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Educational interventions for sustainable innovation in small and medium sized enterprises



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ABSTRACT

Sustainability innovation research suggests that when the managers of small and medium-sized enterprises (SMEs) perceive sustainability as strategic, they undertake sustainable innovation. Educational interventions are, in turn, suggested to foster such views among these managers. But in the interaction between educators and managers, power matters for how knowledge is conveyed and educational interventions are understudied, especially when they are university-led. This article examines how actors' power affects the translation of knowledge between educators and SME managers. A conceptual framework combining translation and power-dependency theory is introduced and applied to the case study of a University-led competence development program offered to construction company managers in Sweden. The analysis reveals how imbalanced dependencies and power within interactions accumulated over time and came to interfere with the program's learning objectives. The study contributes practically by suggesting how mutual goals, time management, and relationship building can create a better context for educator-SME interactions and SME sustainability. The scientific contribution lies in introducing a new perspective on educational interventions for SMEs and providing a conceptual framework for future studies thereof.

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1. Introduction

Small and medium-sized enterprises (SMEs) constitute roughly 99% of all businesses, at least in Europe (European Commission (EC), 2012), and their aggregate impact on the environment is immense (Battisti and Perry, 2011; Revell et al., 2010). Yet, when it comes to sustainable innovation, that is the development of new products, processes and ideas that benefit society and reduce environmental impacts (Schaltegger et al., 2016), SMEs are understudied (Jansson et al., 2017; Klewitz and Hansen, 2014; Reyes-Rodríguez et al., 2016). When studied, the strategic intentions, innovative capacities and managerial commitments of SMEs are stressed as being important drivers for sustainable innovation (Jansson et al., 2017; Reves-Rodríguez et al., 2016), along with collaboration with external actors, e.g., Universities (Klewitz and Hansen, 2014; Lewis et al., 2015). Yet, SMEs have often been described as laggards (Parker et al., 2009), that lack understanding of the strategic potential of sustainability (Battisti and Perry, 2011; Hillary, 2000; Revell et al., 2010) and thus need education (Tilley, 1999). Different educational interventions are, therefore, directed at SMEs so as to remedy the situation (Parker et al., 2009).

One type of educational intervention is that of university-led knowledge transfer programmes (Adams and Comber, 2013), for instance competence development programs (CDPs) offered for free by university staff to SME managers. While university-led programmes for SMEs have mostly been studied as means for economic growth (Bager et al., 2015; Dada et al., 2016; Hunt et al., 2013), which is less compatible with sustainability (Daly, 2013), they should also be relevant to tackle SME's lack of sustainable innovation as they induce managers to interact with sustainability researchers (Klewitz and Hansen, 2014). Yet a general challenge commonly discussed in university-SME programmes is that SME managers' learning style and situation makes them less susceptible to standard modes of knowledge transfer, where academics simply describe and explain things (Pittaway et al., 2015; Vega et al., 2012). Moreover, as university staff may also be less experienced in working with SME managers, and their situations and interests are very different; a lack of understanding can exist in both directions (Hunt et al., 2013). Hence, rather than being an uncomplicated and straightforward transfer of sustainability knowledge, it makes more

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sense to view the interaction between university-staff and SME managers as one of translation: "an interaction that involves negotiation between various parties and a reshaping of what is finally being transmitted" (Zilber, 2006, p. 233). Translation research suggests that "senders" and "recipients" bring with them interests that strongly influence how ideas spread and knowledge is conveyed (Pallas et al., 2016).

Thus translation is a fruitful lens to understand university-led educational programmes, suggesting that in education a negotiation-like process may arise (Maguire and Hardy, 2009; Zilber, 2006), between those who educate to inspire change and those who are supposed to implement that change (Stål, 2014; Stål et al., 2015). Yet, translation research has so far not explained how one or the other party manages to get their interests across and come to shape, or even possibly dominate, translation. While there are many different catalysts for change (Heikkurinen et al., 2019), such explanations can be provided with an analysis of how dependent actors are on each other, and their power relation, as power explains what makes one actor get another to do something (Lukes, 1986). Thus, in this article, Emerson (1962) theory of powerdependence is mobilized. A framework combining these theories is used to analyse the case and answer how actors' power affects the translation of knowledge between educators and SME managers in university-led educational intervention.

Empirically, this research question is addressed by analysing the design and implementation of a not-so-successful university-led programme for SME managers from the Swedish construction industry. The two authors participated in designing and implementing the programme and collected primary data via observations and interviews over a period of almost three years. While translation was part of how the programme was conceptualized, power-dependency theory was added first after the programme was finished and the authors began to analyse the collected data. The competence development programme ran twice and consisted of five sessions with SME managers, where the second author acted as the lead instructor, guiding the participants through three different themes: environmental sustainability, sustainability through additive manufacturing and sustainability through business partnerships. The analysis shows how the CDP created an imbalanced dependency between the educators and the SME managers, which gave SME managers power over educators. Thus educators had to adapt the programme and its content to try and maintain the participation of SME managers. In order to retain interest to complete the programme, some of the sustainability content was removed to make room for themes that were perceived as of more direct interest to the managers.

The study contributes theoretically in the following manner: Much previous research has debated drivers and barriers of SMEs' sustainable innovation (Battisti and Perry, 2011; Hillary, 2000; Revell and Blackburn, 2007; Tilley, 1999), whether these are changing (Halme and Korpela, 2014; Reyes-Rodríguez et al., 2016) and called attention to the role of SME education in fostering strategic awareness (e.g., Parker et al., 2009). Yet, there has been less research into the challenges of such SME education, in particular research that takes an interest not only in SME managers' characteristics, but also educators' perspectives, and the interaction as such, with the power dynamics involved. We address this gap and contributes theoretically by introducing a conceptual framework that combines power-dependency theory and translation. By illustrating our framework via a case study, the article shows how future research can deal with these dimensions analytically and thereby delve deeper into how interactions can affect SMEs' sustainable innovations.

The article's focus on interaction also enables practical suggestions for how to improve educational interventions: setting mutual goals, adequately managing time, and engaging more in relationship building can create a better balance and thereby establish a more suitable context for educator-SME interactions, but if dependencies are already imbalanced, educators may well try to hide this imbalance so as not to jeopardize programme effectiveness.

