

Causal Attribution

Cross-cultural models for explaining events

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Preface

As a person of an eastern cultural descent, the influence of cultural heritage in everyday life has for a long time been something that has peaked my interest. During my Bachelor's degree at the University of Leicester, I had the pleasure of experiencing the biggest Diwali festival outside of India. An annual celebration in the heart of Leicester, despite its geographical distance to India by over 4500 miles. The importance of cultural maintenance despite being in separate cultural context, and the empirical foundation for cultural differences in causal reasoning, provides the primary foundation for my choice for this topic.

This thesis was written as a part of my Master's degree in Psychological Science at the University of Bergen. My very skilled and motivating supervisor, Associate Professor Andrea Bender – without whom this thesis could not have been produced - was the one who introduced me to the exact topic of cross-cultural differences in causal attribution. Thank you so much for always taking the time out to help and motivate me to improve this thesis, despite your own deadlines.

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Abstract

The purpose of this study was to examine and compare the association between culture and causal attribution for Saami and Norwegian participants. Data was collected through cognitive mapping, a technique aimed towards the investigation of causal attribution. Cognitive mapping investigates the causal models people hold, and sheds light on content, factors, structure, causal categories and maps people construct when forming explanations for events and situations. The events constructed in this study were based on Physical-, Biological-, Social and Psychological-, Supernatural- and Composite domain knowledge. Testing the causal model involved the three steps: 1) free listing of causal entities, 2) construction of causal maps and 3) identification of important factors in the maps for a selection of events across domains. There were 38 respondents, constituting of Saami (N = 19) and Norwegian (N = 19) participants. They were presented with the exact same events but in random order. The following cases were investigated: most different individual factors across domains, most different key factors, factor distribution within and across domain, factors within and across causal categories, differences and similarities in causal maps. Differences found related to individual- and key factor difference, use of more unidirectional arrows for the Saami and bidirectional arrows for the Norwegian. There was no significant difference between the groups in the scope of causal distribution across and within domain, causal categories and causal maps. The results were interpreted in terms of the relationship between the groups and the individual position within that group, as well as mechanisms of thinking and reasoning.

Keywords: causal attribution, culture, cognitive mapping, acculturation, Saami, domain knowledge.

Sammendrag

Formålet med dette studiet var å undersøke og sammenligne sammenhengen mellom kultur og de kausale modellene tilhørende samiske og norske deltakere. Informasjonen ble samlet inn og behandlet igjennom kognitiv kartlegging, en metode som har som mål å belyse årsakssammenhenger. Kognitiv kartlegging undersøker de kausale modellene folk holder, og fremhever forskjeller og likheter ved innhold, faktorer, struktur, kausale kategorier og kausale kart, som folk konstruerer når de produserer forklaringer basert på hendelsesforløp.

Hendelsene som ble konstruert i dette studien var basert på fysisk, biologisk, Sosial og Psykologisk, overnaturlige og sammensatt domenekunnskap. De kausale modellene ble testet gjennom tre trinn: 1) Fri assosiasjon vedrørende årsakssammenhenger, 2) Konstruksjon av kausalt kart og 3) Identifikasjon av nøkkelfaktorer i kartene. Av 38 respondenter, var halvparten samiske (N = 19) og halvparten nordmenn (N = 19). Deltakerne ble presentert med nøyaktig samme hendelser, men i tilfeldig rekkefølge. Resultatene som ble presentert i denne studien var: mest forskjellige individuelle faktorer, mest forskjellige nøkkelfaktorer, distribusjonen av faktorer på tvers av og internt i domenet, distribusjon av faktorer på internt i kausale kategorier, forskjeller og likheter ved kausale kart. Forskjellene som ble funnet var knyttet til forskjeller i blant individuelle faktorer og i blant nøkkelfaktorer, bruk av mer enveis piler for samiske deltakere og toveis piler for norske deltakere. Det var ingen signifikant forskjell mellom gruppene i omfanget av årsaksfordeling på tvers av og innenfor domenet, de kausale kategoriene og de kausale kartene. Resultatene ble tolket i forhold til posisjonen og forholdet mellom individ og gruppe, samt mekanismer for tenkning og resonnement.

Nøkkelord: årsakssammenheng, kultur, kognitiv kartlegging, akkulturasjon, samer, domenekunnskap

Table of Content

Preface	ii
Abstract	iv
Sammendrag	v
Table of content	vi
List of tables and figures	vi
Cross-cultural models for explaining events.....	1
Domain specific knowledge	3
Cultural differences in causal attribution	7
Saami in Norway	9
Aim and hypothesis	14
Methods	14
Domain questions	17
Procedure	19
Results.....	22
1. Free listing of causal explanations	22
2. Causal models;	
2a. Categories of causal factors	24
2b. Causal maps.....	29
3. Key factors in causal maps	35
Discussion	37
Interpretation of results	38
Research limitations	46
Implications and conclusion.....	48
References	50
Appendix	54

List of tables and figures

Table 1. Occupational descriptive	16
Table 1a. Factor distribution for step 1.	22
Table 1b. Most frequently mentioned individual factors across domains.....	24
Table 2a. Causal categories.	29
Table 4a. Numbers of factors and arrows overall	32
Table 4b. Numbers of factors and arrows physical domain	32
Table 4c. Numbers of factors and arrows biological domain.....	33
Table 4d. Numbers of factors and arrows social and psychological domain	33
Table 4e. Numbers of factors and arrows supernatural domain.....	34
Table 4f. Numbers of factors and arrows composite domain.....	34
Table 5. Key factors in causal map	35

Cross-cultural models for explaining events

Reasoning is an important part of the cognitive mechanisms involved in everyday life. People use it when they make inferences on everything from deciding what to wear for a party (depending on the occasion, what is appropriate, the season), to interpreting the social norms and dynamics of a group. The causal links people draw between processes can reveal how they make their attribution, and ultimately provide indicators for what their behavior, attitudes and thought process, (Kelley, 1973) are founded upon. Studies have shown that the interpretation of situations and events can vary according to demographical variables, such as age, education and cultural background (Carey & Spelke, 1994). This problematizes the assumption that human psychology is universal, and more so that 96% of the participants used in the top psychological journals in 2008 were from Western industrialized countries (Arnett, 2008; Henrich, Heine & Norenzayan, 2010). If scientist are inclined to assume that all of human psychology is founded upon universal principles, an important question would be if the mechanisms of causal attribution and reasoning are universal.

To answer this question I will first provide some theoretical background for causal attribution. Secondly I will provide a brief empirical review of the findings on cultural differences in attribution, following domain-specific knowledge. Since most of the empirical data on differences in attribution is in regards to eastern and western countries and cultures, I find it constructive to talk about - and ultimately compare - the Saami (native) population in Norway with Norwegians as a third stream. The Saami have a strong cultural heritage, and even though they are both western in the geographical sense, the Saami have established their own council and national identity. This has happened in recent years, despite of the assimilation politics implemented and the fact that most people of Saami heritage are also well integrated into the Norwegian culture. I will attempt to shed some lights on similarities and differences in causal attribution of Saami and Norwegians, through cognitive mapping. This experimental technique involves identification of the factors each participant associate with each event through causal maps and word-association (Eden, Ackermann & Cropper, 1992). The technique allows for illustration and depiction of causal reasoning, and will be elaborated further in the methods section.

Causal Attribution

Causal attribution refers to the mechanism of attributing meaning to something, whether it is an action, event, behavior, or situation. Certain processes of causal reasoning are more

complex for us to understand, and does not allow us to simply retrieve preexisting information on its content. Such as is done in the phrase: **the pet bird** (establishing that it is not wild), **usually** (establishing that this is not always true, but mostly so), **lives in a cage** (reasoning that the pet bird can fit in the cage based on prior knowledge), **inside the house** (reasoning that the cage can fit in house based on prior knowledge). Kunda, Miller & Claire (1990) proposed that the established association between a bird as a pet in a cage makes it relatively effortless to form that connection.

