design

For investigating the intentions and behaviors of bachelor and master students, two different surveys were designed. The main difference in the two surveys was that the one designed for master students asked about ESD experiences in their bachelor studies, whereas the bachelor survey dealt with ESD experiences during their last years in high school. The survey was completed in English, since Maastricht University is a very international institution, with over 50% of its students coming from abroad (Maastricht University, n.d./2020a).

In the preface of the survey, a short explanation of the study and an explanation of a sustainability related profession was given. This explanation provided is based on the definition of sustainability stated in the Brundtland report: "Sustainable development is, in essence, development that meets the needs and aspirations of the present generation without destroying the resources needed for future generations to meet their needs." (Keeble, 1988). According to that, it was stated that a sustainability related profession could be any job with a connection to sustainability, either in private public or non-profit institutions. The profession and/or the organization should in some way make a

contribution to the achievement of the Sustainable Development Goals (UN, n.d./2020a). Since the survey was completed by students enrolled in a business school, examples could be specific business-related positions like: Sustainability Consultant, Public Relations Specialist or Sustainability Analyst.

3.2 Measures

The survey questions for both, bachelor and master students, are based on a number of other studies who used the TPB to investigate intentions and behaviors similar to the topic of this study. Shook & Bratianu used the TPB to study entrepreneurial intention and the questions they asked their participants in their survey regarding attitude, subjective norm and intention were adapted to fit the topic of working in a sustainability related profession. The survey questions are used because they proved to be reliable and accurate. Furthermore, items from studies from Swaim et al. (2013) about the intention of students toward environmental sustainability were adapted. In combination with Schreurs' et al. (2009) study about job pursuit behavior and Van Hooft & De Jong's (2009) research about job seeking for temporary employment, enough questions were available for the different topics this study deals with. For the ESD questions, the key competencies framework from Rieckmann's UNESCO report (2017) was used as a basis. There, he derived the competencies from other authors and reports (see de Haan, 2010; Rieckmann, 2012; Wiek et al, 2011). The questions concerning "other sustainability related behavior" were derived from Uitto et al. (2015) who dealt with the question how in-school experiences shape the general ecological intentions and behaviors in the out-of-school environment. Similar to the studies for example by Schreurs et al. (2009), Uitto & Saloranta (2010) and Uitto et al. (2015), a 5-point Likert scale is used for assessing the variables of the survey. For reliability reasons, the measures should have a Cronbach Alpha of at least 0.7 to be accepted (Pallant, 2013).

Furthermore, the survey was designed in cooperation with the thesis supervisor, Dr. Lukas Figge, who has a research background in sustainability science. Since the TPB is a behavioral construct, a second professional with a background in psychology, Dr. Carolin Muschalik, reviewed the statements related to TPB.

3.2.1 Attitude

The first factor, attitude towards a job in a sustainability related profession, is measured in a 5-point Likert scale ranging from 1 (=strongly agree) to 5 (=strongly disagree). The statements which have to be evaluated are drawn from Swaim et al. (2013) and Shook & Bratianu (2010). For example, the item "I consider starting my own business very desirable." (Shook & Bratianu, 2010) was adapted and

changed to “Working in a sustainability related profession is something I find desirable.”. Furthermore, Swaim et al. (2014) used the statement “Everyone is responsible for caring about the environment.”. In the surveys, a similar statement was used: “Working in a sustainability related profession would allow me to address social and/or environmental issues.”. In total, ten items of each survey are related to attitude, five each for instrumental and affective statement. For attitude, the statements are the same for both the bachelor and master survey. The internal reliability for attitude in both datasets combined was very high with a Cronbach alpha of 0.903.

3.2.2 Subjective norm

The statements regarding subjective norm are related to the social pressure to work in a sustainability related profession and are the same for both surveys. Therefore, focusing on fellow students, family members and friends is applicable. The 14 items are measured in different Likert scales, since subjective norm includes different dimensions, injunctive and descriptive norm (White et al., 2009). First, five statements concerning the injunctive norm, the perception what should or ought to be done have to be evaluated. They are measured in a scale from 1 (=strongly agree) to 5 (=strongly disagree). The statements are derived from the study of Shook & Bratianu (2010) and include statements like: “People in my life think that I should work in a sustainability related profession.” and “My close friends think that I should work in a sustainability related profession.”. Second, statements like “The people who are important to me (will) work in a sustainability related profession.” deal with the descriptive norm, the perceptions that others are or are not performing the behavior in question. For that, a likeliness scale is used (1=extremely likely to 5=extremely unlikely). Finally, five moderator questions are asked including “How important are other people’s opinion to you?” and “How important are your parents’ opinion to you?”, to fully capture the influence of the social environment on the decision to work in sustainability. These questions are assessed by a scale ranging from 1 (=extremely important) to 5 (=not at all important) and do not differ for bachelor and master students. The Cronbach alpha test resulted in a value of 0.775.

3.2.3 Self-efficacy

Self-efficacy is measured in a scale ranging from 1 (=strongly agree) to 5 (=strongly disagree). Six different statements are derived and adapted from different studies and deal with the perceived capability of working in a sustainability related profession. This time, surveys developed by two different authors were used, Swaim et al. (2013) and Schreurs et al. (2009). The two newly developed surveys include the same items. These are for example: “I have the abilities to work in a sustainability related profession.” and “I doubt that I would be able to work in a sustainability related profession.”

(reverse scored). Statements like “It is my decision whether or not to perform environmentally sustainable activities.” (Swaim et al., 2013) were adapted to “It is my decision whether or not to work in a sustainability related profession.”. Internal reliability was high with a Cronbach alpha value of 0.835.

3.2.4 Intention

The items for measuring the intention to work in a sustainability related profession are again derived from Shook & Bratianu (2010) and are the same in both surveys. A 5-point scale from 1 (=strongly agree) to 5 (=strongly disagree) is used to assess the first two statements which deal with the intention to apply and to work in a sustainability related profession. The third and final question: “How likely is it that you will work in a sustainability related profession some day in the future?” needed to be evaluated on a likeliness scale (1=extremely unlikely to 5=extremely likely). Again, internal reliability was high with 0.911.

3.2.5 ESD

The main goal of the thesis is to assess whether Education for Sustainable Development has an impact on students’ intention to work in a sustainability related profession. Hence, a construct which operationalizes ESD needed to be designed. This construct was developed by using statements derived from Reichmann’s UNESCO report (2017). These concepts were then divided into two sections. The participants were asked to evaluate the statements on ESD about their current and previous studies to get an overall picture on how ESD is embedded in educational institutions in general. Ultimately, an integrated variable, ESD-overall, was also created to get an indication of the overall perception of students towards ESD. The internal validity of this variable was high with a Cronbach alpha value of 0.910.

3.2.5.1 ESD-current studies

In both surveys, the first section of questions deals with how the students perceive their ESD competencies are developed in their current program (either bachelor or master). The statements which have to be evaluated are based on the “Key competencies for sustainability” framework mentioned in the official UNESCO report by Rieckmann (2017). He builds upon the work by Wiek et al. (2011) and lists eight different competencies needed for sustainability. Those key competencies are: systems thinking competency, anticipatory competency, normative competency, strategic competency, collaboration competency, critical thinking competency, self-awareness competency and integrated problem-solving competency. Deriving statements from those key competencies which

have to be evaluated by participants has not been done before in other studies and is hence a new approach. This framework was used as a basis because it describes competencies which are seen as crucial to advance sustainable development (Rieckmann, 2017). Hence, it is expected that students who possess these received sufficient ESD and are more willing to work in a related profession.

Before, ESD competencies have been assessed in other ways. For instance, Azapagic et al. (2005) asked their participants how they would rate their knowledge of sustainability related topics (p.18). Gatti et al. (2019) asked a specific question: “How well do you think you understand the concept of sustainability?” (p.676). Other authors, like Pauw et al. (2015) focused on how ESD is implemented at school. With statements like “In school we look at the connections between past, the present, and the future as regards various issues.” (p.15702) the main focus was put on the practical implementation as on the psychological aspects related to intention and behavior. Since those approaches are not overarching the whole sphere of ESD, it was decided to develop a new approach based on the competencies that should be developed by students when ESD is implemented sufficiently.

After the survey was send out to the students, one author answered an inquiry about the ESD construct they used. The concept they used is similar to ours since they based their statements also on competencies like diversity competence, foresighted thinking competence, systems thinking competence, normative competence, interpersonal competence, strategic action competence (Ploum et al., 2018). This approach and the competencies where statements are derived from are similar to the approach taken in this thesis which indicates a high validity and reliability of this concept.

Two statements were derived for each competency expect for “integrated problem-solving”. Its essence is already captured in the statements for the other competencies. Below bullet points are listed for providing an overview of the statements applied per competency:

- The first competence, **systems thinking competency**, is described as “the abilities to recognize and understand relationships; to analyze complex systems” (Rieckmann, 2017, p.10). For finding out if these abilities are perceived to be developed in their program, the students were asked to evaluate the statements: “My master’s/ bachelor’s program develops...” 1) “... my ability to understand and analyze complex and interrelated systems.” and 2) “... my ability to identify and analyze causes and consequences of sustainability.”. The measure for this and for all the other statements is an agreement scale (1=strongly agree to 5=strongly disagree).

- The second competence, ***anticipatory competence***, describes the abilities to understand and evaluate multiple futures (Rieckmann, 2017). Thus, statements were used that capture this idea of anticipation. Students were required to indicate whether they are able to create a vision for a sustainable future and if they are able to evaluate multiple scenarios on how to achieve sustainability.
- The statements used for ***normative competence*** deal with the students' perceived ability to understand and reflect on the norms, values and actions that contribute to sustainability. Furthermore, their ability to debate sustainability values, principles and goals has to be evaluated.
- ***Strategic competency*** is about the development and implementation of innovative actions (Rieckmann, 2017). Therefore, students were asked how they would rate their ability to develop and implement innovative solutions that contribute to sustainability and if they could take responsible actions to promote sustainability.
- ***Collaboration competency*** describes the ability to deal with conflicts and to understand and respect the needs, perspectives and actions of others. The participants were asked to evaluate statements
- The ***competence to think critically*** was queried by the statements if the participants could take a critical position on a sustainability issue and if they are able to question opinions and behaviors of themselves and others.
- Lastly, ***self-awareness*** was checked by evaluating their ability to reflect their own role as a global citizen and if they understand and can deal with their feelings and emotions.

This way the perception of students about how they perceive ESD competences to be developed in their program is queried. Additionally, the students (bachelor and master) have to indicate how satisfied they are with the quality and quantity of ESD in their current program. Furthermore, an open question was provided to suggest how ESD could be improved. The conducted Cronbach's alpha test resulted in a very high value of 0.903.

3.2.5.2 ESD-previous studies

The same set of questions is used for the previous study experiences. For master students, they relate to their bachelor studies and for bachelor students they relate to the last three years of high school education. The statements are written past tense, contrary to the present tense statements of the previous section. In the survey for master students, the participants also have to state where they did

their bachelor studies and what subject they studied. For the statements regarding previous studies, the Cronbach Alpha test confirmed high internal reliability, with a value of 0.922.