The article continues with a presentation of previous research on SMEs and sustainable innovation followed by the conceptual framework. The case and its context, the Swedish construction industry, is then presented, as well as how data was collected and analysed. The findings show how the framework was applied over the three distinct phases of CDP design and implementation. Lastly, theoretical and practical contributions and conclusions for future research/practice of interventions towards SMEs are outlined and discussed.

2. Literature review

2.1. Research field: SMEs and sustainable innovation

Sustainable innovation is discussed in multiple research streams, e.g., as eco-innovations (Carrillo-Hermosilla et al., 2010) or with entrepreneurship (Schaltegger and Wagner, 2011) or business models (Boons and Lüdeke-Freund, 2013; Stål, 2018). It may be viewed as a process (Kemp, 2008) or an outcome (Andersen, 2002), and refers to both incremental and radical change (Hellström, 2007). In this article, sustainable innovation is understood broadly, to refer to both new, and incrementally changed, products, processes and ideas that an SME (defined by the EU as having less than 250 employees with a turnover below €50 million (European Commission (EC), 2012)) develops so as to reduce its environmental impact. Moreover, two points should be acknowledged: sustainable innovation calls for proactive and committed managers (Jansson et al., 2017), and is understudied in the context of SMEs (Battisti and Perry, 2011; Halme and Korpela, 2014; Revell et al., 2010). The latter is primarily because research has privileged the roles of new entrepreneurial ventures and larger firms (Hockerts and Wüstenhagen, 2010; Parker et al., 2009; Schaltegger, 2002).

Still, the research that has been done suggests that, although each SME's environmental impact may be small, their aggregate impact is massive (Hillary, 2000). As mentioned, they have often been portrayed as laggards for multiple reasons, such as lacking motivation (Parker et al., 2009), time and money (Revell et al., 2010) or knowledge (Hillary, 2000). Recently, researchers have pointed to the great diversity among SMEs' attitudes to sustainability (Klewitz and Hansen, 2014), and to evidence from specific national contexts (Jansson et al., 2017; Revell et al., 2010; Reyes-Rodríguez et al., 2016) that SMEs have become more inclined to view sustainability as being of strategic importance. In particular, this research stresses that, if managers view sustainability strategically, this view becomes a key driver for sustainable innovations (Halme and Korpela, 2014). Thus, it seems of critical importance to understand how such strategic orientations to sustainability can be fostered, which points to the importance of educational interventions as a means of demonstrating the strategic importance of sustainability to SME managers (Bradford and Fraser, 2008). Moreover, educational interventions may also bring SMEs into contact with researchers and external experts that can also function as important drivers of sustainable innovation (Klewitz and Hansen, 2014).

Still, universities may not be the best actors to educate SME managers, as managers may prefer to be taught by instructors who themselves are managers (Parker et al., 2009). Yet, it remains true that university staff are increasingly expected to, and do, engage with SMEs (Dada et al., 2016; Hunt et al., 2013; Nakwa and Zawdie, 2016). In such educational interventions, the managers' particular

learning style, which is action-oriented and focused on their immediate situations, may become particularly salient (Bager et al., 2015; Pittaway et al., 2015). Moreover, as university staff are themselves often not used to dealing with SMEs, a lack of mutual understanding may exist that makes knowledge transfer difficult. Thus standard perspectives on knowledge transfer, where success simply depends on the match between recipient and message (Rogers, 2010), are less effective. Instead university-led educational interventions for SME managers are better understood as translation, interactions where both messages and involved parties may need to be adapted (Zilber, 2006).

2.2. Translation

The concept of translation originates from Actor-Network Theory (Callon, 1984; Latour, 1986), where it refers to those changes that create and maintain socio-material networks. A key tenet of Actor-Network Theory is that it puts equal weight on material and social elements (Latour, 2005). Another aspect, at odds with this particular study, is that it views power not as something that can explain things, but that should be explained (Latour, 1986). Moreover, one of Actor-Network Theory's focuses is to explain how, given the ubiquitous and recurrent changes throughout the social world, stability is generated and maintained. For these reasons, Actor Network Theory's conceptualization of translation is less suited for this study. Instead the usage of translation within socalled new institutional theory (Czarniawska and Joerges, 1996; Lindberg and Czarniawska, 2006; Pallas et al., 2016; Sahlin-Andersson and Wedlin, 2017) fits better when one is interested in how human actors convey and negotiate ideas between themselves. In other words, our focus upon the pure human interaction would be ontologically at odds with how Actor Network Theory understands translation. New institutional theory also works well with seeing power as something that can cause occurrences, because for institutionalists, power can both be a driver and an outcome of institutional processes. It can both be that which explains and that which research seeks to explain (Lawrence, 2008). This means that in the studies we draw on, translation means something rather different from that of Actor Network Theory, although some of the meaning has been preserved. For new institutionalists, it is generally change that has to be explained, not stability (Dacin et al., 2002). In this theoretical context, the translation concept has brought forth new insights, particularly when it comes to how ideas move between settings, from one actor to another (Zilber, 2017). The key contribution has been to show that ideas do not "move" without the help of actors and that change is most often involved (Czarniawska, 2013; Czarniawska and Joerges, 1996; Sahlin-Andersson and Wedlin, 2017). This proposition differs from two assumptions that many new institutionalists have held: namely that it is the legitimacy of an idea that makes it move, not the actions of those that carry it further, and that the idea remains intact as it travels. On the contrary, Czarniawska and Joerges (1996) stress that, even if actors try to imitate an idea, they often fail so that something is instead changed.