If, for instance, one is to imagine a pet hippopotamus, the lack of existing information on this situation can lead to composite associations. Through composite associations, one could find it reasonable to assume that the hippopotamus has to stay outside based on; the sheer size of people's houses, the unusually large size of hippopotamuses compared to other pets, and what our knowledge on its preferred habitat is. Finding a hippopotamus in the garden area of a zoo can therefore seem more reasonable than finding it inside in a closed off facility for some, who might get uncomfortable picturing the isolated animal without knowing if this is something the animal prefers. Being provided some indication of the animal being sick on the other hand, might change the causal perspective from animal cruelty, to care and consideration. Information is thus a critical component to the causal models people hold. When making causal attribution, context is therefore as equally important as content.

Lay people try to piece together the reasons why and how individuals do as they do - and events occur as they do - as objectively as possible. Regardless, they will ultimately construct reasons that are formed on the dispositional factors of the agent, and the environment in which it resides. The idea that people with all their dispositions, can believe that they are making objective inferences, is the foundation for Heider's (1958) conceptualization of *näive psychology*. As an oversimplification, this entails that a person can either (or simultaneously) attribute internal causes and controlled mechanisms as the reason something occurs, and also possess the perspective that something is externally influenced, and thus out of the individual's control. This dual perspective is the basis of *attribution theory*. When one is to understand why a certain event is depicted a certain way, it could therefore be constructive to investigate the descriptors disposition in addition to the actual event itself. Art can easily illustrate this as it is figuratively the same object perceived by all (for the most part), but attributed to it is an endless variations of meaning, possibly changing the perception entirely.

Causality refers to the process where different occurrences are conceptualized, and how one thing leads- or is connected to another process or state. How complex a causal

relationship is, is often determined by the knowledge a person possesses about that particular incident, and their information on the surrounding factors. The mechanisms of attributing causal relationships are prone to fundamental attribution error (FAE), exemplified by the renowned experiment of Jones & Harris (1967). In the study the participants tended to make judgement on other participants' attitudes in on a written debate, even though they knew that the authors had been assigned the particular angle, opinions and viewpoints expressed in what the participants read. A study on FAE with Korean and American participants (Choi, Nisbett, & Norenzayan, 1999), demonstrated an universal proneness to FAE, as both groups committed attributional errors. However, when the participants were both asked to perform the task themselves (write from an already decided stance) and then evaluate, this significantly reduced the number of Korean participants making FAE. This indicates that there is indeed a lack of universality in certain aspects of causal attribution mechanisms.

Even though one would assume that the causal mechanisms of reasoning are universal, especially due to globalization and the influence of other cultures being within closer reach than ever, demographic variables can influence the causal attributions people make (Carey & Spelke, 1994). When people piece together information they have for explaining something else, - age can work as a moderating factor for how many and complex causal reasons a participant is able to produce. The depth of perception in regards to the event can in that sense be moderated by education, and the knowledge people possess about that specific domain of events. The perspective and factors surrounding causal attribution, might also be influenced by culture, as the vantage point and structural method used to reason can vary according to the way in which the community approaches events. Age, education and culture, can therefore function as important influences on the causal attribution process overall.

Domain-specific knowledge

In psychology, there is an understanding of human cognition evolving around an individual's core principles surrounding domains such biology and physicality, which are pertinent to influence and activation when confronted with events that are built on the principle knowledge of those domains (Miller, 1984; Lee et al., 1996; Carey, 2009). Based on previous research, domains such as physical (Peng & Knowles 2003, Beller et al. 2003), biological (Medin, oljaehto, Marin & Bang, 2013) and social-psychological (Miller, 1984, Carpenter, 2000) - events can allow for a rough categorization of worldly understanding. This is assumed to be so distinct for certain domains that there can be a model or pattern created around it. Carey et al. (1994) illustrated the process of attributing and grouping information into

domains, by noting that: “*When children encounter an entity that looks like a human being but does not engage in self-generated action, they will not conclude that their notion of person is false but rather that this entity does not fall within the domain of their psychology: it is not a person*”(p.178).

This demonstrates that domains function as a reference point for information processing, and that it works on various levels in different stages of the life.

The difference between core knowledge and perceptual information is that the latter is devoid of content before meaning is implemented to it through the context (Carey, 2009). The domains consists of core knowledge, and collaborate with working-memory and implicit understanding when confronted with words such as *goal* or *fantasy*. Those words do not fit within the sensorimotor construct, and despite linguistic information about the word, its features are constructed within the framework of the individuals’ core cognition. Culture can ultimately influence the process of core cognition, through the individual mental representation available for those words. When investigating the cultural differences in causal attribution, there are several perspectives on how cultural influences mental representation. One perspective is oriented around thinking and reasoning. Nisbett, Choi, Peng & Norenzayan, (2001) proposed the following two main ways of thinking: 1) *Holistic thought* – being contextual and concerned with the scope, process and associative components of the situation, this way of thinking elaborates on and adapts to the content information available. 2) *Analytic thought* - related to the agent, concerned with symbolic representations and its structural relevance to the event, it is concerned with parts and components producing a large-scale effect.

Some empirical findings have suggested that perception and evaluation of physical agents and events are hardwired in children, and not prone to cultural influence. Peng and Knowles (2003) aimed to investigate whether there was any validity to this notion by looking at the cultural impact folk theories would have on such conceptualization. The study investigated the interpretation of physical interactions by Chinese and American participants, and did this by recreating certain physical simulations on the computer such as *launching*, *balance*, *collision* and *magnetic* events, to mention a few. For the study, they hypothesized that the Chinese participants would emphasize the notion of relations between external influences and the physical object under evaluation, as opposed to the Americans who would attribute causal explanations based on the object’s disposition. They found a significant difference in some of the scenarios (Aerodynamic, Magnetic, Launching). In every difference they attributed, there were significantly more contextual explanations made by the Chinese,

which indeed supported their hypothesis. The researchers argued that with the information that the domain knowledge of physical principles provides, - relatively static and universally taught knowledge can be approached differently based on the cultural background and perspective of the individual participant.

With the aim to investigate cultural difference in aspects of causal reasoning, Bender & Beller (2011) studied the objectivity of causal attribution based on previous research revealing that people attribute causal roles to the agents involved in situations. This occurs even when the relationship between cause and effect is symmetrical (meaning that they both have an equal part to play in the occurrence of the situation). For example they asked German, Tongan and Chinese participants to assess which factors they deemed most relevant for certain causal events, where all the settings in each condition would be entirely symmetrical. The findings demonstrated that there was asymmetric bias of responses found in eight of nine settings for the Germans and six of nine for Tongans. The scenario of a piece of wood floating on water had cultural variations in whether the water (Tongans) or the wood (for Germans) was deemed more causally relevant for the situation to occur. Although attribution of causality is not always culturally dependent, and although it varies with which domain one looks at, there is strong evidence of the notion of cultural variations on the physical domain knowledge. Since the studies mainly investigated the physical domain, the similarities and differences in other cognitive domains are worth investigation as well. Through investigating causal attribution for domains dealing with biology or social aspects, one can further examine if and how the domain knowledge is influenced by culture.

If a person performs very complex causal reasoning, he/she would consider more information before a convincing causal account could be constructed. In theory this would entail a cultural difference in the numbers of attributed factors when trying to explain why someone did something such as lying about an affair. Someone with a complex causal theory can be inclined to consider the situational circumstance with information about the affair, the victim, the timing, his or her prior relationships and such. Individuals that perform simplistic causal processing will most likely reduce the number of information attributed to explain the incident (Choi, Dalal, Kim-Prieto & Park, 2003), and might deem negative characteristics of the involved parties sufficient to explain the incident. A study by Carpenter (2000) aimed to look at cultural tightness (the close-knit structure of the group) and the effects that would have on causal attribution. It was found that independent self-concepts occurred more frequently in individualistic cultures as opposed to interdependent (meaning reliant on others) self-concept, for close-knit and collective cultures. In the conceptualization of failure, more causes that are

external were attributed for more collective cultures. Even though there is no objectively clear right and/or wrong way to interpret the situation, cultural variations can give some insight in distinctions in the social and psychological domain on causal attribution.