3.2.6 Job search behavior

Lastly, the job search behavior is tested by asking both groups of participants about actual application behavior. The job search intensity has to be indicated on a scale from 1 (=not at all) to 5 (=few times a week). Further, statements used by Van Hooft & De Jong (2009) were adapted and so statements like “I regularly check for job openings in the field of sustainability.” and “I regularly gather information about the possibilities to work in a sustainability related profession.” have to be evaluated on a five-point agreement scale (1=strongly agree to 5=strongly disagree). Two self-determined statements are also included to check if participants currently work in or already applied for a sustainability related job. In total, seven statements are used to get an indication about the participants job search behavior related to sustainability. Internal reliability is high because Cronbach’s alpha has a value of 0.881.

3.2.7 Control variables

As a control variable, “other sustainability related behavior” is concerned with sustainability related experiences outside the classroom (master students: last five years; bachelor students last four years) and consists of nine questions. The variable was included for assuring that truly the effect of ESD has an impact on students’ intentions and not their extracurricular activities. For most of them, a Likert scale ranging from 1 (=all the time) to 5 (=never) is used. Some of Uitto et al.’s (2015) study questions were used as an inspiration for the statements and they are mixed with self-determined questions. The statements derived from Uitto et al (2015) which have to be evaluated in the previous mentioned Likert scale include “I contributed actively to a sustainability-related student organization (being an active member or board member in organizations such as Oikos, Enactus, Green Office, UNSA, etc.)” and “I volunteered for a sustainability-related cause (e.g., education, social projects, ecological restoration, etc.)”. Furthermore, self-determined questions are included. For example, students could indicate if they engaged in other relevant activities, how much professional work experience they have in sustainability and whether they live a sustainable lifestyle. Cronbach’s Alpha test resulted in a value of 0.750. Thus, internal reliability of the construct is high. The variable is not used in all of the analysis conducted, only as a control variable when examining the ESD constructs.

Similar to studies by Song et al. (2006), Van Hooft & De Jong (2009), Van Hooft et al. (2006), Van Hooft et al. (2004), and Zikic & Saks (2009), “gender” (1=male, 2=female, 3=other) and “age” are also used

as control variables. Regarding “gender”, no participant chose the option “other”. Hence, in the actual analysis “gender” is coded as (0=male and 1=female).

3.3 Sampling approach and data collection

The data for this study was collected by using primary data collected in surveys. This type of method is known as purposive (also known as judgement sampling) (Etikan & Alkassim, 2016; Marshall, 1996). The participants of the survey are selected based on the faculty they are enrolled, Maastricht University – School of Business and Economics. An advantage of this method is the possibility to directly focus on the target population and that it requires less time and effort. Research bias could be a disadvantage since the participants are not randomly selected. The research was endorsed by SBE’s Educational Institute and thus, the surveys were directly sent to all SBE students by mail. One week later, 29 course coordinators were asked to make a post in their electronic learning environment to further promote the study. The data was collected over the course of two weeks, from October 6th until October 18th, 2020.

3.4 Data sample

The main sample for this analysis is 536, since those are the valid recorded responses. 157 responses were incomplete, with most of those participants filled out less than 20% of the surveys. 236 of these 536 participants are currently not looking for a job, hence a reduced sample of 300 is used for the hypotheses dealing with job search behavior (*hypothesis 1* and *hypotheses 3a-c*). Since the surveys were sent out to 5450 students, a response rate of 9.83% can be calculated. Out of all the participants, 51.9% are male and 48.1% are female. The age ranges from 17 – 50 with most students being 20 years old (17.4%). The mean age is 21.4 with a standard deviation of 3.63. The majority of the students are studying (80.2%) and 16.2% are working at the same time. Only 2.2% are studying and doing an internship and 1.3% of the participants finished their studies already. Most frequent master programs are Sustainability Science, Policy & Society (25.10%), International Business: Strategy & Innovation (15.7%) and Public Policy & Human Development (4.9%). A total of 27 master students follow a second specialization, most of them Sustainability Science, Policy & Society (14.8%). Bachelor students mostly study International Business (49.30%), followed by Economics & Business Economics (13.9%) and Economics and Business Economics: International Business Economics (12.50%). Two thirds of the participants come from Germany (32.60%), the Netherlands (20.00%), Belgium (17.40%) and Italy (4.70%). A majority of the participants started their studies in September 2020 (56.0%). The most relevant information about the data sample is displayed in *table 1*.

Table 1: Summary of descriptive statistics

Variable (N=536)		Frequency	Percent
Gender	Male	278	51.9%
	Female	258	48.1%
Age		17-50 (Ø21.4)	
Current situation	Studying	430	80.2%
	Studying & working	87	16.2%
	Studying & internship	12	2.2%
	Finished studying	7	1.3%
Study program (Top 5)	<i>Master: International Business</i>	170	31.7%
	<i>Bachelor: Economics & Business Economics</i>	48	9.0%
	<i>Master: Sustainability Science, Policy & Society</i>	48	9.0%
	<i>Bachelor: Economics & Business Economics: International Business Economics</i>	43	8.0%
	<i>Master: IB: Strategy & Innovation</i>	30	5.6%
Nationality (Top 5)	Germany	175	32.6%
	Netherlands	107	20.0%
	Belgium	93	17.4%
	Italy	25	4.7%
	France	17	3.2%
Study start	September 2020	300	56.0%
	September 2019	118	22.0%
	September 2018	86	16.0%
	Earlier	32	6.0%

Note: N=536. This table represents the summary statistics of the data sample set used.

3.5 Analytical strategy

SPSS Version 27 was used for analyzing the data. Accordingly, the responses of the participants were transmitted to the program. For the analysis, both datasets were combined in SPSS. After analyzing the internal reliability with the Cronbach alpha test, a factor analysis for the newly developed ESD constructs and the control variable “other sustainability related behavior” was performed. The data set was also checked for outliers. Before proceeding with the actual hypotheses’ analysis, several pre-tests were conducted to validate the assumptions for data analysis.

3.5.1 Factor analysis for ESD and other sustainability related behavior

As previously mentioned, internal reliability of the variables was tested first with the Cronbach's alpha test. Furthermore, a factor analysis was conducted for the newly developed ESD concepts. In contrast to the other variables used, they were not previously tested and validated. "Other sustainability related behavior" was also included in this analysis, since some of the statements used are self-determined. Cronbach's alpha was high for the ESD constructs as mentioned above (ESD-current studies=0.903, ESD-previous studies=0.9222, ESD-overall=0.910). The Principal Component Analysis with rotation resulted in a KMO of 0.912 and a highly significant Bartell's test. The results confirm that indeed the statements relating to each of the three variables (ESD-current studies, ESD-previous studies, other sustainability related behavior) loaded on the corresponding factor component. Merely the item "I try to live a sustainable lifestyle (i.e., buy fair trade products, try to minimize waste)." did not load on a factor. However, since internal reliability of the variable "other sustainability related behavior" is high (Cronbach alpha=0.750), the item is not removed from the analysis. Thus, the analysis showed no issues regarding the factor loadings.

3.5.2 Dealing with outliers

Outliers were identified with boxplots (**Appendix B**). Attitude has six, subjective norm nine, self-efficacy four, intention none, ESD-current studies five, ESD-previous studies three, other sustainability related behavior two and job-search behavior none. It was decided to leave these few outliers in the dataset because the study is about personal assessment and hence it is not expected that these outliers distort the analysis. Moreover, the internal reliability for all measures was sufficiently high and also none of the outliers were extreme.

3.5.3 Assumptions for data analysis

Next, it was checked if the assumptions for data analysis are met. These assumptions are normality, linearity, homoscedasticity and independence. In order to verify the assumption of normality, histograms were created, and the Kolmogorov-Smirnov test was used. For attitude (sig.=0.001), subjective norm (sig.=0.003), self-efficacy (sig.=0.001), intention (sig.=0.001), ESD-current studies (sig.=0.001), other sustainability related behavior (sig.=0.001), and job search behavior (sig.=0.001), the Kolmogorov-Smirnov test indicated that these are not normally distributed. Only for ESD-previous studies (sig.=0.95) the test indicated a normal distribution. However, the sample size is high (N=536) and thus, the Central Limit Theorem holds, and it can be expected that the sample is normally distributed (Lumley et al., 2002).

The corresponding histograms for illustration purposes can be found in **Appendix C**. For testing the assumption of linearity, scatterplots were created for each variable against the dependent variable job search behavior (**Appendix D**). In both data sets no deviations can be identified which violate the assumption of linearity. The scatterplots also indicate that the assumption regarding homoscedasticity is met. The assumption of independence is expected to be met as the data in both surveys come from different participants. Thus, the observations were not influenced by other participants and the standard errors of the variables are not related.

3.5.4 Strategy for testing hypotheses

For testing the direct effect of intention on job pursuit behavior (*Hypothesis 1*) and the direct effects of the TPB variables on intention (*Hypotheses 2a-c*), a hierarchical regression is used. Analyzing the *Hypotheses 3a-c* requires the use of Hayes' PROCESS Model 4 (*figure 3*), since it is able to test if intention fully or partially mediates the relationship between the TPB variables and job search behavior (Hayes 2012, 2017). Therefore, the PROCESS add-on Version 3.5 created by Hayes was downloaded. Furthermore, Model 4 was also used to analyze *Hypotheses 4a-c*, the mediation effects of the three TPB variables (attitude, subjective norm, self-efficacy) on the relation between ESD and the intention to work in a sustainability related profession.

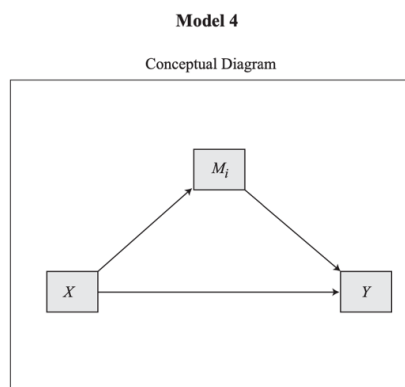


Figure 3: Hayes' PROCESS Model 4 (Hayes, 2017)

4. Results

In this section the hypotheses introduced in *section 2.2* are tested. The most important insights are that all the hypotheses are supported and the mediation effects of intention and the TPB variables in *hypotheses 3a-c* and *4a-c* are all significant.

Before explaining the results of the analysis, the correlations between the variables are displayed. After that, the results of the analysis are presented in chronological order, from *hypothesis 1* to *hypotheses 4a-c*. First, the effect of intention of working in a sustainability related profession on job search behavior was tested. The main finding is that this relationship is significant and intention influences job search behavior positively. Second, the relationship between the three TPB variables (attitude, subjective norm, self-efficacy) on intention was analyzed, which is also significant and positive. Moreover, the indirect effect of the TPB variables on job pursuit behavior through intention was investigated. The result was a positive mediation effect. Afterwards, the main analysis of this study was conducted, the effect of ESD on intention through the TPB variables. The finding is that the relationships was mediated by the TPB variables. Lastly, final overall models were tested for intention and job search behavior. *Figure 4* gives an overview of the tested and supported hypotheses.