When it comes to the interactions between university staff and SME managers, the translation lens implies two things: First, the parties involved can be thought of as participating in a negotiation regarding what knowledge is to be conveyed (cf. Zilber, 2006) and second, the knowledge conveyed will ultimately change in this process. In particular, the role of educators, also referred to as editors (in the parlance of translation) once they begin changing things in interactions with others, i.e., those actors that put forth ideas and adapt them in the process, is highlighted (Helin and Babri, 2015; Sahlin-Andersson and Wedlin, 2017). This latter theme has been central to studies that have applied translation in

the context of interventions for sustainability (e.g., Stål, 2011; Stål, 2014). Adaption may, for instance, happen because editors do not think that an idea fits with their own beliefs (Helin and Sandström, 2010) or because they do not want to deliver ideas perceived to be unwelcome by recipients and therefore rather omit those ideas (Stål et al., 2015). For instance, informing a group of business owners of their carbon emissions may be such an example, where editors prefer to reframe a message so as not to engender conflicts (Stål and Bonnedahl, 2015). Still, despite these observations of the different types of changes involved in translation, previous research has neglected to explain how translation develops in the way it does, for instance under what circumstances editors will adapt what they transmit in one way or another. In other words, while translation theory posits that participants interests explain why they seek one or another translation (Pallas et al., 2016), it stops short of explaining what determines whether their attempts will also succeed. Arguably, this is because translation research has not explicitly engaged with the notion of power, or more precisely how the power relation between the parties involved affects translation. While new institutional research, including that which uses translation, does recognize that power has a role in driving phenomena, it has not so much developed explicit "institutional" concepts to flesh out that role (Lawrence, 2008). Rather auxiliary theories, that fit the particular motive at hand, have often been borrowed into the conceptual frame, see for instance Levy and Scully (2007) who draw on Gramsci's notion of the "Modern Prince", or van Bommel and Spicer (2011) who talk about "floating signifiers".

2.3. Power and dependency

While there are multiple approaches and definitions of power (Clegg, 1989), this present study calls for a power theory that is relevant for human interactions and relates power to how parties depend on each other (Casciaro and Piskorski, 2005; Kern et al., 2018). Thus, Emerson (1962) is mobilized: He argued that, in an interaction where one actor is less dependent, that actor has power and can force the other actor to do things they would not otherwise have done. His theory is a suitable choice, because unlike other ways of dealing with power issues, he kept his analytical focus stringently directed at the human interaction. Admittedly this is somewhat reductionist but it also has the merit of bringing forth the elements of that interaction without diluting the analytical gaze with too much reference to the multiple contextual layers that embed these interactions. Reading Emerson, it would seem that such context does enter his theory but via actors' understanding of their interests and dependencies, thus there is nothing in his theory that suggests that interests and dependencies cannot be understood as generated by institutions (cf. Lawrence, 2008). For some research of power issues, it is this generation that is of core concern (Fleming and Spicer, 2014), but since we are interested in analysing human interactions as such, we find Emerson's approach suitable. Going further, Emerson argued more precisely, that an actor A has power over an actor B when B depends on the active participation of A to achieve their goals. Thus, power is not something that an actor owns prior to an interaction, but rather something that arises because of the relationship between actors (Fleming and Spicer, 2014). Emerson's view of power is also aligned with how newinstitutional theory views power (Kern et al., 2018), and is thus conducive to how this study applies translation.

Moreover, power increases when a dependent actor is highly motivated towards their goal, and cannot go outside the interaction to find some actor C that can help them in reaching it. However, in any interaction there is generally some kind of two-way power relation, so that there are also goals for which actor A needs help

from B to reach. Yet, in an imbalanced interaction, one of the actors is more dependent on the other, perhaps because one of the actors can either use other actors to fulfil their goals or because the goal as such is not valued equally by the actors. And vice versa, when one lacks power, one cannot get the other actor to act against their interests. Moreover, actors involved in an interaction come to realize their relative power when they discover the relative degree to which other actors are dependent on them. Thus, over time the patterns of power use may change (Emerson, 1962).

2.4. Conceptual framework

Below, the translation lens and power dependency-theory are combined into a conceptual framework for the analysis of twoparty interactions (Fig. 1): For the analysis of how translation occurs, power-dependency theory implies that, in order to explain the interaction between the parties involved, one must understand in what way they are dependent on each other. This dependency then induces a particular power relation (see the middle of Fig. 1). If the induced power relation is symmetric, one can expect an interaction where both actors (or perhaps neither) can get their interests across. But if one of the parties, because of asymmetric dependencies, has power over the other, one may expect an interaction where translations run in the interest of the powerful party, for instance so that a recipient is forced to adopt new knowledge, or so that editors come to adapt conveyed ideas completely so as to appease recipients. Thus, the power relation informs how the translation appears and how its content is changed.

The three vertical steps in the middle of Fig. 1 also point to how the combination of translation and power-dependency theory can be analytically mobilized, in other words how to analyse a particular interaction. Thus, such an analysis involves three steps: 1) examining dependencies, 2) the induced power-relation and 3) the translations they inform.

3. Methodology

3.1. Empirical background and case selection

The case context, the Swedish construction industry, is characterized by an oligopoly with little outside pressure for innovation (The Swedish Agency for Public Management, 2009; Nyberg et al., 2015). Even smaller construction companies seem less motivated to innovate because they experience a persistent high demand for their services (Nyberg et al., 2015). Still, SMEs may nevertheless need to innovate more, as their value chain positions are uncertain.

Out of concern for the recognized difficulties of SMEs in the construction industry to innovate, and because construction and housing has a large climate footprint (Statistics Sweden, 2016), a 3-

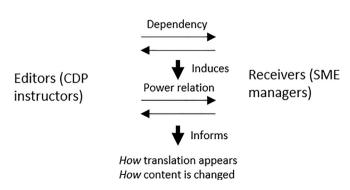


Fig. 1. The role of dependency and power in informing translation.

year project, referred to here simply as "the A-Project", was applied for and received funding. The A-project contained many different activities involving sustainability and additive manufacturing and in it, the university was tasked with running a CDP for SME managers to increase their ability to innovate sustainably.

The authors worked with the CDP in different ways between when the A-Project began in fall of 2015 and, until the CDP was cancelled in the late autumn of 2017. Already at the outset, when the CDP was being designed, it was realized that the translation perspective provided a relevant conceptual lens for understanding how SMEs could be educated regarding sustainable innovations. Moreover, the construction companies targeted seemed to be reactive rather than pro-active, thus constituting good representatives of such SMEs that "need" education to engage in sustainable innovation (Parker et al., 2009). Data collection began from the start, on the process of designing the CDP, and continued throughout the two implementation phases. Yet, the authors did not bring in power-dependency theory to explain how translation appeared until after the CDP had been discontinued and additional theory was needed to analyse occurrences. The close affinity that the authors had with the case enabled them to grasp many interesting nuances and details in the data that could not have been known if they had only observed the activities of others. This type of superior access is often adduced as one of the merits of so-called action research, which is rather common when it comes to educational interventions (Mcgrath and Toole, 2012). Moreover, as the objectivity of the distanced researcher is increasingly regarded as a myth, as all researchers affect the cases they study, action research is becoming more popular (Reason and Bradbury, 2001).