In a literature review on culture and causal cognition (Norenzayan et al. 2000), researchers found support for the following cultural differences in:

- 1) Understanding of entity/increment theory (intelligence is static – most Americans, versus dynamic - Koreans and some Americans).
- 2) Interpretations of behavior in humans and fish (relations between and surroundings - Chinese/Japanese, object properties - Americans), and
- 3) Causal reasoning in general (context dependent - Hindus, dependent on disposition of the agent - Americans).

These differences in attributing understanding are, in those particular studies, involved in a variety domains spanning from physical, social and psychological, and biological. In ontology, perception and attribution, the research focus tends to be on relevant categories within the variables examined, and on certain cognitive domains used when examining these. Contexts that requires the activation of certain fields in a participants cognition, can distinguish between the participant group. Individual variations can provide a similar or dissimilar response; for example, the reason someone gets sick might be explained within a biological domain in some cultures, with some emphasis on social and psychological domains. On the other hand, some cultures might attribute social and psychological factors such as bullying to primarily cause the sickness (biological domain). Since many of the aforementioned studies were comparison between Eastern and Western cultures, studies need to investigate cultures that are closely related in geographical distance to evaluate whether cultural differences occur regardless of distance in cultural familiarity to others.

There could be an argument made for the constructivist approach to causal cognition, suggesting that knowledge is constructed through loose internal information structures surrounding specific categories and domains (Hong Morris, Chiu & Benet-Martinez, 2000). Possessing this domain knowledge is just one aspect of causal attribution, as the way in which people think and reason using this information, is another. There has been some debate concerning the level and complexity on the amount of influence culture has on these causal mechanisms. In a literature review, Bender, Beller & Medin (in press) have warned against overemphasizing the relationship between the individual and the group, when accounting for cross-cultural differences in causality. They highlight that differences should be regarded in terms of linguistic differences and cultural folkology. In a literature review by Norenzayan &

Nisbett (2000) the cultural differences in causal reasoning were still evident despite that the groups demographics (age, gender, educational level and socioeconomic status) were highly similar. Furthermore, the predicted difference emerged regardless of whether the language implemented in the experiments were native or second to the participants. This indicates that cultural heritage has a level of influence on thought mechanisms and causal attribution, irrespective of language and other individual variables.

Cultural differences in causal attribution

Individualism and collectivism are a part of value dimensions in society as established by Hofstede (1980; 2001), and the concepts explain how oriented towards the self, versus the group people are in that society. An understanding of individualism as a dimension is that it is associated with the nation's financial status and closeness to the cultural group one belongs to (Berry, Poortinga, Breugelmans, Chasiotis & Sam, 2011). A higher and equal financial status, in combination with open and flexible group formations, can reduce the likelihood of being dependent upon hierarchical relations - and ultimately the group. Whilst in collectivistic societies and close-knit communities, many are dependent upon the advice and effort of their group - and thus creating more interdependent structures. The existing data suggests individualistic societies are mostly western (such as USA and North Europe), and that these countries usually will form straightforward and internalized causes related to the agent, when making causal attributions about for example another person's behavior (Hofstede, 2001). As opposed to collectivistic societies (mostly indigenous cultures and eastern like China and South America) where a more holistic and broader evaluation could take place. The unique understanding of the explanation people make towards commonplace events can in other words help identify whether dispositional or cultural influences are the strongest on psychological domains, and can also indicate which tendencies are generalizable and which are unique in an emic perspective.

The way in which people form their identity ultimately reflects what can influence their causal attribution. Individuals who are coming from collectivistic societies might have to negotiate some of their values, and become more reliant of initial cultural understanding due to relocation, when living in individualistic settings. Collectivistic societies often rely on input and perspectives from others, their experiences circumstantial factors when attributing reason and causes (Berry et al., 2011). This can also be explained by the societal structure, where individuals who likely in larger cities are more likely to be influenced by several different cultural values, and thus more likely to facilitate their own individualistic perspective, based

on various viewpoints. Here the individuals rely much more on their own approach anyway, and are more likely to benefit from being self-sufficient. However, indigenous cultures with close knit social structures are more likely to conform when they come from a societies with a collectivistic focus, which in turn can be demonstrated in how their individual perspective is influenced by their group, and that they define their personal values and interpretation to the group's overall perception.

Researchers suggest that collectivistic and individualistic values can influence causal reasoning and attribution by regarding the relationship between perception, social context and constraint (Miller, 1984). In a meta-analysis of individualism and collectivism, researchers (Oyserman, Coon & Kemmelmeier, 2002) critically evaluated the generalizability of those value dimensions in studies designating individualism/collectivism to specific of cultures. They reviewed collectivism and individualism internally between the US participant, and found distinction between the scores for European American versus Asian-, African-, and Latino Americans. The review provided stable empirical evidence for cultural difference in the basic psychological value dimension, even for residents living in the same country, but with different cultural heritage. Notably with limitations like most participants were students and mainly - in regard to eastern participants- from Japan, China and Korea (not representative of Asia as a whole). There was no difference in American versus Latin American or African scores. There was a small difference between American opposed to Indian, Korean and Japanese participants, however the greatest difference was between Chinese and American participants. Even though these value dimensions have been criticized for simplifying complex cultural values, and being interconnected to other overlapping value dimensions, they emphasize how cultural structure and cognitive influence is worth looking into. However, this study recognizes that value dimensions can vary within the groups of the society, and questions whether western and eastern culture comparison is a good argument for these value dimensions on a general basis. Many rural areas in America share the components of the Chinese interdependent society structure, but perhaps without there cultural tradition.

In a review on the differences in social explanation, Miller (1984) looked at cultural influences in attribution for Indians compared with Americans in different age groups. The study was based on earlier empirical findings, where young children and non-western individuals were shown to have in common that they conceptualize causal links in a holistic way. This means that they tend to view the *agent* they are evaluating as heteronomous in the causal relationship, and that they fail to make use of classificatory attributions due to limitations in abstract cognitive classification systems. The idea that there is a cultural

attribution bias is based on the notion that people might be culturally primed to emphasize dispositional or situational factors (Lee, Hallahan & Herzog et al, 1996). Failure in attributing sovereignty to the individual agent entails that different cultural causal model can limit cross-cultural understanding, and can make certain cultural groups look at norms and thought processes exhibited by others as behavioural and situational irregularities.

As Millers (1984) aim was to demonstrate how social inferences are not only understood by completely subjective or objective factors, the findings from the study supported that there was a difference related to culture in regards to the way in which the participants attributed meaning towards a situation, more so than to experience and cognitive capacities. Hindus were more inclined to make broader inferences where several variables were mentioned both directly and indirectly influencing the situation, as opposed to western individuals. This suggests that cultural groups can, and probably will to some extent, make distinct causal inferences about certain events and situations. Even though people might have the ability to integrate knowledge about the world into their own understanding, much of an individual's evaluation and causal attribution is implicit and intuitive. If causal attributions were strongly connected to a specific cultural heritage, one would expect to find similar patterns of causal attribution in individuals who have emigrated to other places and integrated to other cultures, as in people with same native background as them, living in their initial native environment.

A study, by Lee et al. (1996), supported this notion, as they compared two different models of cognitive processing in terms how well they would be able to illustrate attributional differences. By taking editorials and sports articles from Hong Kong and the United States, they would ask coders to look at whether the journalists of the different topics would make personal (dispositional) and/or situational attributions for each article, and rate to what extent they would do so on a 9-point likert-scale. The reason they looked at sports articles, were that the game itself has a certain set of predetermined, and the framework for sports articles would then be established already, leaving more room for the journalists' disposition being added to the article. Editorials would however be more complex, and would therefore require a sense of care and *cognitive control* when treating the ambiguous source matter, as the topics would be more open to interpretation. Krull's mixed model on social inference (1993, as cited in Lee et al, 1996) was the model best resembling their findings; that initial attribution - which was supported as related to culture- can be moderated by careful consideration. Taking into consideration that the disposition of the coder could very well have created a bias in the evaluation in and of its own, their findings were in alignment with the cultural difference in

value dimensions proposed by Hofstede (2001), when they found that individuals from Hong Kong tended to look at more situational factors as opposed to the participants from United States. The consequences of these assumptions can ultimately provide some insight in the way knowledge is distributed in these countries, as the findings are based on articles and editorials, which are common sources for information.