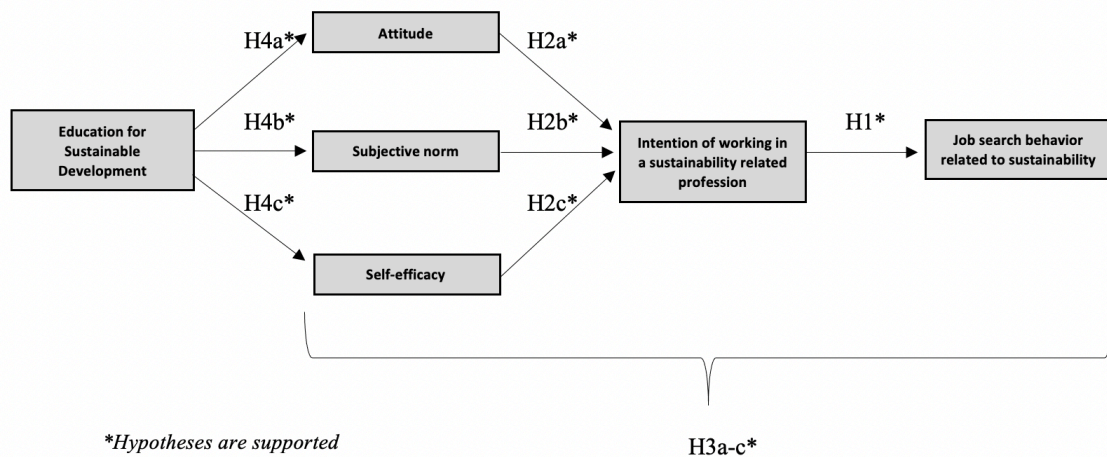


Figure 4: Overview – Hypotheses tested

Note: This figure illustrates the hypotheses 1-4a-c, developed in section 2.2. The hypotheses were tested and based on the analysis conducted, all of them can be supported.

4.1 Descriptive and correlations

The correlations of the variables along with the means and standard deviations are listed in *table 2*. As can be seen from the table, all correlations between the variables are highly significant ($p < 0.01$). Attitude ($r = 0.786$), subjective norm ($r = 0.575$) and self-efficacy ($r = 0.286$) are all positively correlated with intention, which provides support for the theory of planned behavior. Furthermore, intention

and job search behavior ($r=0.676$) are also positively correlated, as well as ESD-current studies and job search behavior ($r=0.227$). A smaller level of correlation can be observed for ESD previous studies and job search behavior ($r=0.137$). Since all the correlations are positive and significant, further analysis is conducted to understand the relationships of the variables better. Regarding the control variables, gender is not significantly correlated with self-efficacy and the ESD constructs. Similarly, age is not significantly correlated with ESD previous studies and the overall ESD variable. The variable describing other sustainability related behavior, however, is significantly correlated to all other variables.

Table 2: Correlations matrix

Variable	M	SD	1	2	3	4	5	6	7	8	9	10	11
1. Job search behavior	3.307	1.089	1										
2. Intention	2.208	0.933	.676**	1									
3. Attitude	1.927	0.626	.577**	.786**	1								
4. Subjective norm	3.156	0.709	.542**	.575**	.551**	1							
5. Self-efficacy	1.789	0.574	.184**	.286**	.246**	.210**	1						
6. ESD-current studies	2.183	0.650	.227**	.245**	.254**	.260**	.220**	1					
7. ESD-previous studies	2.634	0.796	.137**	.104*	.127**	.200**	.099*	.241**	1				
8.ESD-overall	2.409	0.571	.244**	.212**	.232**	.287**	.194**	.737**		1			
9. Other behavior	3.777	0.674	.501**	.420**	.397**	.424**	-.137**	.158**	.227**	.248**	1		
10. Gender	0.480	0.500	-	-	-.312**	-	-.051	-.072	-.054	-.078	-	1	
			.259**	.307**		.195**						.199**	
11. Age	21.396	3.633	-	-	-.115**	-	-	-.099*	-.004	-.059	-.106*	.110*	1
			.250**	.191**		.236**	.143**						

Note: N=536. Other behavior=other sustainability related behavior. SD=Standard deviation.

**Correlation is significant at the 0.01 level (two-tailed).

*Correlation is significant at the 0.05 level (two-tailed).

4.2 Hypotheses testing

4.2.1 Hypothesis 1: The direct effect of intention on job search behavior

For testing *hypothesis 1*: “The intention of working in a sustainability related profession has a positive direct effect on the actual job pursuit behavior.”, a two-step hierarchical regression has been conducted including the control variables gender and age. In this analysis, the reduced sample size of 300 has been used because the participants who are not actively looking for jobs have been filtered out. To control for gender and age, those variables were entered at the first stage of the regression. The results show that they significantly account for 10.6% of the variation in job search behavior ($F=17.678$, $p<0.01$). Furthermore, the effect of intention is highly significant ($b=0.780$, $p<0.01$) and

increases the model's R^2 by 40.9% ($F=249.587$, $p<0.01$). This means that 40.9% of the variance of job search behavior is explained by its linear relationship with intention. Hence, we found evidence that supports the first hypothesis, and that intention has a positive effect on job search behavior. Taking the control variables into account, the model explains in total 51.9% of the variance in job search behavior. The control variable age also has a significant negative effect on this relation ($b=-0.037$, $p<0.01$). Contrarily, gender is not significant ($p>0.05$). The results are summarized in *table 3*.

Table 3: Summary of hierarchical regression analysis for job search behavior

Variable	b	SE	R ²	ΔR ²
Step 1			0.106	0.106
Gender	-0.551**	0.122		
Age	-0.058**	0.018		
Step 2			0.515	0.409
Gender	-0.120	0.094		
Age	-0.037**	0.013		
Intention	0.780**	0.049		

Note: $N=300$. Number of bootstraps is 5000. ** $p<0.01$, * $p<0.05$ (two tailed).

4.2.2 Hypothesis 2a-c: The direct effect of the TPB variables on intention

For analyzing the hypothesis concerned with the relationships of the TPB variables with intention, again a hierarchical regression is used. The determinants (attitude, subjective norm, self-efficacy) are included stepwise in the analysis since the TPB declares that intention is predicted by all three determinants simultaneously.

In the first stage, the control variables gender and age contributed significantly to the regression model and accounted for 11.9% of the variation in job search intention ($F=36.167$, $p<0.01$). Attitude explained an additional 51.2% of variation in intention and this change in R^2 was significant ($F=740.416$, $p<0.01$). When subjective norm was added to the model, it explained an additional 2.3% of the variation in job search intention and this change was also significant ($F=35.087$, $p<0.01$). Finally, adding self-efficacy, R^2 increased further by 0.6% ($F=8.846$, $p<0.01$). When all three independent variables and the two control variables were included in stage four of the regression model, all of them were significant predictors of job search intention. Additionally, the control variables gender ($b=-0.115$, $p<0.05$) and age ($b=-0.015$, $p<0.05$) negatively influence job search intention. The most important predictor was attitude which uniquely explained 51.2% of the variation in intention. In sum,

the five variables accounted for 66.0% of the variance in intention. *Table 4* illustrates the findings of the regression.

Table 4: Summary of hierarchical regression analysis for job search intention

Variable	b	SE	R ²	ΔR ²
Step 1			0.119	0.119
Gender	-0.541**	0.76		
Age	-0.41**	0.011		
Step 2			0.632	0.512
Gender	-0.113*	0.52		
Age	-0.025**	0.007		
Attitude	1.127**	0.041		
Step 3			0.655	0.023
Gender	-0.109*	0.050		
Age	-0.017*	0.007		
Attitude	0.981**	0.047		
Subjective norm	0.244**	0.41		
Step 4			0.660	0.006
Gender	-0.115*	0.050		
Age	-0.015*	0.007		
Attitude	0.958**	0.047		
Subjective norm	0.235**	0.041		
Self-efficacy	0.127**	0.043		

Note: N=536. Number of bootstraps is 5000. ** $p < 0.01$, * $p < 0.05$ (two tailed).

4.2.3 Hypotheses 3a-c: The mediation effect of intention on the relationship between the TPB variables and job search behavior

For analyzing *hypotheses 3a-c* the reduced sample size of 300 is used, meaning that those who are currently not looking for jobs are excluded from this analysis. Furthermore, since a mediation analysis was conducted, PROCESS model 4 is used for the analysis. An overview of the results is displayed in *figure 5*.

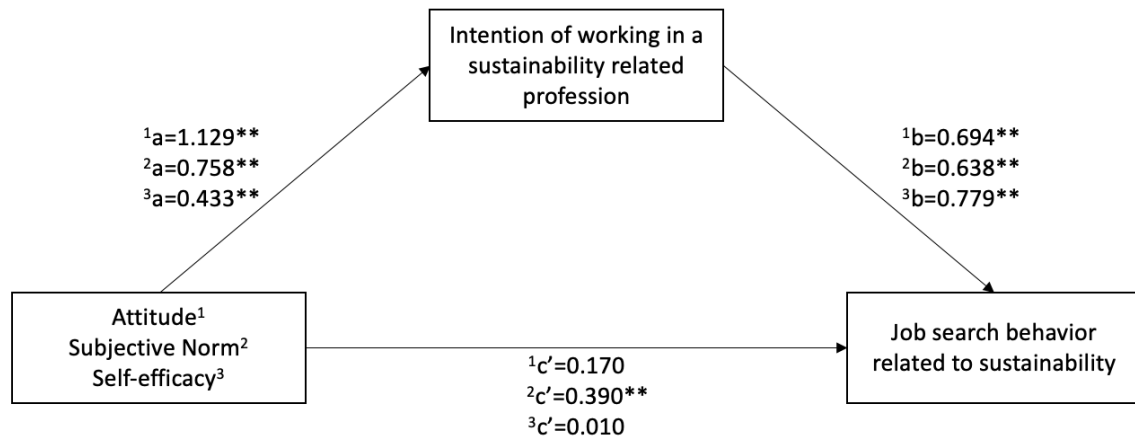


Figure 5: Mediation effect of intention

Note: This figure illustrates a visualization of the mediation analysis for hypotheses 3a-c shown in table 4. Standard regressions coefficients are given for the relationship between the TPB variables and job search behavior as mediated by intention. ** $p < 0.01$, * $p < 0.05$ (two-tailed).

Hypothesis 3a describes that job search intention mediates the relationship between attitude and job search behavior positively. The regression analysis showed that attitude has a positive and significant effect on intention ($b=1.229$, $p < 0.01$). Since the effect is positive, the first part of the mediation model, stating that attitude has a positive effect on intention, is supported. Regarding the second part, intention positively affects job search behavior ($b=0.694$, $p < 0.01$) with a R^2 of 0.518. This indicates that the model explains approximately 52% of variance in job search behavior. The 95% Confidence interval of the indirect effect between attitude and job search behavior did not contain zero. Hence, a mediation effect can be reported ($b=0.852$, $SE=0.108$, $CI=[0.648;1.075]$). Due to the fact that the effect of attitude on job search behavior becomes insignificant after including the mediator in the model ($b=0.170$, $p > 0.05$), it is a full mediation. Thus, *Hypothesis 3a* is supported in that intention positively, fully mediates the relationship between attitude and job search behavior.