3.2. Data collection

The data was collected during the design and implementation of the CDP (it ran twice, in two different versions – see Fig. 2). The role of the different authors shifted in terms of collecting data and engaging in participant observation (see Table 1). One year after the A-Project started, a research assistant was hired who began participating in the various project meetings, systematically collecting notes. Later, the research assistants' data collection was somewhat curtailed as he was also tasked with contacting SMEs so as to get them to participate. During the first 6 months of the A-Project, the first author played a more active role, participating in meetings and collecting notes. Soon thereafter however, the two instructors hired to run the programme quit. As a result, the design of the CDP lay dormant for 6 months until new efforts commenced during the autumn of 2016. A new programme manager took on the responsibility for the CDP and a new instructor was hired. The programme manager now started participating in the meetings and monitoring the programme design. As the new instructor also quit at the end of 2016, the second author was brought in as the new lead instructor, and she stayed with the CDP until it was discontinued. In keeping with the translation perspective, the four persons responsible for arranging the CDP, i.e. the two authors of this article, the programme manager and research assistant, are below referred to as the editors in this particular case. These four were the ones responsible for designing and modifying the content of the CDP and interacting with the SME managers (although to varying extent).

The first implementation phase (CDP 1) thus started in early spring of 2017. Here the second author coordinated the efforts of the research assistant, acted as instructor or moderator during the CDP-sessions, and collected observation notes during those sessions that she did not lead herself (sessions led by hired experts). The first author also attended the first and last sessions of CDP 1. As seen in Fig. 2, CDP 2 ran during the autumn of 2017, after which the editors discontinued the CDP.



Fig. 2. Time-line of the CDP and the A-Project.

Table 1Data collection.

Phase	Design	CDP 1	CDP 2
Time	Autumn 2015 to end autumn of 2016	Spring 2017	Fall 2017
Authors involved	First author active autumn 2015; first author active early spring 2017	Second author active, first author participates mainly during the first and last sessions of CDP 1.	Second author active, first author participates on last session.
Activities	Designing pedagogical model, planning CDPs	Recruiting SMEs to attend the CDP, arranging five (5) CDP sessions	Recruiting SMEs to attend the CDP, changing CDP-content/structure, arranging five (5) CDP sessions
Major events	Autumn 2015 original instructors quit, autumn 2016 new instructor quit	Proves very difficult to get SMEs to attend the CDP. SMEs refrain from following the CDP model.	Continues to be difficult to get SMEs to attend the CDP and to adhere to the CDP model.
Data collection method	Participant observations, informal interviews	Participant observations, informal interviews	Participant observations, informal interviews
Data sources	Research assistant's notes; notes interviews with research assistant & programme manager First, second,author's notes	Research assistant's files/notes; notes interviews research assistant & programme manager second author's notes	Research assistant's files/notes; notes interviews research assistant & programme manager second author's notes

3.3. Data analysis

The analysis was guided by how translation and powerdependency was combined into the conceptual framework, showcasing three steps, as depicted in Fig. 1. Thus, a clear theoretical understanding of what to look for was established before conducting the analysis, and data was coded according to this understanding. Hence, the analysis followed common recommendations for case analysis (Eisenhardt and Graebner, 2007; Yin, 2014). In practice, following the three steps meant that data was coded according to the following three questions (corresponding to steps in Fig. 1): First, how dependent were the educators and the participating SMEs on each other in fulfilling each other's' goals? Second, how did imbalances in dependency result in differences in power between the two parties? And third, how did this possible difference in power affect the translations that took place? In line with seeking to follow interactions over time rather than to provide a static description of relations, the data was separated into three different, albeit overlapping, phases (design, implementation CDP 1 and implementation CDP 2). These three phases seemed to entail distinct activities and events, and the separation made the reflection on data material, but also its display, easier. When answering the three questions above, it was first discerned what important goals the actors pursued, and then in what way they needed each other to fulfil those goals. In that way, their mutual dependence was assessed and compared so as to arrive at the resulting power relation. Next, this understanding of the power relation was used to explain the different events observed within the CDP, more precisely to understand events relating to the translation of ideas and knowledge. These events showcased how editors moderated the conveyed knowledge content, and what efforts the SME managers made to engage themselves with the programme.

4. Findings

4.1. Design phase

The design phase started after the Funding Agency approved the A-Project and proved very long, stretching out for eighteen months.

While SMEs did not participate during this time, this phase is important because it laid the foundation for how dependent the CDP came to be upon the participation of SMEs. In other words, it created the context in which future interactions would take place. In the original application that granted the A-Project 17, 7 MSek from the Funding Agency, the university had committed to:

[...] put together 4 formal groups of firms. Each group will consist of 5–7 companies with a few participants from each company, who will partake in a number of developmental sessions during a 12-month period (Jonsson, 2015).

Thus at least 20 SMEs had to participate in the CDP in order to fulfil the promise to the Funding Agency. Still, in the beginning this was not perceived as a problem, as the two instructors who planned to run the programme were experienced in running similar programmes and felt confident. These two had good contacts within the business community and, while they were not as knowledgeable when it came to sustainability, the intention was to bring in sustainability experts.

What then happened was that the two instructors quit, because of a disagreement with the A-Project's leadership. Thus all of a sudden there was no pedagogical model for how to run the CDP, nor any experienced instructors hired. Furthermore, no one from the university seemed interested in taking over and the CDP lay dormant during the spring of 2016.

During the autumn of 2016 things changed as a new programme manager took on the responsibility for the CDP and hired a research assistant and a new instructor. Now new ideas for the CDP's pedagogical model were developed. The research assistant was tasked with making lists of SMEs to contact within the construction industry. However, the new instructor did not put much effort into developing the programme, so, when he quit at the end of 2016, the A-Project had been running for eighteen months and there was still no pedagogical model for how the CDP was to be run, nor had any SMEs been contacted. Thus, when the second author took on the responsibility as lead instructor for the CDP, it had become urgent to get the programme started. Now things went fast; the programme manager and the first author, both senior lecturers with

pedagogical qualifications, put together a pedagogical model for the CDP programme and decided to run CDP 1 before the summer of 2017.

The CDP was to consist of five (5) sessions: At the first session, the SME managers would be introduced to the business model canvas and be asked to map out their current business model. Then the three following sessions would add knowledge regarding environmental sustainability, sustainability through additive manufacturing or business collaboration. Between each session, the SMEs were to work with their canvas "at home" and refine them to integrate new ideas into their business model and refine their strategy. At the last session, they would present their conclusion in terms of a new business model, and an execution plan to enact those innovations would be drafted.