In a study by Benet-Martínez, Leu, Lee & Morris (2002) chinese-american participants were asked to evaluate to what extent they believed that the two cultures they were from, were in alignment with one another. The participants were split into two groups where one consisted of those who believed the cultures were in alignment, and the other group consisted of those who meant the cultures were conflicting. The researchers then primed the participants with famous icons associated with each culture; either typical american icons (the white house, mickey mouse) or chinese icons (a rice farmer, the great wall of china). Following that, an animation of a fish leading a flock was shown, and the participants were asked to identify possible causes for this. The responses were coded into internal and external factors. For the group who believed that the cultures were aligned, responses attributing internal factors for the behavior of the fish were noted when the participants were primed with Chinese icons, and external factors when the participants were primed with American icons. These results indicate that people with multicultural background/heritage who possess a variety of different cultural backgrounds that are not conflicting, have several causal frames and domain considerations disposable, and can use these variations in causal mechanisms interchangeably.

Saami in Norway

Similar to many modern indigenous cultures, the Saami are not registered separately from the rest of the inhabitants in the country, and are primarily spread throughout a vast geographical distance. Thus, only a vague estimation of their population number can be constructed, and it is estimated that there are around 37.000 Saami individuals in Norway (Statistisk Sentralbyrå, 2011). Associating the Saami population in Norway with other indigenous groups is however a complicated process. Even though their cultural traditions are indeed strong, with the 100 year anniversary of the Saami national assembly recently taking place in Trondheim (February 6th, 2017), the re-establishment of their cultural identity has been an important part of the modern Saami history. This is largely due to the *Norwegianisation* of the Saami from about mid 1800s through the 1960s, where active and aggressive assimilation policies were being implemented. Even though many minority and indigenous group have been subjected to

pressures for conformity, in the particular case of the Saami, the assimilation policies involved loss of land and privileges because of the maintenance of their native Saami language (Thuen, 2007). It is argued that the ongoing Norwegianisation persisted due to the inability to create a generalized and independent Saami organization where the interests of the Saami could be argued as a collective interest. This illustrates how many relatively isolated group variations of Saami inhabitants there were at the time. The local heritage and variation is largely the basis for why many modern Saami individuals consider themselves Saami even though the native language skills for some are not intact, providing an indication that language might be a prominent but not the singular factor for cultural identity.

A main component in Saami tradition is reindeer herding, fishing and hunting (Nergård, 2006), and due to their community-based structure their heritage is heavily interdependent reminiscent of collectivistic societies. In a literary review investigating the discourse surrounding multicultural education in Finland, the researchers established that the national curriculum specifically highlights that the education provided Saami children has to be done in a way that they can maintain their cultural identity and heritage (Holm & Londen, 2010). It is revealed, however, that this does not work that well in practice for Saami children who are living outside what is considered their “home-region”. As an example, they are not provided educational instructions in their native language, in certain regions of the country. Studies have shown that demographical variables such as language can be critical in determining the interpretation of causal relations in situations where, for instance, action or current state is highlighted (Brown & Fish, 1983). In Norway, for instance, the word “asfalt”-same is sometimes used for modern Saami individuals who are living in the big cities (Tøhaug & Mehren, 2013). For some, the word *asfalt* (eng. asphalt) portion of the word could be a slang associated with being modern and culturally “down to earth”. However it can also be regarded as degrading; highlighting the lack of cultural affiliation the Saami individuals have towards the dominant Norwegian culture. Lack of language facilitation in certain regions could therefore create a regional distinction in how much the collective Saami culture, understanding and language influences causal mechanisms for Saami individuals

Understanding Saami traditions, experience and knowledge is critical if one is to understand the basis for distinction or similarities in causal mechanisms. As a part of a field study on the Saami lasting approximately 15 years, Nergård (2006) was interested in investigating this. In his book he explains the distinct Saami understanding of nature to be established by the following; On one hand they know its nature merely by the use of it. On the other hand they know nature as a common ground for different lifeforms and users (Nergård,

2006, p. 97). If it is recognizable that Saami culture and heritage provides insight and knowledge about the nature at a level the Norwegian culture does not do, causal attribution towards physical or composite events related to nature, could be expected to be different than for Norwegian participant. There are several examples which can be highlighted as substantially different from the Norwegian culture throughout the book, where sharing tales of visions with the whole community through collective meetings at councils, is interpreted as a way for the community to facilitate the person experiencing psychological distress or suffering from hallucinations. For Saami individuals living outside areas where these practices might be common, those collective forms of “treatments” might not be recognized in the same way by other Saami groups. As Thuen states; The cohesiveness of Saami peoplehood is perhaps best conceptualized as a network of varying relationships with zones of varying density (Thuen, 2007; in Gupta, p.135). Considerations should always be made towards the variation of a cultural group, but as we have seen through other studies, having a collectivistic foundation can help explain distinctions in causal mechanisms.

With the acknowledgement of Saami rights and their will to maintain their culture, there is an increased focus on how Norwegianization has taught us that cultural maintenance is important. The Saami demonstrated this through their reaction on the assimilation, which is now viewed as an acculturation strategy that actually can lead to the opposite - and led many to support the Saami separating their heritage from the Norwegian culture they once were pressured to be a part of. Previously the Saami have been a people financially sanctioned by the Norwegians through the assimilation strategy. As the theory of cultural value dimensions go (Hofstede; 2001, Berry et al.; 2011) the lack of financial possibilities and rights is indeed what prompted the mobilization of a collective Saami council. The need to be dependent on the effort of the group might be the social context needed to explain why the Saami could be collectivistic. It is important to note that their culture and tradition is older than the Norwegian culture, being around 5000 years old (Broadbent, 2013) as opposed to the 203 year old Norway. During this time, living in isolated conditions and being mainly community-based, they were prompted to cooperation, bartering and council meetings forming the hierarchical societies of old (Nergård, 2006), evolving into Christian Læstadian societies (Nordvik, 2013) where the societies were bound together by religious views. There are many trials and traditions the Saami people have had to face together, teaching them an invaluable lesson of the strength of their communities.

The Saami are now believed to be successful in restoring their cultural heritage. Their continuously work towards independent cultural projects has somewhat influence Norwegian

reasoning as well. The former ethnic Norwegian Mayor of Tromsø, one of the many northern cities with a substantial Saami population, mentioned in an interview (Gjerde, 2016) that a picture he was presented with during a seminar about Saami history, changed his perception of the assimilation policies implemented on the Saami. The experiment illustrated in the picture, was of a Norwegian experimenter measuring the head of a Saami woman as a means to see if she was mentally retarded. This powerful image affected the former Mayor in such a way, that he withdrew his initial policy to make their council be a part of the few areas where the Norwegian and Saami language are equivalent in use (*språkforvaltningsområde*). The reaction the picture elicited came despite that the former Mayor already knew the history of the assimilation policies, but could not attribute the same meaning from it until it was illustrated through a Saami perspective. This demonstrates that the ability to interpret an event and rightfully attribute meaning to it varies depending on individual and contextual differences.