Similar results can be reported for *hypothesis 3b*. Intention mediates the relationship between subjective norm and job search behavior ($b=0.484$, $SE=0.055$, $CI=[0.381;0.595]$). Furthermore, subjective norm positively relates to intention ($b=0.759$, $p < 0.01$) with a R^2 of 0.413, providing support for the first part of the hypothesis. Likewise, evidence is given for the second part, as intention positively influences job search behavior ($b=0.638$, $p < 0.01$), with R^2 of 54.1%. Evidence for a partial mediation can be found since subjective norm's relationship to job search behavior remains significant after intention is added to the model ($b=0.309$, $p < 0.01$). These findings provide evidence to support *hypothesis 3b*.

Intention fully mediates the relationship between self-efficacy and job search behavior ($b=0.337$, $SE=0.070$, $CI=[0.198;0.477]$). Self-efficacy becomes insignificant after intention as a mediator is included ($b=0.010$, $p>0.05$). In addition, self-efficacy and intention ($b=0.433$, $p<0.01$) as well as intention and job search behavior ($b=0.779$, $p<0.01$) are positively related, providing support for both steps of the proposed hypothesis. A detailed overview of the results is provided in *table 5*.

Table 5: Summary of the mediation effect of intention on the TPB variables and job search behavior

	Hypothesis 3a		Hypothesis 3b		Hypothesis 3c	
	Intention	Job search behavior	Intention	Job search behavior	Intention	Job search behavior
Attitude	1.229**	0.170	-	-	-	-
Subjective norm	-	-	0.758**	0.309**	-	-
Self-efficacy	-	-	-	-	0.433**	0.010
Intention	-	0.694**	-	0.638**	-	0.779**
Gender	-0.043	-0.097	-0.337**	-0.111	-0.526**	-0.120
Age	-0.025**	-0.039**	-0.006	-0.033*	-0.015	-0.037**
R ²	0.663	0.518	0.413	0.541	0.167	0.515
F	194.325**	79.322	69.495**	86.760**	19.828**	78.375**

Note: $N=300$. Number of bootstraps is 5000. ** $p<0.01$, * $p<0.05$ (two tailed).

4.2.4 Hypothesis 4a-c: The mediation effect of the TPB variables on the relationship between ESD and intention

Another mediation analysis is conducted to assess whether the relationship between Education for Sustainable Development and the intention of working in a sustainability related profession is mediated by the three TPB variables. Different ESD-constructs are used for investigating this relation. The mediation is tested with the variable concerning ESD—current studies, ESD—previous studies and a combined variable, which integrates both constructs (ESD—overall). Lastly, other sustainability related behavior is used as a control variable when performing the mediation analysis with the overall ESD-construct, to assure that the effect of ESD is measured independently of other external behavior. The main findings are that the TPB variables mediate the relation between all the ESD constructs and intention. For testing *hypotheses 4a-c* mediation analyses were conducted similar to them for *hypotheses 3a-c*. However, this time a multiple mediation model is used because the TPB variables serve as the mediators in this model. *Figure 6* provides an overview of the results when using ESD—current studies as the independent variable.

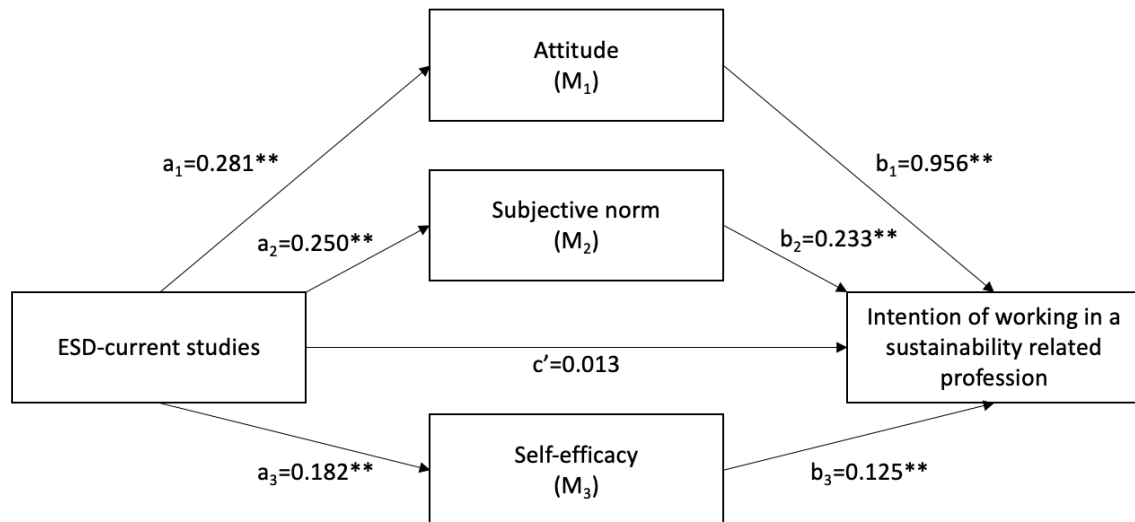


Figure 6: Mediation effect of the TPB variables (ESD-current studies)

Note: This figure illustrates a visualization of the mediation analysis for hypotheses 4a-c (ESD-current studies). Standard regressions coefficients are given for the relationship between ESD and intention as mediated by the TPB variables. $***p < 0.01$, $**p < 0.05$ (two-tailed).

When using ESD-current studies as the independent variable, the 95% confidence interval of the total model does not contain zero ($b = 0.290$, $SE = 0.49$, $CI = [0.196; 0.358]$). That means that the TPB variables mediate the relationship between ESD-current studies and intention. ESD has a positive impact on attitude, subjective norm and self-efficacy ($p < 0.01$), providing evidence for the first part of the hypotheses 4a-c. Further, the TPB variables relate positively to intention ($p < 0.01$), supporting the second part of the hypothesis. Moreover, since the inclusion of the mediators resulted in an insignificant effect of ESD-current studies on intention ($b = 0.013$, $p < 0.01$), the TPB variables fully mediate the relationship between ESD-current studies and intention. Thus, hypotheses 4a-c are supported. The detailed outcomes of the analysis can be found in table 6.

The results of the mediation analysis using ESD-previous studies and ESD-overall as an independent variable are similar to the analysis using the ESD-current studies concept. Similar results are also reported when using the ESD-overall variable and controlling for other sustainability related behavior. The 95% confidence intervals do not contain zero and the ESD constructs become insignificant after the mediator is added to the model. Hence, the use of all four different approaches results in the support of hypothesis 4a-c. The corresponding figures and tables for these analyses are displayed in Appendix E-G.

Table 6: Summary of the mediation effect of the TPB variables on ESD-current studies and intention

	Attitude	Subjective norm	Self-efficacy	Intention
ESD-current studies	0.218**	0.250**	0.182**	0.013
Attitude	-	-	-	0.956**
Subjective norm	-	-	-	0.233**
Self-efficacy	-	-	-	0.125**
Gender	-0.362**	-0.223**	-0.027	-0.115*
Age	-0.011	-0.038**	-0.019**	-0.015**
R ²	0.155	0.137	0.064	0.660
F	32.493**	28.041**	12.059**	171.467**
<i>Indirect effect</i>				
	Effect	SE	Lower CI	Upper CI
	0.290	0.048	0.196	0.386

Note: N=536. CI=95% Confidence interval. Number of bootstraps is 5000. **p<0.01, *p<0.05 (two tailed).

4.3 Overall model for intention and job search behavior

Finally, two hierarchical regressions were performed, one with intention and one with job search behavior as the dependent variable. The corresponding tables can be found in **Appendix H** and **I**.

In the overall model for intention, the control variables gender, age and other sustainability related behavior were entered at stage one. In the second stage, the ESD-overall variable was entered and lastly the TPB variables. The model is significant (F=150.002, p<0.01) and the three TPB variables have a positive effect on intention. ESD is not significantly related to intention. Furthermore, all of the control variables have a significant effect at the 5% level. Gender and age related negative and other sustainability related behavior positive to intention. All the variables together accounted for 66.5% of the variation in intention. This regression confirms the results obtained for *hypotheses 2a-c* and *4a-c*.

The regression conducted for job search behavior is significant (F=47.025, p<0.01), but shows slightly different results than the model for intention. Among the TPB variables, only subjective norm's effect is significant. This finding confirms the results from *hypotheses 3a-c*, that intention partly mediates the relationship between subjective norm and job pursuit behavior. Intention also has a highly positive and significant effect on job search behavior, confirming the analysis conducted for *hypothesis 1*. The effect of ESD and gender is significant. Age has a significant negative and other sustainability related behavior a significant positive effect on job search behavior. The variables explained 56.4% of the variance in job search behavior.

5. Discussion

After conducting the different analyses in *section 4*, this section is discussing the results. Moreover, the theoretical contributions as well as the limitations and directions of future research are examined. Practical and societal implications for higher education institutions and specifically for Maastricht University are also provided.

5.1 Interpretation of the results

5.1.1 Main findings

As expected, the analysis showed that the intention of working in a sustainability related profession has a positive direct effect on job search behavior towards sustainability. It can be derived that a high intention of a student to work in sustainability leads to a higher level of job pursuit behavior in this field. The results are in line with previous conducted research, by Powell & Goulet (1996), Van Hooft & De Jong (2009), Van Hooft et al. (2004) and Swaim et al. (2013). All those authors reported a positive relationship between intention and job search behavior.

Furthermore, student's attitude, subjective norm and self-efficacy have a positive direct effect on their intention to work in a sustainability related profession. Attitude was found to be the strongest predictor of students' intentions, confirming other studies which conducted research on this matter (for example Swaim et al., 2013; Yazdanpanah & Forouzani, 2015). The fact that the multiple regressions and all three TPB determinants were found to be significant, the application of the TPB was confirmed and validated in the context of this thesis. Moreover, intention acts as a mediator in the relationship between the TPB variables and job pursuit behavior. The higher the level of attitude, subjective norm and self-efficacy, the higher the intention and subsequently the job pursuit behavior of students.

The results show that all of the ESD variables (ESD-current & previous studies, ESD-overall) have a positive effect on the TPB variables, which then have a positive effect on intention. That ESD positively relates to attitude supports the findings from Kagawa (2007), Meinhold & Malkus (2005) and Coertjens et al. (2010). It can be derived that the more sustainability content a student learns, the more favorable his/her attitude towards the topic. These students then have a higher intention to pursue a career in that field. ESD also has a positive effect on subjective norm. Therefore, it is likely that a student who is surrounded by likeminded people, will have an increased intention of working in a sustainability related profession. This is intended by ESD, which focuses on collaboration and showing empathy towards others (Rieckmann, 2017). In studying in an open-minded environment and learning

to deal with conflicts in a supportive manner, students are more aware of sustainability issues. The analysis shows that self-efficacy is also positively influenced by ESD. This is in line with a study done by Zikic & Saks (2009) who found that people who attended trainings have a higher self-efficacy when looking for a job. Thus, students who receive ESD are likely to have more belief in their ability to contribute to sustainable development. Essentially, students who receive more ESD tend to show a higher intention to work in a sustainability related profession.