In analysing the design phase it can be concluded that, as the CDP had progressed and valuable time was lost, the editors involved in the programme became increasingly dependent on having SME managers participate in the programme. One of the direct goals of the CDP, and thus of the editors, was to ensure that at least 20 SMEs participated in the programme, to fulfil the university's obligation to the Funding agency. Another, less "sharp" goal, was that of making sure that participating managers learned, and for that SME managers would have to fulfil their part in terms of working and reflecting upon their business models, otherwise the pedagogical model would not work. As Emerson (1962) argues, an actor A's dependence upon an actor B also increases when there are no alternative courses of actions through which A can achieve their goals. Clearly, the possibility of coming up with some other plan, or taking more time to develop a stronger pedagogical model. had decreased, as much time had already been lost.

4.2. Implementation of CDP 1

CDP 1 was planned and executed during the spring of 2017. To provide an overview of this and CDP 2, Table 2 displays both what was planned for and carried out in the programme, and how SME managers interacted. Even though the second author had just started working with the CDP, the programme needed to start already in March in order to complete the programme before the summer. Now, in early 2017, the research assistant began making "cold calls" to the SMEs on his list. The plan was to establish contact via phone and then visit firms in person. After some filtering, the list contained 95 SMEs that were active in the regional construction industry. Initial phone contacts quickly resulted in a majority of companies openly declaring that they were not interested, stating that they "lacked time" or were "not able to see any added value". However, some 30 companies at least mentioned that they were somewhat interested in the CDP. These firms were then sent a folder describing the programme. The research assistant tried to arrange meetings with these 30 companies, though very few companies were willing to meet, stating again that they lacked time. The result was that only seven (7) companies were visited. During visits and follow-up calls, the research assistant informed the companies that the programme was about to start in March. However as March approached, a majority of the SMEs that had previously expressed interest now claimed that they could not attend due to an intense workload before the summer. Therefore, some SMEs instead wanted to wait until the autumn, but some also simply stopped answering the research assistant's calls. About two weeks before the scheduled start, there were only three (3) SMEs that had confirmed their attendance. Nevertheless, it was decided to run the CDP anyway, despite the fact that three was too few to reach the programme goals. There was a strong sense of urgency among the editors that the CDP could not be postponed once again and that it had to be run before summer.

What can be concluded from the time leading up to the start of CDP 1 in March was that it had become even more apparent that dependencies between SMEs and the editors were highly imbalanced: In phone calls with SMEs, they expressed little interest; rather they seemed mostly concerned with completing their imminent workload. Thus, it seems that the SME managers' goals consisted of planning and executing their work, and for addressing that concern they did not see the CDP as useful. In terms of dependency, as described by Emerson (1962), they did not perceive themselves to be dependent on the actions of editors. Hence, the power of editors to make SME managers do something that they would not otherwise do was clearly limited. As evidenced above, editors could, for instance, not make SME managers participate in the programme even if they contacted them repeatedly, as SME managers then simply stopped taking their calls.

The editors, on the other hand, had become even more desperate for the participation of SMEs when calls showed that very few SMEs showed interest in attending the CDP. Thus, any SME that was interested had to be treated very delicately.

On the first day of the CDP, the four editors and two consultants gathered for a half-day session, expecting to welcome participants from three SMEs. In what has to be interpreted as a clear display of asymmetric dependency, only one company showed up (albeit with three representatives). The other two did not even send their apologies but simply did not turn up. Pushing the imbalance even further, editors could not simply ignore the SMEs who were not there but had to make an additional effort to get them to attend. The two missing SMEs were contacted by phone, but only one could be reached. The other SME apparently ignored the call and never got back to the research assistant, even though they had previously talked on the phone several times and even met in person. The representative from the SME that was reached did not make any excuses, but promised to show up at the next session. This representative showed up during the second session, but came late and left early and continued to participate in the remaining sessions as he pleased. He explicitly stated that he participated because he felt obliged to the instructor and the research assistant that had visited his company and talked to him several times. As the powerdependency theory would suggest, the editors could not make him do anything he did not want; hence, he neither did any of the home-assignments nor presented any results at the last session.

Thus, as the first session showed that the CDP was still very much in jeopardy, the editors decided to focus all their efforts on the SME that had attended. It was clear that, if they would not show up again, the programme would have to be postponed once again. This meant a first adaptation of the CDP as it was now changed into a programme that catered exclusively to only one SME (in the pedagogical model discussions *between* companies were supposed to be a learning tool, but planned sessions for discussions now had to be changed into coaching sessions).

As the CDP progressed, it also became clear that the three managers from the first SME preferred to be alone in the programme; they wanted a sole focus on their business and seemed to regard the representative from the other SME as a nuisance. Thus, the CDP had become fully dependent upon one SME, so for instance when these managers wanted to postpone the final session by two weeks, this was done without hesitation. Moreover, the managers did not do any of the home assignments between the sessions, and the instructor could only remind them. This also meant that schedules had to be further rearranged as assigned slots for discussing assignments became meaningless. More serious was that the pedagogical model itself, where firms were supposed to stepwise develop their business model according to what they learned, had to be abandoned. Subsequently, at the final session, when the SME managers were supposed to present a refined business model

 Table 2

 CDP sessions as planned and as actually carried out.