Their initial good-willed need to mix their Norwegian politics in the Saami areas, can similarly be illustrated in the Mayan elites perception of the Spanish invasion, where they were subjected to violence and persecution. In their own historical works, named *título*, the Mayan elites wrote about the invasions as a dent in their cultural history, and with a favorable perspective illustrating the clashes as a symbol of their tenacity and bravery. These descriptions were given despite the Mayans being defeated in most all battles (Restall, 2006; in Gupta p. 126) by elite members of the tribe who were distanced from the struggles of their people. In the same way as the council in Tromsø were distanced from the struggles of the Saami, and thus formed the initial perspective that a Norwegian influence on Saami areas would be considered acceptable. This supports the notion that cultural background, identity and history can create a framework for how cultural groups interpret situations. Research suggests that cultural differences for groups that do not have a strong enough position to argue the maintenance of their own tradition and heritage when meeting the greater community (Korac, 2003), can experience that managing a cultural unity could become a challenge. The Saami might intuitively use the appropriate causal frames to adapt to Norwegian causal attribution, when they find themselves within a Norwegian setting.

Adaptability is perhaps the best cognitive strategy when one is spending most their time in a context where one form of attribution is common. An example of how one does this can be the way in which one explains feedback in a formal setting versus an informal (or different) setting. For instance, understanding that a doctor's physical evaluation that your muscles are sore is accurate in a scenario of stomach ache, is based on the scientific

validation, and can seem reasonable for almost everyone through their own biological domain knowledge. The conflicting notion then that the stomachache is caused by depression and stress as proposed by your friend or family, could be considered as a primary or secondary reason for this – all depending on the priority one gives the social- and psychological domain knowledge. The hierarchy of the causal attribution prioritizing the factor *scientific validation*, over the *advice from close relations* in the event of a *stomachache*, indicates what sort of domain knowledge one prefers.

Aim and hypothesis

To summarize, the aim of this master thesis is to explore cross-cultural differences and similarities in the causal models people hold for events, and which causal factors they generate for explaining why incidents occur. Based on previous research on cross-cultural difference and its influence on domain knowledge, questions can be raised in regards to what extent there is a cultural difference in causal attribution. **The first hypothesis posed is that there will be a difference in the distribution of factors between groups across domains (H1). Secondly, it is hypothesized that there will be a difference between the causal maps held by the Saami against the Norwegians (H2).** This study will look at which cognitive domains the participants tap into when explaining events, and also if certain domain boundaries vary within the cultural groups.

Method

This study aims to investigate cross-cultural differences and similarities in the causal attribution made by Saami and Norwegian participants for certain domain-specific events: physical, biological, social- and psychological, supernatural, and composite. The data collection for this study started in December 2016, and ended in February 2017.

The design of the study is quasi-experimental, as it uses *cognitive mapping* when collecting and analyzing the data. Cognitive mapping is a data collection and analysis technique, which is meant to look at reasoning, rationalization, and the causal links people draw between variables leading up to events and situations (deKwaadsteniet, Hagmayer, Krol & Wittman, 2010). Through this method, it is possible to investigate word frequency, causal categories, complexity of cognitive maps and “word”-association. The complexities can vary in terms of arrowheads used and other structural cues, however researchers have warned against the interpretation of these as an overall indication of complexity (Eden et al., 1992). Cognitive mapping is primarily concerned with unidirectional relations, when the starting

point of one line is the starting point for one reason or cause, ending at the tip of the arrowhead where the effect is expected to be found. Since causal maps are unique in the sense that they are supposed to reflect the participant's cognition, there should be some individual difference to the maps overall. To create a mutual rule for interpreting their internal structure is then difficult, as making assumptions that one group does one thing more than the other based on this complex process is difficult. One has to take that into considerations, as the significant differences do highlight very distinct patterns and links, that the internal structure and form of the map relates to it being an entirely different event - rather than there being an overall difference in interpretation.

The technique of cognitive mapping allows the participant to look at the factors individually, since they have to construct several keywords associated with the event, and also have to sort the placement of these factors by importance and in a way that makes sense to them. This is meant to be a way of getting the participant to respond more genuinely to what they actually think about that actual event, rather than what they believe they are expected to think, because they continuously have to reflect upon words to corresponding scenarios. The technique also prevents random word construction out of fatigue, since the participants are prompted to clarify and reflect orally prior to writing down the keywords.

Participants

The participants in this study are of Saami background ($N=19$), and ethnic Norwegians without an immediate foreign background for ($N=19$). The gender distribution consisted of the following number of male participants; Saami = 6 and Norwegian = 5, and females; Saami = 13, Norwegian = 14. There was not a significant between-group difference in number of male participants. However there were substantially more female participants than male overall. The average age for participants in the Saami group was 28.78 years (range 21-46 years), and approximately the same for the Norwegian group where 24.57 years (range 19-28 years) was the average age. Most (60%) of the participants were students ($N=23$; Norwegians = 13, Saami = 9), but many were also employees to some extent in different branches ($N=14$), whilst one person was unemployed.

Table 1. Occupational descriptives

Occupation	<i>Norwegians</i>	<i>Saami</i>
Student	13	10
Bar and kitchen work	2	1
Health/social worker	2	2
Transportation worker	1	1
Other full time	1	4
Unemployed		1

The participants were recruited through Facebook groups, and by referral of Norwegian Saami Association (Norske Samers Riksforbund, NSR). Since social psychology rightfully has been the target of criticism in regards to the use of relatively homogenous participant groups, being western, college educated, and from industrialized rich democratic countries' (Henrich et al., 2010). This study aimed to recruit people not only through convenience sampling, but also by specifically recruiting people with different occupational backgrounds, and also from a variety of geographical locations in Norway. The invitation sent to the participants included brief information about length, purpose and procedure of the study, and also that they would receive a gift certificate from Godt Brød with the value of 65kr as compensation for their time.

The Norwegians that participated did so in the psychological faculty at the University of Bergen. Many of the participants in this group had roots from other parts of Norway such as Oslo, Stavanger and Ålesund. The Saami group participated at a variety of locations; at the Saami House and also a meeting facility in Oslo, in Bergen at the psychological faculty and at the Norwegian University of Science and Technology in Trondheim. Even though many have cultural roots in Northern Norway, it is more representative to use Saami participants living in some of the big Norwegian cities, as most of the modern-day Saami population live outside what was considered their traditional area of settlement (Sørli & Broderstad, 2011).

Details on cultural background were collected as part of the demographical data in order to identify to which extent the participants had a Saami heritage. The participation

criteria was that the participants had to self-identify as their designated group regardless of maintenance of native language. For the Norwegian group all ($N=19$) participants identified as such, and reported Norwegian as their native language. For the Saami group there were nine who identified as Saami completely, seven of which had Saami as their native language, and the other ten identified themselves as both Norwegian and Saami with another native language (either Norwegian or Russian).

Materials

For this study, the domains investigated were the: physical domain, biological domain, social- and psychological domain, supernatural domain and composite event. There were questions from the *supernatural* domain, given that studies have indicated the old Saami cultural tradition is spiritually oriented (Nergård, 2006). *Composite events* were also on the list of domains to see if the variation in understanding the kinds of event that seemed “out-of-the-ordinary” or complex/mixed would depend on culturally specific conceptualization. In addition researchers have argued that context is important when examining causal attribution (Owe et al. 2013), thus variety of contexts might be able to give some indication of whether attributional differences are context/domain dependent or simply random. The questions in the physical domain were related to physical event and phenomena, as well as biological domain questions being related to biological events and processes, and the social- and psychological domain being questions related to social- and psychological phenomena

I constructed 4 questions relevant for the participant group for all of the domains. This resulted in a set of 20 questions on the following events (Norwegian translation in brackets):

Domain questions

What do you think can lead to;

- *Physical Domain*
 - a piece of wood floating (at en trebit flyter)
 - a lightning bolt striking, killing a number of reindeer (at et lynnedslag treffer) og dreper en rekke reinsdyr
 - the seasons coming and going (at årstidene endrer seg)
 - The moon waning (månen minker i størrelse)

- *Biological domain*

- the child of a poor woman getting high fever (at barnet til en fattig kvinne får feber)
- a chicken growing into a hen (at en kylling blir en høne)
- all birds in a flock moving in the same direction (at alle fugler i en sverm beveger seg i samme retning)
- a kitten having the same unique pattern on its nose as an older cat (at en kattunge har samme unike mønsteret på nesa si som en eldre katt)