The overall analysis conducted for intention and job search behavior reflect the results obtained for the hypothesis analysis. Strengthening ESD affects the TPB variables positively, which increase the intention to work in a sustainability related profession. Moreover, intention is a highly significant predictor of job search behavior.

5.1.2 Effect of the control variables

The control variable “other sustainability behavior”, such as taking part in a sustainability related student organization, positively influences attitude and subjective norm. For self-efficacy, the effect is not significant. Other sustainability related behavior also has a positive effect on intention. Therefore, students who engage in actions related to sustainability in their free time tend to have a higher attitude, self-efficacy, and overall intention of working in a sustainability related profession. Gender and age significantly and negatively influence the relation of the TPB variables to intention. This potentially means that older and female students tend to lower level of intention than their younger male counterparts. Additionally, the findings of this study indicate that the job search behavior is smaller for older students. Meaning that the older a student is, the smaller his/her job search behavior. The effect of gender on job search behavior is not significant, hence the effect does not depend on the gender of the students.

5.2 Theoretical implications

The study conducted in this thesis makes several contributions to the research of ESD and TPB. As reported in the introduction, research called for more studies to understand the effect of ESD on students (Pauw et al., 2015; Tilbury, 2011; Uitto et al., 2015). For example, Uitto et al. (2015) noted: “The question of whether ESD efforts make a difference is not commonly dealt with in the literature.” (p.62). This study shows that ESD indeed makes a difference for students and increases their attitude towards working in a sustainability related job, as well as their level of subjective norm and self-efficacy. These three variables in turn positively influence the intention and behavior. Hence, this

research contributes to the overall research related to ESD. It is shown that ESD actually enhances students' intention to work in and search for jobs in a sustainability related profession.

Furthermore, a new approach for measuring ESD was developed in this study. The construct used in this thesis is based on the UNESCO framework of key competencies in sustainability (Rieckmann, 2017). Since the factor analysis and Cronbach's alpha tests were successful (ESD-current studies: 0.903, ESD-previous studies: 0.922, ESD-overall: 0.910) it was a valid construct for analysis. This is one of the first studies which explicitly takes the approach of deriving statements which have to be evaluated from a competency framework (together with Ploum et al., 2018). As Ploum et al. (2018) mentioned, "Several researchers have compiled frameworks of key competencies. However, their work is exploratory in nature and more in-depth analysis of these frameworks is called for." (p.1). While conducting their research these authors focused on sustainable entrepreneurship. In contrast, this thesis deals with the general implementation of ESD in higher education institutions, specifically Maastricht University – School of Business and Economics. Thus, this study expands the ESD literature in a way that it developed a valid construct to examine the effect of ESD on students' intentions.

Lastly, the research results show that the TPB is an applicable framework to use for examining the job search intention and behavior of business school students. The findings are consistent with the literature concerning TPB. Regarding job search behavior in general, several studies applied the TPB before and came to confirmatory conclusions. However, the effect of self-efficacy was ambiguous. Some research found it to be not significant related to intention (Van Hooft & De Jong, 2009; Van Hooft et al., 2004; Caska, 1998; Song et al., 2006), while others noted that it actually is (Zikic & Saks, 2009; Uitto et al., 2014, 2015; Meinhold & Malkus, 2005). For predicting the job search behavior of students, it can be derived from the results that self-efficacy has a significant effect. In addition, the effect of intention was not clear. On the one hand, some authors (Schreurs et al., 2009; Zikic & Saks, 2009; Song et al., 2006) reported that intention does not have a significant mediation effect on the relation between the TPB variables and intention. On the other hand, Van Hooft & De Jong (2009) found the effect to be significant. In the context of ESD and job search behavior of students, a mediation effect of intention was found which again confirms the applicability of the TPB.

5.3 Limitations and future research

This study is subject to several limitations, which are further explained in this subsection. First, convenience sampling is used as the method to gather the data (Etikan & Alkassim, 2016; Marshall, 1996). Hence, the participants were not randomly selected but rather based on the faculty they are

enrolled at, Maastricht University – SBE. Future research could study if these findings are generalizable across different study programs. Also, it would make sense to repeat the study at a university outside the Netherlands to see whether the location of the institution has an impact of students' intentions. However, it is expected that the results and implications of this thesis are generally relevant to other higher education institutions who want to make a contribution to sustainable development.

Second, the statements in the survey regarding ESD were self-determined based on a proposed framework by Rieckmann (2017). No other author has used thus approach before. Hence, it could be the case that, despite the high internal reliability and the successful factor analysis, they do not fully reflect or capture the essence of ESD. The statements were about the perceived level of each students. Future studies could further test the validity and reliability of these items. They could for instance use the framework again for the above-mentioned studies in different study areas or countries. Additionally, they could use a different framework for measuring ESD and compare the results to those of this thesis.

Third, the actual application behavior is not measured in this study, since the students are not yet working. Rather, job search intention and job search behavior are analyzed. Thus, future research could investigate if students are actually working in a sustainability related job and which role ESD in their bachelor's or master's program played in that decision. Ideally, this study could be repeated in around two years' time with the same participants to see whether they ended up working in a sustainability related profession or not. This study would generate valuable results how ESD and intention ultimately influence the application behavior of students.

Fourth, since a self-reporting method of data collection was used, common method variance (CMV) could be another limitation of this thesis (Podsakoff et al., 2003). This means that observed correlations between variables are distorted. Potential causes could be that participants answered to questions according to their social acceptability and not their true feelings. Another reason could be misinterpretations of the items (Wainer & Kiely, 1987). In this study, CMV was trying to be reduced by using different sources for the measures. However, future research could further limit CMV by designing the questionnaire in a different way. For instance, the order of questions could be changed, or different scale types could be used (Chang et al., 2010).

5.4 Practical and societal implications

Besides the theoretical contributions, this study offers various practical implications for business schools and higher education institutions in general which will be presented in this subsection.

5.4.1 Developing responsible leaders

The data analysis shows that strengthening ESD actually enhances students' intention to work in sustainability related jobs. This in turn would make those jobs more attractive and more relevant for companies to offer. Thus, it is an opportunity for those companies to become more sustainable themselves. Therefore, business schools or universities who want to make a contribution to a more sustainable future should ensure strong focus on ESD.

One of the goals of ESD is to produce responsible future leaders for society (Barth et al., 2007; Rieckmann, 2017). This is indeed relevant, as Godemann et al. (2014) noted: "The expectation that management education institutions should be leading thought and action on issues related to (...) sustainability has been reinforced in the light of their association with business leaders' failings (...)" (p.16). For instance, corporate corruption and events like the financial crisis are results of irresponsible and reckless management. Universities can build a countermeasure against these negative developments and possibly even prevent them if they focus more on ESD. Furthermore, some of the key competencies of ESD are collaboration competency, critical thinking competency and self-awareness competency (Rieckmann, 2017). Hence, students who learn these competencies during their time in university are able to contribute to a sustainable future because they not only take economic factors into consideration when making decisions in their working lives. They will rather put their focus on the bigger picture and try to incorporate different views, like social and environmental concerns. Society has a better chance of meeting environmental goals with more responsible leaders. An example for this could be the climate agreement from Paris (UN, n.d./2020c). Although the Paris agreement was a first step to tackle climate change, not enough has been done in the last years to reach the desired goals (Harvey, 2020). Responsible leaders would put these goals higher up on their agenda.

5.4.2 Implications for Maastricht University – SBE and other higher education institutions

A stronger focus on ESD not only makes jobs in the field more attractive, but also higher education institutions like Maastricht University – SBE. Out of 536 students surveyed in this study, 52.60% indicated they are (somewhat) satisfied with the quality and quantity of ESD in their current program. 23.10% neither agree nor disagreed and 24.30% at least somewhat disagreed. One open field for

feedback was incorporated in the surveys in which students answered that they would enjoy more case studies, more applied work and all in all more focus on sustainability related topics. Exemplary quotes are: *“Examining more updated case studies”*; *“Focus more on SDG’s so have seminars or lectures specifically targeting this topic”*; *“Offer an elective course in sustainability science”*; *“Integrating more sustainability topics in class”*; *“Underline the importance of sustainable development and how we can make a contribution to it once we start working ”*; *“Each course in the IB master’s curriculum should have sustainability as one of its focal points”*. Since one fourth of the students surveyed is (somewhat) dissatisfied with ESD, there is an opportunity to improve and to better serve the needs and wants of its students in the future.

SBE lists “Sustainability” as an area of expertise in their strategic vision booklet for 2025 (Maastricht University – SBE, 2020). Its vision is “(...) addressing societal problems, by co-creating knowledge and developing team players and leaders for the future.” (Maastricht University – SBE, 2020, p.3). In this strategy document, it is also mentioned that “both society and students are calling out universities to respond to societal challenges, such as the UN Sustainable Development Goals for 2030.” (p.4). One of SBE’s values which is going to be focused on from 2020-2025 is indeed fostering sustainable development. It is important that for the next five years more emphasize is put on this topic, because students show an increased interest in sustainability. This follows from the survey comments quoted above. Therefore, it is crucial that the focus on sustainability is communicated to prospective students and that it will be implemented in the study programs more.

ESD is not explicitly used in marketing Maastricht University and SBE to students as can be seen by their webpage (Maastricht University, n.d./ 2020b). Thus far, problem-based learning (PBL) and the internationality of the university are the essential value propositions to students. Also, the current sustainability focus lies mainly on research and not on education, which has to be adapted accordingly. Adding ESD would help UM and SBE to increase its attractiveness and relevance. If Maastricht University position itself more as a sustainable institution with more ESD concepts embedded in their courses, they have the chance to attract even more top talent in the future than they currently do.

In general, for business schools and universities to continue being relevant, reevaluating their curriculum is a necessary task which should be followed up upon. There is still room for improvement regarding the implementation of sustainability in higher education and some universities are still lagging behind (Lozano et al., 2015; Lambrechts et al., 2013). In the following three recommendations are listed which should strengthen ESD beyond the incorporation of more related concepts in study

programs. This would then lead to the desired outcome described above, a more sustainable future. Out of those, Maastricht University has already implemented certain initiatives. Hence, these recommendations are also applicable for other higher education institutions.

5.4.2.1 Online courses and lifelong learning

The corona pandemic forced higher education institutions to shift from their traditional teaching style to mostly offering online courses (Times Higher Education (n.d./2020). Notably, this disruption does not necessarily have a negative impact on the quality of education. A study by Azeiteiro et al., 2015 found that students who received online education felt a high level of motivation and satisfaction. This is not only a good alternative to learn in times of crisis but is also an opportunity to offer lifelong learning in the future. Studies found that online courses are as effective as in-person education (Weber & Lennon, 2007; Lapsely et al., 2008). Even after the pandemic, when universities are gradually going back to their traditional model of teaching, it is a possibility to offer more ESD related content online. That could be an opportunity to educate all members of the society about sustainable development (Stromquist & Da Costa, 2017). Moreover, this is in line with Maastricht Universities claims to offer “(...) high-quality research and research-based education for adult and lifelong learners.” (Maastricht University – SBE, 2020, p.4). Maastricht and other institutions should do that, offering study material about sustainability online for everyone in order enable lifelong learning.