Sessions as planned:	Session introducing the pedagogical model and business model canvas	Session on environmental sustainability	Session on sustainability through additive manufacturing/3D techniques	Session on sustainability through business partnerships	Final session with SMEs presenting
CDP 1 carried out	Lecture and discussion on the business model concept, social exercises, discussions on participant SMEs current business model	Lecture and discussion on environmental sustainability, planetary boundaries and the construction industry.	Lecture and discussion on the growth of artificial intelligence, and the possibilities as well as pros and cons of additive manufacturing for sustainable solutions. Workshop with 3D printing, scanning and designing.	Lecture and discussion on cooperative alliances and other approaches to sustainable partnerships.	In front of a panel with expertise in sustainability and business model innovation
SMEs activities in CDP 1	Only one SME turns up. Find it somewhat difficult to pinpoint an existing business model as there are several different ones.	Expressed interest and discussed possibilities to use wooden waste as biofuel for factory, and managing logistics to reduce CO ₂ emissions.		Expressed interest in hiring consultants to strengthen digital competence as well as potential partnerships with degree projects at the university.	sustainability in the
CDP 2 carried out	Lecture and discussion on the business model concept, social exercises, discussions on participant SMEs current business model	Lecture and discussion on environmental sustainability, planetary boundaries and the construction industry.	Lecture and discussion on the growth of artificial intelligence, and the possibilities as well as pros and cons of additive manufacturing for sustainable solutions. Workshop with 3D printing, scanning and designing.	Adapted to focus only on mergers.	In front of panel with expertise in sustainability and mergers.
SMEs CDP 2	All three SMEs actually part (or soon to be) of the same company group.	discussed environmental certifications and the need for regulation to guide their choices of e.g. materials.	One of the SMEs expressed interest in 3D techniques for visualizing their products and later hired a company to update their webpage as well as produce prototypes for an upcoming trade fair. However not with a sustainability focus	manage mergers in a way which retains competence in both companies. No sustainability focus.	No integration of sustainability in the business model presented.

entailing a new sustainability strategy, what they did was simply to present their current business model and reflect upon different dimensions of it, barely touching on ideas discussed at previous sessions. The panel discussion following then came to revolve around what dimensions they should focus on, rather than on how the CDP enabled new strategic orientations. Nonetheless, after the CDP, the managers were very pleased and suggested that the university should continue to run programmes for one SME at a time.

4.3. Implementation of CDP 2

The implementation of CDP 2 was planned and executed during the autumn of 2017. With a plan to start the programme in October, in early autumn the research assistant re-established contact with the 30 SMEs that had previously expressed a positive interest. Since many SMEs had complained about seasonal workload, the assistant was now confident that more firms would attend. In August the research assistant thought that he could secure the attendance of seven (7) or eight (8) companies. As mentioned, the attendance of a minimum 20 SMEs had been promised to the Funding Agency, but at this time, after two years, only two (2) SMEs had participated, of which only one (1) had actually completed the programme! Thus, the editors were even more dependent this time around on having a large group of SMEs participate in the CDP.

However, when asked for a formal confirmation, four (4) companies soon dropped out, referring to lack of time and general inconvenience. Three weeks before the scheduled start, only two (2) SMEs could be confirmed. The CEO of one of these SMEs had informed the research assistant that they were about to merge with another firm, and the CEO said that the merger created a need for developing their business model. He was interested in participating in the CDP if the issue of how to merge companies could be addressed in the programme.

Since the editors had learnt from CDP 1 that it was difficult to get SME managers to complete home assignments and even attend if the programme was not tailored to their needs, the schedule was changed. Instead of expecting the managers to reflect at home between sessions, the schedule now included time for managers to reflect, discuss, and document new ideas regarding their business model during the sessions.

On the first day of the CDP, representatives from three (3) SMEs arrived. While editors thought that these companies were independent of each other, it soon turned out that two SMEs were part of the same group of companies, and the third company was the one they would soon merge with. Subsequently, it became clear that these managers were mentally occupied with the upcoming merger, and this was what they wanted to discuss at the sessions. Again, given the asymmetric dependence between the editors and

the participating SMEs, the former could not "force" the SME managers to focus as much on other topics. Still, in terms of the formal content of the programme, the themes from the original programme were kept, but the theme regarding business partnerships was changed so that it exclusively dealt with mergers, and an external expert was hired to lead this session.

Again, home assignments were not done, and it was more problematic that different representatives attended different sessions without giving prior notice to the instructor. Hence, she had to plan sessions, for instance bringing in external guests and experts, without knowing who was going to show up. The explanation that was given afterwards was that urgent business matters came up, again testifying to how little dependence the SME managers felt upon participating in the CDP. And again, editors were dependent on having them participate, yet they had no power to force them to attend. The infrequent attendance had serious consequences for CDP 2 as sessions could not be linked together and things had to be repeated for the new people that showed up. Moreover, sometimes it was apparent that the people that showed up had been ordered by their managers to be there, but because they lacked any understanding of what the CDP was about, they seemed generally unmotivated and were unable to participate in the planned discussions. Thus the opportunity to reflect and develop the SMEs' business model during the session was lost.

Just as with CDP 1, the final session was devoted to presenting and discussing the three companies' current business models. Nothing was said about how the different themes could be integrated in these models and nothing was said about sustainability. If the SMEs had learned anything, it seemed that they had learned what they were currently doing and reflected somewhat on potential problems with that, but they had not been able to integrate much regarding sustainability. Yet, as with CDP 1, the CEOs of the three participating SMEs who did show up for the last sessions still seemed pleased with the programme. They admitted that they would have liked to have more time between the sessions, and would have liked to postpone the final session even more in order to get more out of the programme.

A third implementation of the programme was planned for the spring of 2018, but owing to the massive difficulties in recruiting participants, and how few SMEs that actually attended, CDP 3 was cancelled. The editors instead focused their efforts on convincing the leadership of the A-Project that they could not do more to fulfil their commitments and that the other actors within the A-Project had to engage SMEs. Subsequently, of the 20 SMEs that were supposed to attend the CDP, after two and a half-years, only five (5) had attended, and it was highly questionable as to how much they had learnt regarding sustainable innovation.

4.4. Summary of findings

As interpreted above, over the three phases the editors became more and more dependent upon participating SMEs, while SME managers clearly showed that this dependence was not mutual. Hence, the power of editors was limited. This informed translation in two ways: First, the editors could not make the participating SMEs do things that they did not want to do, and second, editors went out of their way to accommodate the wishes of the SMEs. Table 3 below summarize some of the examples of how the CDP content was adapted in efforts to accommodate SME managers throughout CDP 1 and CDP 2.