- *Social-psychological domain*
 - a student confronting his teacher (at en student konfronterer sin lærer)
 - a person being more respected by the group than anyone else (at en person blir høyere respektert av gruppen enn noen andre)
 - a foreigner behaving like a local (at en fremmed oppfører seg som en lokal innbygger)
 - a mother knows what her child is feeling (en mor vet hvordan barnet sitt føler)

- *Supernatural domain*
 - evil things happening (at noe ondt skjer)
 - a prayer being answered or a ritual having an effect (at en bønn blir hørt)
 - a priest doing something wrong (at en prest gjør noe galt)
 - Humans coming into existence (mennesket ble til)

- *Composite events*
 - the hunters/fishers being exceptionally successful (at jegere er eksepsjonelt suksessfulle)
 - the winter holding off (at vinteren kommer sent)
 - a mental illness being healed (at en mental lidelse blir helbredet)
 - a roof collapsing while someone is sitting underneath (et tak kollapser når noen sitter under)

Procedure

After collecting demographic data on age, gender, educational background and ethnic belonging/identification, the procedure of this study involved three steps: free listing of causal entities, construction of causal maps and identification of important factors in the maps for a selection of events (explained in detail below). Beforehand, the participants were told that the questions was not skill-based, and was simply asked with the intention of understanding how they think about those events, in order to relieve any pressure or stressors asking the questions might elicit. They were also given an example of a question, unrelated to the task, which was: “Which factors do you think can lead to me jumping up and down”, where the reflection process being that my feet hurt might establish “cramps” as a factor.

The study was done with all participants in Norwegian. The data collection took around 40/50 minutes for each participant, and the three steps followed the following procedure:

- **Step 1**

In order to figure out how the participants think about the domains, different “domain-specific” events were listed in random order. The participants had to write down each response as a factors on post-it notes, where two to five responses per question was said to be sufficient.. After mentioning each factor they were instructed to put the note in front of them in no particular pattern. If they had a factor in mind which was written down from before they were told to just mention it, but not write it down on a new post it again - so that they would get all the factors only once. This was done in order to prevent certain factors from being more salient when choosing from them later on. All of the post its were in the same colour, and doodling over a word as a means of erasing what previously had been written was restricted.

One criticism which has been assigned to the experimental method used in studies on attribution, is that the experimenter might have manipulated the participants *inferential goals* - what they are motivated to understand - through questioning (Lee et al. 1996). To avoid this, a very specific instruction sheet was created with the exact information which would be relayed to the participant. If then one participant would be inclined to make inferences, then this would also apply to all of the participants based on the phrasing.

A protocol sheet where the responses and demographics separate for each participant, were noted down (appendix A), in addition to a consent form (appendix B). The experimenter

asked the participants follow up questions in order to start a vocal reflection process, if a clear factor did not emerge for the participants after they had some time to reflect on their own. If a factor emerged that the researcher did not understand in the context of the question, the participants were also asked to elaborate. This was in order to make the category of the factor and clear, with unambiguous reasoning.

- **Step 2**

For Step 2, the researcher selected two events from each domain. These questions were chosen at random, but were the same for each participant. The following events were:

- From the Physical domain: “the seasons changing”, and “a piece of wood floating”.
- For the Biological domain: “the child of a poor woman getting high fever”, and “all birds in a flock moving in the same direction”.
- For the Social-psychological domain: “a student confronting their teacher”, and “a mother knows what her child is feeling”.
- From the Supernatural domain: “evil things happening”, and “a prayer being answered”.
- For the Composite domain: “the winter holding off”, and “a roof collapsing while someone is sitting underneath”.

The participants had to pick those causes they considered relevant for the event from the post-it notes they had on the table. They were told to place the causes around the main event (which would already be written down as a post it note on the blackboard), and create a pattern they deemed informative for the factors leading to the selected event. They were told that they had to indicate the relations between the causes and the events by drawing lines and arrows in between. Examples of the types of arrows were provided, with the description that one was unidirectional (indicating a one sided relationship), and that the other was bidirectional – (indicating an interconnected/dual relationship) (illustration 1.). The final state of the causal models was documented through a photograph.

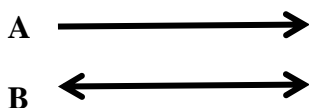


Illustration 1. Arrow A depicts a unidirectional arrow, whilst B depicts a bidirectional arrow.

The purpose of doing this step with post-its and the blackboard was so that the participants could switch and change the structure, the factors and arrows of their maps without any trouble. The maps were photographed so that the data could be stored for each participant, and that the similar/different variations of arrows could be interpreted properly.

- **Step 3**

In the final step the participants were asked to take a look at their completed causal map. From this map they were told to list the three most important factors in their diagram. Those responses were noted on a protocol sheet, in the rank order for each event.

The purpose of asking the participant to rank and identify important factors was to isolate the main features of the factors corresponding with the chosen events. This invites the participant to choose a selection of factors close to the situation, and their understanding of the causal attribution.

Ethics

In terms of ethical considerations, informed consent forms were used with information on; confidentiality, rights to withdrawal, voluntariness of participation, an appropriate explanation of the purpose and procedure of the study, and the name and contact information in case of inquiries concerning the study (Appendix). The participants were debriefed after the study in order not to influence their initial responses during the experiment, on the former findings of similar studies and on the exact purpose of this very study. Since this study is not concerned with health related questions and does not gather any sensitive personal information, sending an application to REK (regional ethical committee) was not necessary.

Data from Step 2 was used to analyze the process of conceptualization, and provide both structural and content information on causal models and help to determine the complexity of the maps. Even though categorization of the factors into word categories are apart of the data analysis, the exact content and rationale will be mentioned below

Results

The aim of this study was to investigate the difference and similarities between the causal maps and links created by Norwegian and Saami participants. The data presented in this section follow the procedure involving the three steps of data collection; 1) Free Listing, 2) Causal Models, 3) Key Factors.

Task 1: Free Listing of Causal Explanations

Data collected in Step 1 allowed for the identification of causally powerful entities. Some responses were rephrased to match them with frequently occurring labels when they were deemed to be synonymous/similar. For example circulation was rephrased as *rotation* (and counted together with instances of *rotation*) as it was a reference to the earth rotating around itself as well as the sun. Such changes of the original wording and the initial responses provided by the participants were indicated for each of the cases (original words are put in brackets in the word categorization below).

The factors mentioned in Step 1 were organized and analyzed according to the “domain-specific” questions they belonged. Table 1a. features the number of factor and percentage distribution of factors per domain for the two participant groups. The table shows how the Saami participants consequently mentioned slightly more individual factors (1011) than the Norwegian participants group (961), but not to the extent that there would be a significant difference between the groups (physical domain: $t(122) = .09, p = .92$, biological domain: $t(30) = .21, p = .83$, supernatural domain: $t(114) = .25, p = .80$, social- and psychological domain: $t(130) = .34, p = .55$, composite domain: $t(30) = 0, p = 1$), as each group provided close to half of the data. The range of the factors distributed internally within each group were approximately the same ($S = 17-22\%$, $N = 17-23\%$).

Table 1a. Factor Distribution for Step 1

	Physical domain	Biological Domain	Social-Psychological domain	Supematural domain	Composite events	Total
<i>Norwegian</i>	187	203	189	160	222	961
%	19	21	20	17	23	
<i>Saami</i>	192	213	207	177	222	1011
%	19	21	21	17	22	
Total	379	416	396	337	444	1972

As one of the several aims of this study was to distinguish what causal factors the Saami and Norwegian participants use when explaining event, Table 1b. was constructed to highlight the causal factors with the greatest difference between the individual responses given, regardless of domain. None of the factors mentioned below were from the Supernatural domain, because there were not any from the list with a < 6 response difference. The reasoning behind this cut-off point in difference was based on the evaluation that 6 responses more/less for one group, corresponds to a difference of close to half of the group providing more/less responses than the other group. This is a decent foundation for declaring and discussing a difference between participant group in groups consisting of 19 participants, as there were quite a lot of factors with a response difference of five and less, making it difficult to provide an additional concise list of all the response difference.