5.4.2.2 Focus on sustainable consumption

An additional practical implication would be that with more emphasis on ESD, universities could help to promote sustainable consumption. “Progression towards more sustainable consumption patterns is a key challenge of the 21st century. Higher education plays a crucial role in this (...)” (Barth et al., 2014, p.72). Research by Coertjens et al. (2010) emphasized that schools influence the attitude towards pro-environmental behavior of pupils in a positive way. Thus, ESD would promote more sustainable consumption which in turn helps to manage the increased amount of waste produced by humans and further decreases carbon emissions. This is an aspect of the sustainable development goals (UN, n.d./2020d). Some universities already initiated projects with regards to sustainable consumption. The results were a transformed campus life and a positive impact on students’ and staffs’ attitude and behavior (Adomßent et al., 2014). Maastricht University is already on the right track in this regard but could increase its commitment. For instance, they introduced the Maastricht University Green Office (UMGO) which consists of six student employees who work on sustainability topics (Maastricht University, n.d./2020c). Marketing these activities more would have a meaningful

impact on the campus and on the community life. Other business schools and universities might follow this lead and offer more such projects to help the environment.

5.4.2.3 Creating shared value

Since universities are a crucial factor towards a more sustainable future in general, a stronger focus on sustainability is important for creating a desirable future and shared value (Waas et al., 2010; Porter & Kramer 2011). Universities are production entities, they produce knowledge and act as an employer and payer of salaries (Lehmann et al., 2009). Hence, the theory of creating shared value can be applied. It describes that not only economic needs are important to consider for an organization, but also social needs. This is the case because dismissing social harms can lead to increased costs (Porter & Kramer, 2011). Creating shared value further describes that the success of a corporation and the health of the community around it are intertwined (Porter & Kramer, 2011). In order to take countermeasures against the trend that more and more students work in big cities, universities could integrate more programs in collaboration with local businesses to support the community. For instance, it is a big challenge for some cities in the UK to attract and retain top talent, as they perceive London as the most attractive place to work (Swinney & Williams, 2016). This new focus could lead to students staying in their area and contribute with their sustainability expertise to thriving local communities. Again, Maastricht University has a lead role in this regard. The university explains on its website that it is anchored within the region and aims to increase the social involvement of its students (Maastricht University, n.d./2020d).

6. Conclusion

In conclusion, this study contributed to the further understanding of the effect of Education for Sustainable Development on students' intention to work in a sustainability related profession. By analyzing the survey results of 536 participants from Maastricht University – SBE it was shown that ESD influences the intention and job search behavior of students positively through an increased attitude, subjective norm and self-efficacy. Thus, focusing more on ESD would have several benefits for higher education institutions and society in general. Therefore, it was proposed implement more ESD related concepts in higher education to increase the intention of students to work in as sustainability related profession. The attractiveness of those jobs would be increased, and better leaders would be developed. Additionally, the relevance of universities could be enhanced by offering online education to provide lifelong learning opportunities. Education about sustainable consumption and creating shared value are other implications which have to be considered. Future research could repeat a similar study in order to generalize the findings to a broader extent. This study complemented existing research by providing insights about the effect ESD has on students' intentions and job search behavior. Furthermore, the application of the TPB for the job search intention of students was validated

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8. Appendices

Appendix A: Survey questions (integrated Bachelor & Master)

- 1 Your gender is:
- 2 Your age is:
- 3 What describes your current situation?
- 4 Your master's program is:/ Your bachelor's program is:
- 5 Indicate here if you follow a second specialization/program:*
- 6 When did you start your program?
- 7 Your country of origin is:

Attitude

- 8 Working in a sustainability related profession is something I find important
- 9 Working in a sustainability related profession would allow me to address social and/or environmental issues.
- 10 Working in a sustainability related profession would allow me to address concerns I have about the long-term future of the environment and society.
- 11 Working in a sustainability related profession is something I find enjoyable.
- 12 Working in a sustainability related profession would give me personal satisfaction
- 13 Working in a sustainability related profession would give me high quality of life
- 14 Working in a sustainability related profession is something I find desirable
- 15 Working in a sustainability related profession is something I find attractive
- 16 Working in a sustainability related profession would allow me to continuously learn new things and to develop myself professionally.
- 17 Working in a sustainability related profession would enable me to earn a good income.

Subjective norm

- 18 People in my life think that I should work in a sustainability related profession.
- 19 My parents think that I should work in a sustainability related profession
- 20 My close friends think that I should work in a sustainability related profession
- 21 My fellow students think that I should work in a sustainability related profession
- 22 My significant other thinks that I should work in a sustainability related profession
- 23 The people who are important to me (will) work in a sustainability related profession
- 24 My close friends (will) work in a sustainability related profession
- 25 My fellow students will work in a sustainability related profession

- 26 My significant other (will) work in a sustainability related profession
- 27 How important are your parents' opinions to you?
- 28 How important are your close friends' opinions to you?
- 29 How important are other people's opinions to you?
- 30 How important are your fellow students' opinions to you?
- 31 How important is your significant others' opinion to you?

Self-efficacy

- 32 It is my decision whether or not to work in a sustainability related profession.
- 33 I have the abilities to work in a sustainability related profession
- 34 I doubt that I would be able to work in a sustainability related profession
- 35 I have the skills to work in a sustainability related profession.
- 36 I have the capacities to work in a sustainability related profession
- 37 I have the competencies to work in a sustainability related profession.

Intention

- 38 I intent to work in a sustainability related profession
- 39 I intent to apply for a sustainability related profession
- 40 How likely is it that you will work in a sustainability related profession some day in the future?

ESD-current studies

My master's program develops .../My bachelor's program develops...

- 41 ... my ability to understand and analyze complex and interrelated systems.
- 42 ... my ability to identify and analyze causes and consequences of sustainability.
- 43 ... my ability to create a vision for a sustainable future.
- 44 ... my ability to evaluate multiple scenarios on how to achieve sustainability.
- 45 ... my ability to understand and reflect on the norms, values and actions that contribute to sustainability.
- 46 ... my ability to debate sustainability values, principles and goals.
- 47 ... my ability to develop and implement innovative solutions that contribute to sustainability.
- 48 ... my ability to take responsible actions to promote sustainability.
- 49 ... my ability to deal with conflicts by facilitating collaborative problem-solving.
- 50 ... my ability to understand and respect the needs, perspectives and actions of others.

- 51 ... my ability to take a critical position on a sustainability issue.
- 52 ... my ability to question opinions and behaviors of myself and others.
- 53 ... my ability to reflect on my own role as a global citizen.
- 54 ... my ability to understand and deal with my feelings and emotions.
- 55 I am satisfied with the quality and quantity of Education for Sustainable Development in my current Master's program./
- I am satisfied with the quality and quantity of Education for Sustainable Development in my current Bachelor's program.
- 56 Optional: Do you have suggestions on how Education for Sustainable Development could be enhanced in your current program?

ESD-previous studies

- 57 What did you study for your Bachelor's degree?*
- 58 At which university did you study for your Bachelor's degree?*
- My Bachelor's program developed .../ My high school education developed ...*
- 59 ... my ability to understand and analyze complex and interrelated systems.
- 60 ... my ability to identify and analyze causes and consequences of sustainability.
- 61 ... my ability to create a vision for a sustainable future.
- 62 ... my ability to evaluate multiple scenarios on how to achieve sustainability.
- 63 ... my ability to understand and reflect on the norms, values and actions that contribute to sustainability.
- 64 ... my ability to debate sustainability values, principles and goals.
- 65 ... my ability to develop and implement innovative solutions that contribute to sustainability.
- 66 ... my ability to take responsible actions to promote sustainability.
- 67 ... my ability to deal with conflicts by facilitating collaborative problem-solving.
- 68 ... my ability to understand and respect the needs, perspectives and actions of others.
- 69 ... my ability to take a critical position on a sustainability issue.
- 70 ... my ability to question opinions and behaviors of myself and others.
- 71 ... my ability to reflect on my own role as a global citizen.
- 72 ... my ability to understand and deal with my feelings and emotions.

Other sustainability related behavior

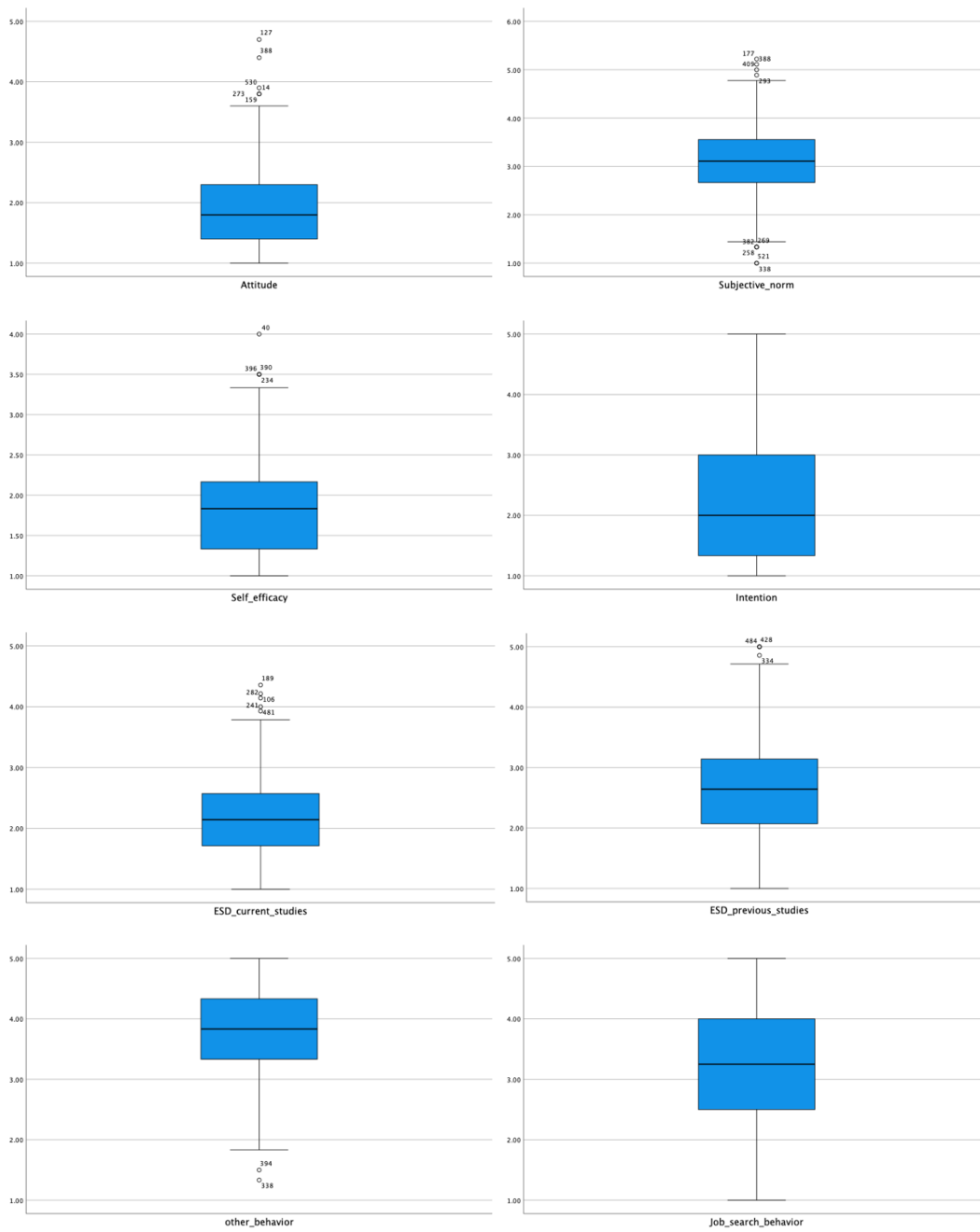
- 73 I contributed actively to a sustainability-related student organization (being an active member or board member in organizations such as Oikos, Enactus, Green Office, UNSA, etc.).
- 74 I participated in sustainability related courses and events outside of the university context (e.g. MOOCS, conferences, etc.).
- 75 I actively engaged in organized political activities related to sustainability (e.g. protests, demonstrations, petitions, campaigns, etc.).
- 76 I volunteered for a sustainability-related cause (e.g. education, social projects, ecological restoration, etc.).
- 77 I engaged in social & environmental entrepreneurship (i.e. ideation, pre-incubation, incubation or acceleration of a sustainability-related start-up).
- 78 Do or did you engage in other relevant activities? If so, which one(s)?
- 79 I try to live a sustainable lifestyle (i.e. buy fair trade products, try to minimize waste).
- 80 How much professional work experience do you have in sustainability, for example through previous internships and jobs?
- 81 If you have work experience in sustainability, what did you do? (Describe briefly)