5. Discussion

In this article, we asked how actors' power affects the translation of knowledge between educators and SME managers in a university-led educational intervention programme. Power dependency theory was mobilized to show how educators come to change the content of their programme due to power asymmetries that in turn stem from dependencies that have accumulated over time. As a result, two forms of translations emerged: Firstly, there is the use of explicit power (cf. Fleming and Spicer, 2014), when SME managers refuse to do what educators ask of them. Such explicit power uses affect translation because, if educators cannot steer what SME managers are to do, it becomes difficult for educators to succeed in disseminating their ideas. As a result, it may further undermine their situation and make them lose their confidence in what they do. If translation is a negotiation, refusals considerably weaken one's position. Secondly, there are also more subtle uses of power that also affect translation: As shown in the data, the content and schedule of the CDP were adapted many times to accommodate SMEs, even if this was to the disadvantage of the educators (see Table 3). Adaptations are not made because SME managers forced educators to do so, but because editors avoided demanding too much of participants. Such subtler effects, where actors come to influence, rather than push, a certain agenda, are sometimes referred to as a "second face of power" (Fleming and Spicer, 2014; Lukes, 1986). It is harder to show such less explicit use of power, but through the intimate knowledge of the case, it is possible to see how the content of the CDP changed due to small hints and cues from the SMEs. Explicit and subtle forms of power are interlinked, in the view of the relatively powerless it may appear easier to avoid confrontation than to challenge the other one and "lose". One may, therefore, expect that explicit power is used in the beginning when the power order has not been established, but that as the interaction goes on, power comes to have a more subtle influence in the form of adaptations and modifications of form and content. These observations fit well with how a leading power researcher such as Lukes (1986) discusses how different forms of power coevolve and interrelate (cf. Fleming and Spicer, 2014).

Now, in answering the specific question, some general contributions to the literature can be made, in particular to the conversation regarding the barriers and drivers for SMEs' commitment to sustainability. This literature has increasingly come to stress the importance of strategic orientations (Halme and Korpela, 2014; Jansson et al., 2017; Reyes-Rodríguez et al., 2016) and third-party collaborations (Klewitz and Hansen, 2014; Lewis et al., 2015) as key drivers of sustainable innovation. Yet, while educational interventions are suggested as being valuable to make SMEs perceive the strategic value of sustainability (Parker et al., 2009), and also bring about such collaborations, there has been less research into how educational interventions really work in these situations. In addition to highlighting the role of power for translation, this article examines the role of educators and the interactions between parties, as they play out over time. Moreover, the conceptual framework introduced, developed by combining translation and power-dependency theory (see Fig. 1) and illustrated via the case study, can readily be applied by other researchers interested in highlighting those dimensions in a further study of SMEs' interactions and collaborations with external parties. This conceptual framework provides an important contribution to the literature in the form of a much needed theoretical lens, not least because such interactions and collaborations are increasingly ubiquitous in the field of sustainable innovation. Clearly, the framework can be applied to interactions beyond educational interventions. While there is plenty of research that singles out different antecedents for sustainable innovation (Jaka, 2018; Pacheco et al., 2018), there is a considerable lack of conceptual frameworks that enable an analysis of third-party interactions.

Below the merit of these contributions is further developed: First, as mentioned, most previous research has exclusively

 Table 3

 Summary of how power imbalance relates to translation in the CDP content.

	Dependence	Power	Translation - changes in CDP content
Implementation phase	Due to the goals of the CDP and the time lost in the implementation, editors are highly dependent upon getting SMEs to participate	N/A	N/A
CDP 1	Dependence is even more pronounced as editors can only get two (2) SMEs to participate	Editors cannot make SME managers do their home assignments work/follow the programme model. One of the SME managers comes and goes as he pleases. One of the SMEs does not show up and never explains why.	Home assignments are not done, so the opportunity to integrate themes into the SME business model is lost. At the final session only one SME presents something, but this does not reflect prior sessions, for instance sustainability.
CDP 2	After two years only two (2) out of a minimum 20 SMEs have participated. Editors become even more dependent, in particular as difficulties in getting SMEs to attend persist.	1 3	The focus of the CDP is shifted to accommodate for the merger that the SMEs are going through. Home assignments are not done, so the opportunity to integrate themes into the SME business model is lost. But also the time allotted for reflection at

focused on SME characteristics and interests and shown little consideration for the interests of those parties, such as educators, that interact with SMEs. By self-critically revealing the goals and dependencies of the educators involved in this programme, it is possible to better understand the inherent difficulties, but also possibilities, of educational interventions. As the findings reveal, dependencies can get in the way of educators' attempts at raising the innovative capacities and interests of SME managers. While self-reflection can be painful for the educators involved, it is called for as university-staff are more and more expected to engage with SMEs, sometimes as an attempt simply to find new revenue streams (Dada et al., 2016). Clearly, this raises questions of how researchers can maintain their integrity and not fall prey to funders or SMEs who have their own particular interests. An analysis of educators' goals and how these can make them dependent upon participating managers seems like a good place to start in terms of making these things visible.

Second, the conceptual framework shows how to consider interventions as interactions between two parties that both bring their interests with them, and in moves and countermoves come to shape the exchange of ideas over time. Thus, in contrast to previous research what is highlighted is not only the intentions of SMEs going into an intervention, such as education, but how intentions combine with those of counterparts to produce certain outcomes. Thus, it suggests a less static role for SMEs, where they simply represent one set of characteristics. Rather focusing on interactions highlights how characteristics matter by shaping interactions, and have an effect on the knowledge that is conveyed between parties. Particularly as interactions were followed over time, it is possible to show how dependencies may accumulate and power relations may become further exacerbated. Hence, the study shows how the developed conceptual framework can be used to follow interactions over time and capture their dynamics.

Nevertheless, more work is needed, both in order to validate the conceptual framework via variance studies, and longitudinal case studies to tease out its processual dimensions.

Generally speaking, it seems that policy interventions undertaken by one actor and directed at another are assumed to be situations without power dynamics (Parker et al., 2009). The analysis conducted here shows that, on the contrary, and especially when the interaction is highlighted, interventions can be ripe with power dynamics. Moreover, as argued above, power emerges as a

relational, processual phenomenon over time. Thus, power use is likely to increase as one actor becomes aware of another's dependency. In other words, our findings show how actors discover their relative relational power throughout an interaction occurring over time.

Power is likely to be an inherent feature of most interventions as the public, which finances interventions, has certain goals in mind, while SMEs have other direct interests. After all, if the sustainability interests of the public and SMEs were fully aligned, no interventions would be needed in the first place. As shown in this study, power is important from the policy makers' perspective because, if those tasked with implementing an intervention are relatively powerless, they are left with either refraining from trying to change SMEs or diluting their message so that it completely fits SMEs. In a similar study of climate mitigation education for farmers, Stål et al. (2015) for instance found that only educators that adopted a strong pro-farmer stance could continue with the education; educators that problematized agricultural practice found themselves without any new customers.