Four questions in each domain gave the participants a possibility of mentioning the same factor four times within the domain itself (if one consequently identifies the factor as relevant for all the four questions within the domain). Score for the factors that are chosen below are taken from events within one domain to compare the differences in responses internally within each domain. The factors might have been mentioned multiple times across all the five domains, however none of the factors had a response difference for >6 within any of the other domains, than those mentioned below.

The following factors were mentioned 6, or more times, by the Saami (Table 1b):

Sun, physical domain, total for events: “seasons changing” = 13, and “moon waning” = 4.

Cycle physical domain, total for events: “seasons changing” = 6, and “moon waning” = 5.

Construction composite domain, total for event: “a roof collapsing while someone is sitting underneath” = 23.

Confidence social- and psychological domain, total for event: “a student confronting their teacher” = 3, “a person being more respected by the group than anyone else” = 6, and “a foreigner behaving like a local” = 7.

Weight composite domain, total for event: “a roof collapsing while someone is sitting underneath” = 6.

Medicine composite domain, total for event: “a mental illness being healed” = 14

For the Norwegian participants, the following factors were mentioned 6, or more, times:

Evolution biological domain, total for events: “a chicken growing into a hen” = 4, “all birds in a flock moving in the same direction” = 14, “a kitten having the same unique pattern on its nose as an older cat” = 4.

Lack of recourses biological domain, total for events: “the child of a poor woman gets sick” = 13.

Knowledge composite domain, total for events: “a hunter being exceptionally successful” = 12, and “a mental illness being healed” = 12.

Patience composite domain, total for events: “a hunter being exceptionally successful” = 7, and “a mental illness being healed” = 1.

Training composite domain, total for events: “a hunter being exceptionally successful” = 12, and “a mental illness being healed” = 2.

Illusion physical domain, total for event: “moon waning” = 7.

Factor	<i>Norwegian</i>	<i>Saami</i>	Difference
Solen (<i>sun</i>)	4	13	9
Evolusjon (<i>evolution</i>)	15	7	8
Syklus (<i>cycle</i>)	2	10	8
Kunnskap (<i>knowledge</i>)	14	6	8
Trening (<i>training</i>)	11	3	8
Konstruksjon (<i>construction</i>)	8	15	7
Ressursmangel (<i>lack of recourses</i>)	10	3	7
Patience (<i>tålmodighet</i>)	8	1	7
Illusjon (<i>illusion</i>)	7	0	7
Selvtillit (<i>confidence</i>)	5	11	6
Vekt (<i>weight</i>)	0	6	6
Medisin (<i>medicine</i>)	4	10	6

Task 2a: Causal Models; Categories of Causal Factors

The large amount of individual factors (343) makes it difficult to obtain a more general overview of whether there might be an influence of culture or domain on participants' responses. In a second step, the factors were therefore grouped into larger categories, where changes in the factors were noted in parentheses as *endret* (changed). This was done in

content-based clustering and produced the following ten content categories and a residual category (“others”):

1. Physical properties and forces - characterized by words describing properties and forces constructed through physical principles. The factors in this category will either be dealing with matter and element, or they can be forces with distinct physical properties .
List of factors; Salinitet, Tørr, Størrelse, Vekt (endret egenvekt), Fuktighet, Rotasjon (endret sirkulasjon), Energi, Vinkling, Bevegelse, Massen (endret substans), Tyngdekraft (endret gravitasjon), Oppdrift, Gass, Flyteevne, Lys, Fysikk, Kjemi, Ild, Luft (endret luftlommer), Temperatur, Retning, Magnetfelt, Jorden, Materialer, Konstruksjon (endret bygningen), Plassering (endret Høyt punkt, posisjon, avstand og Åpen slette), Antall, Utforming (endret form), Formasjon, Væske (endret vann og sjø)

2. Meteorological entities/phenomena & environment (in ecological terms) – This category includes words that deal with atmospheric science, environment and weather. The factors are characterized by words within the principles - or that exists as a part of, meteorology.
List of factors; Erosjon, Naturkatastrofe (endret jordskjelv), Meteornedslag, Klimaendring, Luftstrøm, Årstid, Natur, Vær (endret dårlig vær og tordenvær), Havstrømmer Sort hull, Global oppvarming, Forurensning, Natur lov, Syklus, Solen.

3. Coincidence and luck– The two factors in this category revolve around randomness and chance, and are mostly constructs of timing.
List of factors; Flaks (endret hell, uheldig), Tilfeldighet (endret sannsynlighet).

4. Biological properties and forces – This category is characterized by words describing features that define, influence and make up living organisms. Biological forces refers to, in this context, an attribute, that alters the biological disposition of the agent.
List of factors; Råte, Naturlig variasjon, Fotosyntese, Organisk, Alder, Orienteringsevne, Medisin, Rusmiddel, Reproduksjon (endret forplantning, sex og befruktning), Rase, Avl, Gener (endret DNA), Kjønn, Slektskap (endret familie), Evolusjon (endret kromosom, celledeling og utvikling), Biologi, Vekst, Infeksjon (endret bakterie og virus), Smitte, Drifter, Immunforsvar, Sykdom (endret influensa), Hygiene, Instinkt, Sanser (endret lytte), Gevir, Ernæring (endret feilernæring, kosthold, proteiner og mat), Behov, Indre kompass, Predisposisjon, Arv, Jakt

5. General Conditions – The words in this category describe conditions, things and circumstances as they are at that point in time. The factors were mentioned as a way of describing how events and situations are influenced by these relatively static (unaltered) conditions.
List of factors; Tilstand, Kvalitet, Livssituasjon, Struktur (endret bygningsstruktur og organisert), Skade, Svekkelser (endret slitasje), Konsekvens (endret butterfly effect), Miljø (endret omgivelser, klassemiljø), Omstendighet (endret forhold, almenntilstand, vilkår, levevilkår og boforhold), Tid, Kronologi.

6. Supernatural forces – These factors are somewhat beyond human comprehension. Words that and cannot be explained by science, or laws of nature, will fit into this category.
List of factors; Religion (endret religiøsitet), Forutbestemt, Tro (endret Gud, Djevelen og guddommelighet)
Human activities/influences– the following categories are describing the society and the activities humans engage in

7. Professions and work – Words that are used to describe professions and work as being a critical part of the events unfolding. These words have in common that they describe effort by specific people, and thus their influence, as being key for causal mechanisms to occur. This means that active engagement through professions and work, is identified as a causal factor.
List of factors; Arbeid (endret jobb og innsats) Håndverkere, Helsepersonell (endret psykolog), Karakter (grades), Prestasjon (endret meritter), Aktivitet

8. Qualities, feelings and characteristics - These factors are related to emotions and characteristics which can be intuitively activated, and can be present regardless of certain events. The words are identified by the questions; “you are feeling” or “you have a lot of [qualities/characteristics]”, and are more related to the persons dispositions towards the situation, than the situation itself.
List of factors; Hat, Ondskap, Utstråling (endret karisma), Overbevisning (endret placebo), Talent, Endring (endret vaneendring), Interesse, Utholdenhet, Erfaring (endret naturvant), Intelligens (endret intellekt og sosial intelligens), Tålmodighet, Vilje, Egenskaper (endret personlighet og beslutsomhet), Ferdigheter (endret evne og dyktighet), Empati, Formuleringssevne (endret retorisk og stemmeleie), Innsikt (endret refleksjon), Skam,

Kjærlighet, Karakter (attributes), Overlegenhet (endret arroganse, selvhøvdelse og bedrevitenhet), Identitetsforhandling, Udugelighet, Oppfatning (endret persepsjon, overbevisning, attribusjon, tolkning og observasjon), Disiplin, Perspektiv, Strategi (endret taktikk), Sinne (endret irritasjon), Virkelighetsfjern, Modig (endret mot), Intuisjon, Åpenhet, Selvrealisering (endret selvforsynt), Fortregelse, Selvtillit (endret selvsikker(het) og usikkerhet), Aksept (endret innse), Hensikt (endret agenda, motiv og intensjon, nytteverdi), Egoisme (endret griskhet og grådighet), Forståelse, Atferd (endret kroppsspråk og handling), Ansvar, Trygghet (endret frykt, flukt, beskyttelse og sikkerhet), Trening (endret øvelse), Misnøye (endret frustrasjon Oppmerksomhet, Mål (endret destinasjon, målbevisst og målrettet), Forventning, Valg (endret beslutningsevne), Fremstilling (endret fremtoning)

9. Social relations and communication – Words in this category are identified as interpersonal constructs, or factors that relate to this. The factors are dependent on other people, and thus social relations, to be influencing/causing events. These factors are also concerned with the dynamic and communication of humans and their groups.