Job search behavior

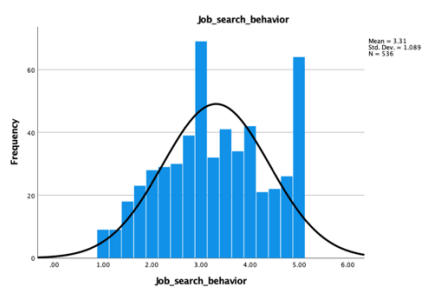
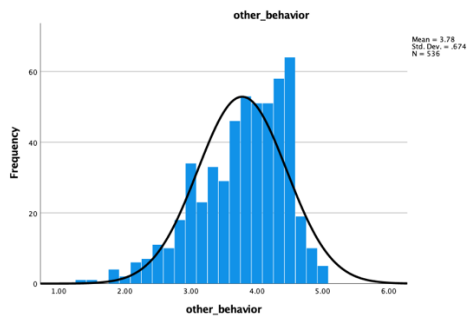
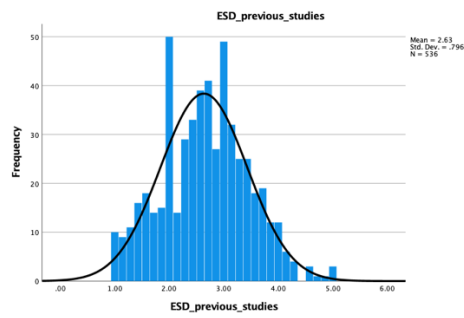
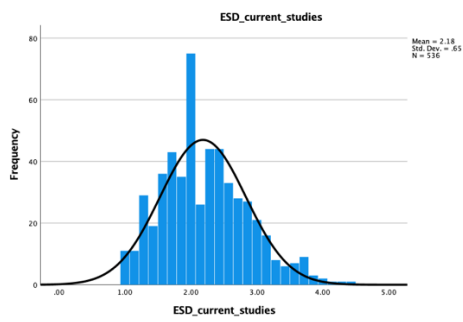
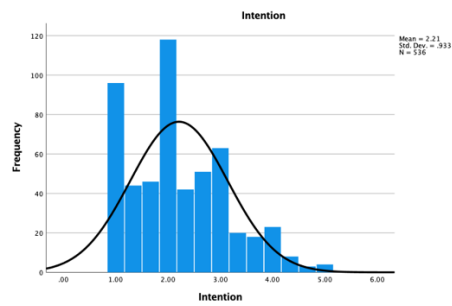
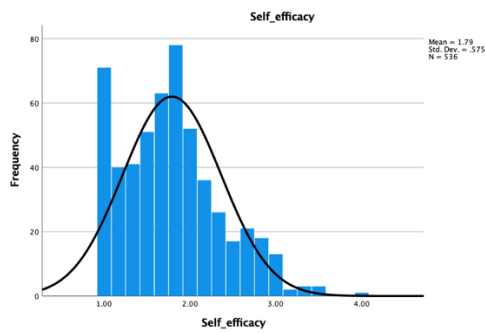
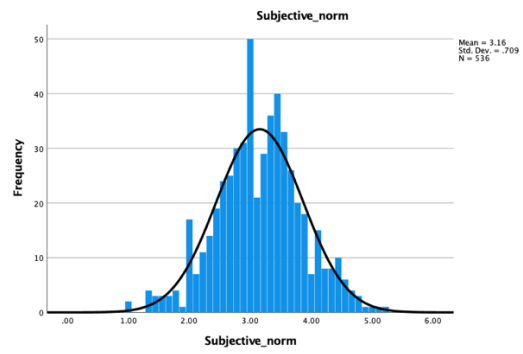
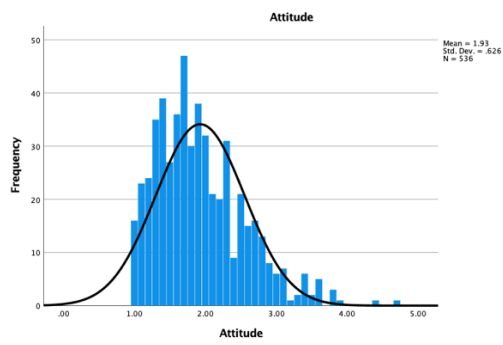
- 82 How intensively are you looking for job opportunities at the moment?
- 83 I regularly check for job openings in the field of sustainability
- 84 I regularly gather information about the possibilities to work in a sustainability related profession.
- 85 When looking for jobs, I primary consider sustainability related positions.
- 86 When looking for jobs, I primary consider companies with a clear sustainability mission.
- 87 I currently work in a sustainability related profession.
- 88 I already applied for a job in a sustainability related profession.