Lastly, by uncovering these dynamics, the study shows how more focus on educators, interactions and power can make practical contributions in terms of suggestions for how to better craft SME educational interventions. The remedies suggested can be put into two groups: 1) those that aim to create a better *context* for the interactions between educators and managers, that is to set the scene for a better balance, and 2) those that target the *interaction* as such and can counteract imbalance if it occurs:

First, to create a better context for the interaction between educators and SME managers, programme goals need to be set so that they do not risk creating asymmetric dependencies. Programme managers should not promise a certain "quantity", but rather set goals that target the learning of those who participate. It would be best if SMEs participated in goal setting so that they are also committed to fulfilling programme goals. A second-best alternative would be to find some combined goals that SMEs can be committed to, primarily those that tie together sustainability and concerns for customer demand.

Second, time management is very important and needs to ensure that educators do not end up in time pressure, forcing them to make compromises in their pedagogical plans. The possibility for funders to grant extensions and acknowledge the particular difficulties of engaging with SMEs may be one way to ensure that

educators get the proper support. But, for this to be happen, funders must also realize the specific difficulties of making educational interventions work for SMEs.

Third, which ties into the two points above, engagement with SMEs needs to start much earlier, to enable the two parties to invest in the relationship so that they both have something at stake, either with a period of open interaction, where mutual understandings can emerge, or if an educational intervention does not start from scratch but builds upon earlier relationships.

Ensuring a better balance when it comes to how goals are set would mean creating a better context for translations, but what type of remedies can be undertaken if dependencies already prove to be imbalanced?

According to Emerson (1962), actors do not know what power they have over others before their interactions; they discover that when they realize that others are highly dependent upon them. Thus, if dependencies are in fact imbalanced, it is necessary for educators to quickly realize that. Then, what they could do is either to try and rebalance dependencies, for instance by adapting content, within reasonable limits, so that it fits better with the goals of SMEs. But, another option is also simply to try and "hide" the imbalance from the SME managers. While this may seem deceitful, we argue that it is done to protect a respectful interaction, and ultimately the possibility for SMEs to learn: If recipients realize that they have considerable power over editors, it is likely that they will lose respect altogether for recipients, so that no knowledge at all is conveyed. Although this did not seem to be the case for all the SME managers participating in the CDP, there were some indicators that at least one of the participants in CDP 1, who came and went as he pleased, seemed to feel little respect nor seemed to learn anything.

This article has also referred to translation research in a general sense, more precisely the issue of what determines how actors succeed in promoting their interests (Pallas et al., 2016). Although the article did not primarily aim to do so, it also contributes to this conversation, by bringing together translation and powerdependency theory in a conceptual framework and applying it to a case. The following contributions to translation research can be suggested: integrating an understanding of power and dependence into translation theory makes it possible to understand how ideas are changed as it makes it possible to understand why certain interests prevail. Thus, the conceptual model can be used to understand translation in a widely different setting, in relation to the spread of different types of ideas, not necessarily related to sustainability (Sahlin-Andersson and Wedlin, 2017) The case focused here was one where power was very imbalanced, so the conceptual framework also needs to be applied to translation infused with other types of power relations. We admit that Emerson (1962) treatment of power issues is somewhat reductionist, in that it does not pertain to explain how interests and dependencies arise in the first place. Thus, further theorizing the role of power for translation entails working backwards in the causal chain to understand what positions actors in a certain relation to each other, and how that both predate and evolves out of interactions. Our work is a start in the effort to talk about power issues in educational interventions and we wanted to do it in a way that clearly showed the human interaction as such.

That said, the starting point for this article was the supposition that SMEs environmental impact is huge and that they need improvement. Even when SMEs seemingly act to improve the environment it may be made primarily to further business interests (Corvellec and Stål, 2019) or be highly decoupled from business-asusual (Stål and Corvellec, 2018). Given the study's results, are educational interventions, led by universities, the right thing to do? It is hard to answer such a question based only on a case study, and especially one which was not so successful. It is certainly tempting

to be pessimistic. On the other hand, given the lack of better alternatives (Parker et al., 2009), and the remedies suggested above, it may be reasonable to keep trying. Anyhow, given the current pressure on universities to interact more with their surroundings, it seems inevitable that more attempts will be made, motivating further studies of these activities.

6. Conclusion

This study addressed how actors' power affected the translation of knowledge between educators and SME managers in a university-led educational intervention showcasing the resulting effects both of explicit power use and of more subtle uses. The findings detail how the programme goals and events within the programme created a situation where the educators responsible for the programme became more and more dependent upon the participating SMEs. In short, managers block some translation by refusing to do certain things, but primarily the effect shows up via educators adapting and modifying contents. The resulting power imbalance also explains why the programme became a less effective learning tool and lost some of its focus on sustainability.

In addition to highlighting the role of power, the study contributes to research on how to improve SMEs' sustainable innovation by highlighting the role of educators and interactions. More precisely by offering a conceptual framework that it is possible to utilize for future analyses of such interactions, in the context of other types of interventions or collaborations. This goes beyond the current focus of sustainable innovation research of simply identifying antecedents. Nevertheless, more research is needed to both clarify the conceptual relations and to tease out the processual dimensions. When it comes down to educational interventions, the study also contributes practically by suggesting that setting mutual goals, managing time, and engaging in relationship building can create a better context for educator-SME interactions. However, if dependencies already prove imbalanced, we suggest educators should try to hide this so as not to further jeopardize programme effectiveness. These remedies may improve educational interventions but whether they succeed in bringing about more sustainable SMEs needs to be further analysed.

There are limits to our study, we used a single case our empirics are used illustrate, nourish and develop our conceptual ideas, not to test them, thus further work is needed to come up with a better understanding of boundary conditions and contingency factors. Our data collection was also somewhat eschewed as it drew perhaps too much on educators' experiences. As discussed above, our conceptualization of power is one that assumes that actors' have clear interests, therefore additional work needed to understand how power works within educational interventions should also explore the context for such interventions, and how those feed into the dependencies and interests of participating actors. We hope that we find time to further explore these matters, or that others' find them interesting enough to also warrant their concern.

Data statement

Data in this research consists of research notes from interviews and observations. They are all in Swedish, hence of little use to international readers. Moreover, we are not allowed to share all of this data, especially since we cannot guarantee respondents where and how it will be used. Hence we have chosen NOT to include our data in the submission.

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