** item can only be found in the survey for master students*

Appendix B – Boxplots

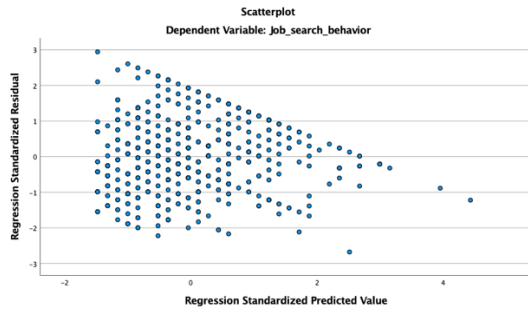


Appendix C – Histograms

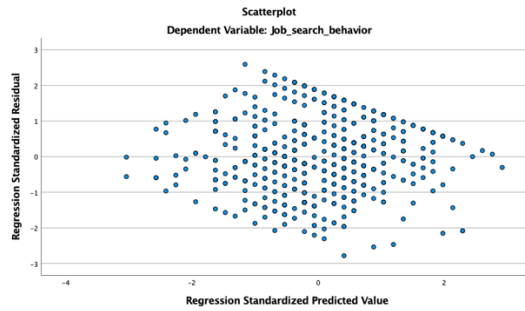


Appendix D – Scatterplots

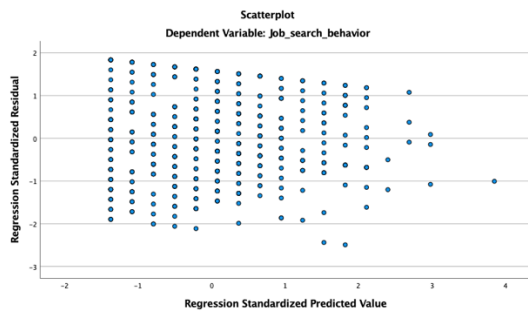
Attitude



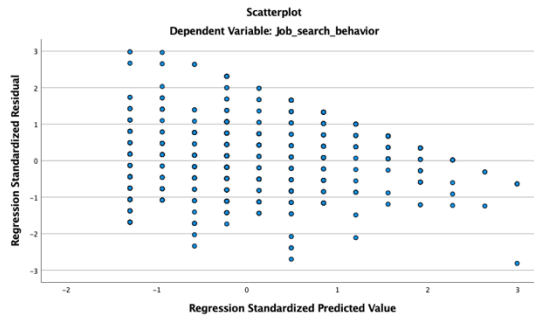
Subjective norm



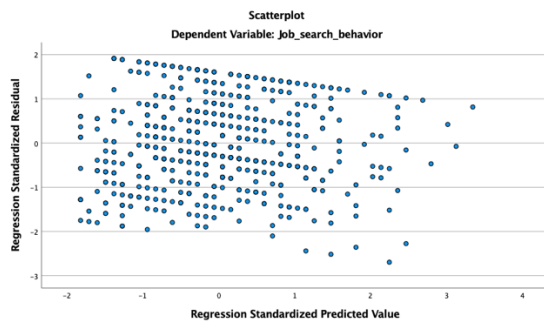
Self-efficacy



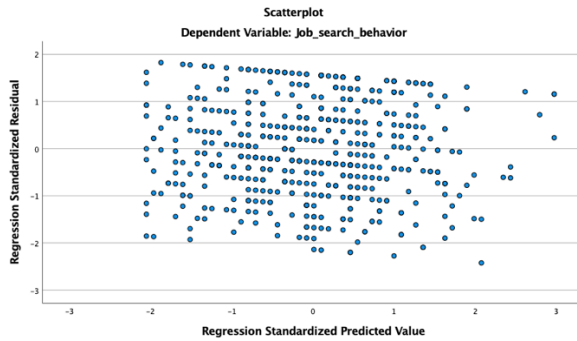
Intention



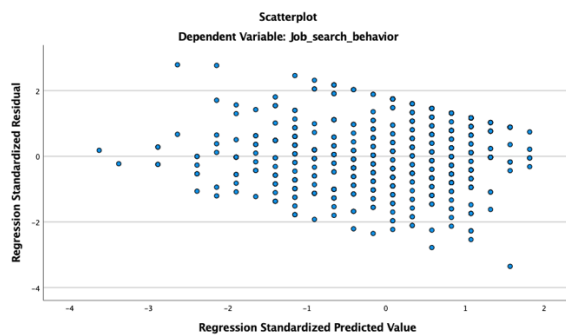
ESD-Current studies



ESD-Previous studies

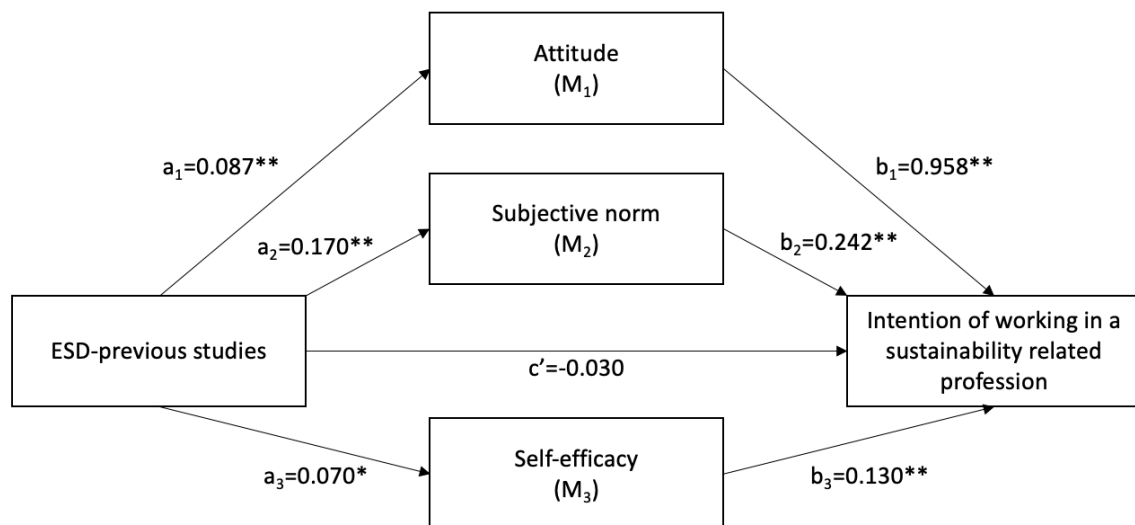


Other sustainability related behavior



Appendix E – Mediation effect of the TPB variables on ESD-previous studies and intention

Illustration of the mediation effect of the TPB variables (ESD-previous studies)



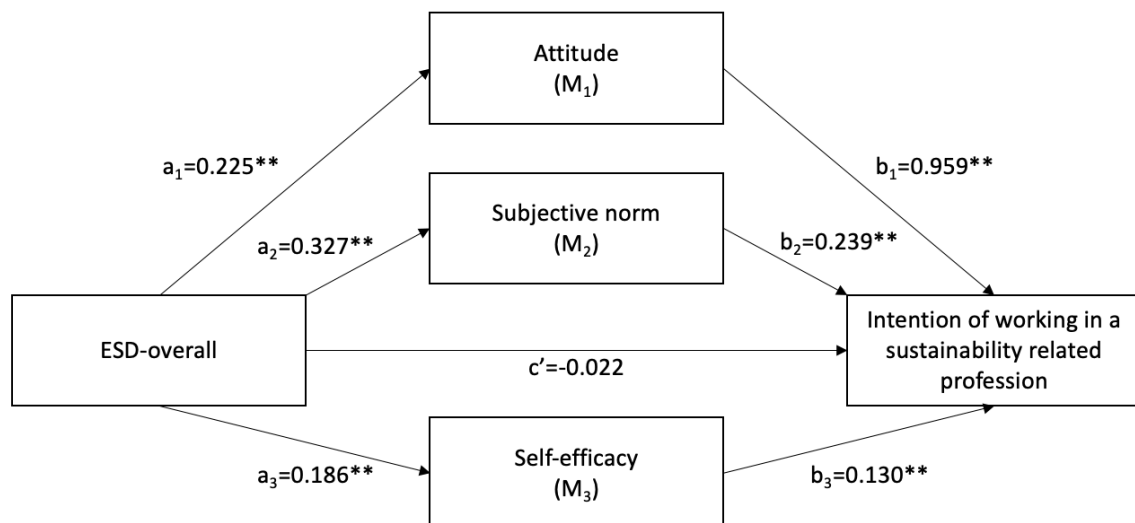
Mediation effect of the TPB variables (ESD-previous studies)

	Attitude	Subjective norm	Self-efficacy	Intention
ESD-previous studies	0.087**	0.170**	0.070*	0.030
Attitude	-	-	-	0.958**
Subjective norm	-	-	-	0.242**
Self-efficacy	-	-	-	0.130**
Gender	-0.372**	-0.228**	-0.035	-0.116*
Age	-0.014*	-0.042**	-0.022**	-0.014*
R ²	0.116	0.121	0.031	0.661
F	23.321**	24.379**	5.707**	171.881**
<i>Indirect effect</i>				
	Effect	SE	Lower CI	Upper CI
	0.133	0.035	0.064	0.201

Note: N=536. CI=95% Confidence interval. Number of bootstraps is 5000. **p<0.01, *p<0.05 (two tailed).

Appendix F – Mediation effect of the TPB variables on ESD-overall and intention

Illustration of the mediation effect of the TPB variables (ESD-overall variable)



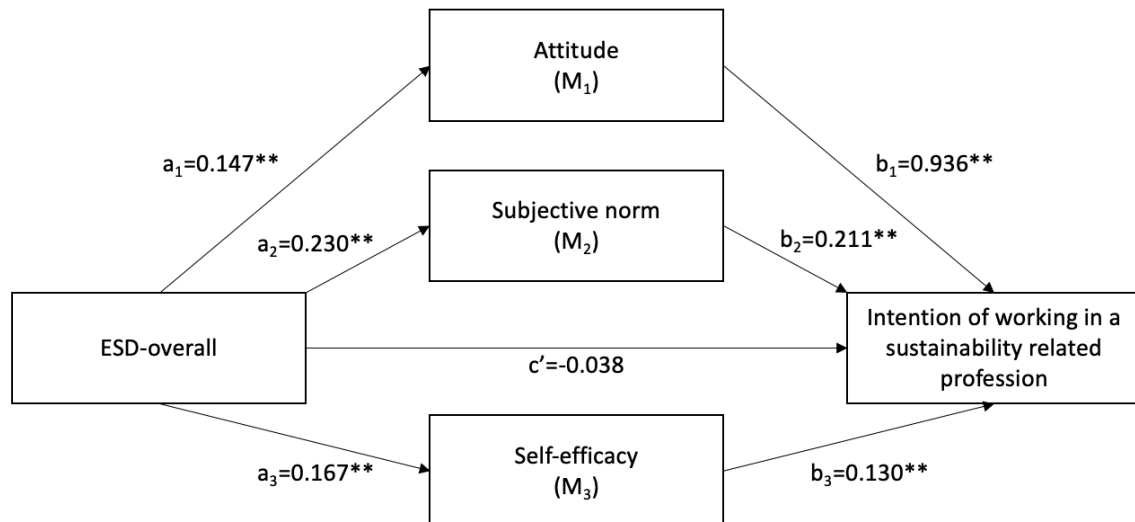
Mediation effect of the TPB variables (ESD-overall variable)

	Attitude	Subjective norm	Self-efficacy	Intention
ESD-overall variable	0.225**	0.327**	0.186**	-0.022
Attitude	-	-	-	0.959**
Subjective norm	-	-	-	0.239**
Self-efficacy	-	-	-	0.130**
Gender	-0.361**	-0.216**	-0.026	-0.115*
Age	-0.012	-0.040**	-0.021**	-0.015*
R ²	0.146	0.153	0.056	0.661
F	30.325**	32.140**	10.438**	171.540**
<i>Indirect effect</i>				
	Effect	SE	Lower CI	Upper CI
	0.319	0.052	0.216	0.423

Note: N=536. CI=95% Confidence interval. Number of bootstraps is 5000. **p<0.01, *p<0.05 (two tailed).

Appendix G – Mediation effect of the TPB variables on ESD-overall and intention controlled for other sustainability related behavior

Illustration of the mediation effect of the TPB variables (ESD-overall variable controlled for other sustainability behavior)



Mediation effect of the TPB variables (ESD-overall variable controlled for other sustainability related behavior)

	Attitude	Subjective norm	Self-efficacy	Intention
ESD-overall variable	0.147**	0.230**	0.167**	-0.038
Attitude	-	-	-	0.936**
Subjective norm	-	-	-	0.211**
Self-efficacy	-	-	-	0.130**
Gender	-0.293**	-0.132*	-0.009	-0.104*
Age	-0.008	-0.035**	-0.020**	-0.014*
Other behavior	0.290**	0.358**	0.070	0.111**
R ²	0.234	0.258	0.062	0.665
F	40.494**	46.130**	8.711**	150.002**
<i>Indirect effect</i>				
	Effect	SE	Lower CI	Upper CI
	0.208	0.046	0.121	0.303

Note: N=536. CI=95% Confidence interval. Number of bootstraps is 5000. ** $p < 0.01$, * $p < 0.05$ (two tailed).

Appendix H – Overall model for intention

Variable	b	SE	R ²	ΔR ²
Step 1			0.244	0.244
Gender	-0.413**	0.072		
Age	-0.033**	0.010		
Other behavior	0.501**	0.053		
Step 2			0.254	0.010
Gender	-0.407**	0.072		
Age	-0.032**	0.010		
Other behavior	0.467**	0.055		
ESD-overall	0.170**	0.063		
Step 3			0.665	0.411
Gender	-0.104*	0.050		
Age	-0.014*	0.007		
Other behavior	0.111*	0.040		
ESD-overall	-0.38	0.044		
Attitude	0.936**	0.048		
Subjective norm	0.211**	0.043		
Self-efficacy	0.130**	0.043		

*Note: N=536. Number of bootstraps is 5000. **p<0.01, *p<0.05 (two tailed).*

Appendix I – Overall model for job search behavior

Variable	b	SE	R ²	ΔR ²
Step 1			0.284	0.284
Gender	-0.344**	0.080		
Age	-0.044**	0.011		
Other behavior	0.674**	0.060		
Step 2			0.302	0.018
Gender	-0.355**	0.080		
Age	-0.045**	0.011		
Other behavior	0.611**	0.061		
ESD-overall	0.261**	0.070		
Step 3			0.489	0.187
Gender	-0.092	0.073		
Age	-0.041**	0.010		
Other behavior	0.313**	0.058		
ESD-overall	0.051	0.064		
Attitude	0.632**	0.070		
Subjective norm	0.345**	0.062		
Self-efficacy	0.020	0.063		
Step 4			0.564	0.075
Gender	-0.070	0.068		
Age	-0.032*	0.009		
Other behavior	0.266**	0.055		
ESD-overall	0.036	0.060		
Attitude	0.049	0.086		
Subjective norm	0.217**	0.059		
Self-efficacy	-0.039	0.059		
Intention	0.577**	0.059		

Note: N=300. Number of bootstraps is 5000. **p<0.01, *p<0.05 (two tailed).

9. Statement of Originality

With this statement, I, Pascal Sprunk, declare the submitted thesis, titled:

“The effect of Education for Sustainable Development on students’ intention and behavior to pursue a career in a sustainability related profession.”

to be produced independently by me, without external support. Wherever I paraphrase or cite literally, a reference to the original source (journal, book, report, internet, etc.) is given.

By signing this statement, I explicitly declare that I am aware of the fraud sanctions as stated in the Education and Examination Regulations (EERs) of Maastricht University, School of Business and Economics.



Pascal Sprunk

Dortmund, 4th of January 2021