List of factors; Leder (endret dominans), Samvær, Kjennskap (endret bekjentskap), Idolisering (endret opphøyelse, beundring og forbilde), Relasjon (endret forhold og familie), Tilpasning (endret assimilering og integrering), Tilknytning (endret kontakt og forbindelse), Tilhørighet (endret imøtekommenhet), Konflikt (endret krig), Ekteskap, Sosial (endret sosialisering), Gruppe (endret fellesskap, gruppering, isolert, gruppepress, flokkmentalitet, samlet og flokkatferd), Delt opplevelse, Vennskap, Nettverk, Kommunikasjon, Deltakelse, Likhet (endret speiling og kopiering), Støtte, Omsorg, Autoritet (endret dominanse), Hjelp (endret assistanse og veiledning), Feilinformasjon (endret informasjonsbrist, vranglære og feiltakelse), Forskjellsbehandling (endret favoritisering), Makt, Konformitet, Påvirkning (endret mobbing, innflytelse provokasjon og utprøvende), Harmoni, Avklaring (endret klarering og korrigerering), Uenighet, Misforståelse, Fanatisme, Respektløs (endret frekkhet), Samfunn, Undervisning (endret læring, veiledning og opplæring), Fornærmelse, Urettferdighet, Diskriminerende, Politikk (endret Donald Trump), Status (endret posisjon og velstand), Illusjon (endret bedrag, og løgn)

10. Economy – In this category the words are value oriented They refer to activities or concepts that are said within a financial context.

List of factors; Ressursmangel (endret klær og helsetilbud), Økonomi (endret fattigdom), Infrastruktur, Korrupsjon, Krav, Gevinst, Utstyr, Ressurser

11. Others – Less frequently mentioned factors that do not belong in a particular category.

List of factors; Behandling (endre terapi), Vedlikehold, Urelatert, Oppfølging, Oppløsning, Romskip, Reise

The factors were placed within their causal-categories, in order to identify if the participants would use different or similar categories when explaining events. An independent sample t-test compared the causal categories between Saami and Norwegian participant groups. Most of the factors mentioned by the participants were in the category Qualities, Feelings and Characteristics for the Saami (S=282, N=257), and the category Social Relations and Communications for the Norwegians (S=266, N=278). None of the values were different at the .05 alpha level, indicating that there was not a significant difference between the groups across the causal categories (Table 2a).

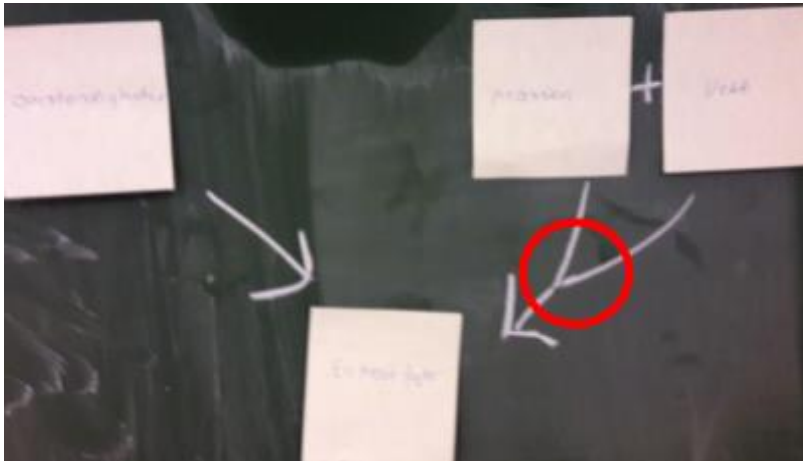
Table 2a. Causal Categories

	Norwegian			Saami			<i>t</i>	<i>p</i>
	<i>N</i>	<i>M</i>	<i>SD</i>	<i>N</i>	<i>M</i>	<i>SD</i>		
<i>1. Physical properties and forces</i>	178	5.90	7.29	205	6.8	8.11	-.45	.65
<i>2. Meteorological entities and environment</i>	132	8.80	13.38	149	14.9	10.65	-1.26	.21
<i>3. Coincidence and luck</i>	126	63	45.25	124	62	42.42	.02	.98
<i>4. Biological properties and forces</i>	229	8.8	9.30	245	8.1	8.20	.27	.78
<i>5. General condition</i>	101	12.6	11,74	100	11.1	12.59	.25	.80
<i>6. Supernatural forces</i>	24	8	5.29	32	2.4	14.22	1.61	.20
<i>7. Professions and work</i>	16	3.20	2.38	23	4.6	4.92	.57	-
								.57
<i>8. Qualities, feelings and characteristics</i>	257	6.70	6.13	282	6.4	5.89	.26	.26
<i>9. Social relations and communication</i>	278	7.90	7.45	266	7.6	6.44	.20	.83
<i>10. Economy</i>	51	12.70	12.33	31	5.3	4.17	1.15	.33
<i>11. Other</i>	20	2.8	4.05	10	3.3	2.30	-.23	.82

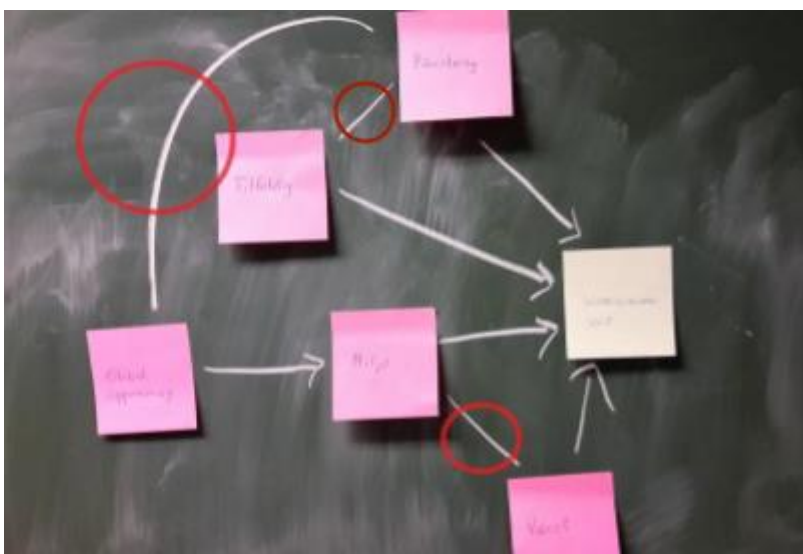
Task 2b. Causal Models; Causal Maps

To investigate internal patterns of the constructed maps for each group, I looked at frequency of occurrence for the most dominant factors, direction of relations and generalizability within the given responses in the data analysis, following what has been done in other studies using

cognitive mapping (deKwaadsteniet et al. 2010). Whilst most of the relationships in the causal maps were clear through the arrows, example 1, 2. and 3. can demonstrate some of the analysis and coding that was done in regards to interpretation of the maps containing non specific indications.

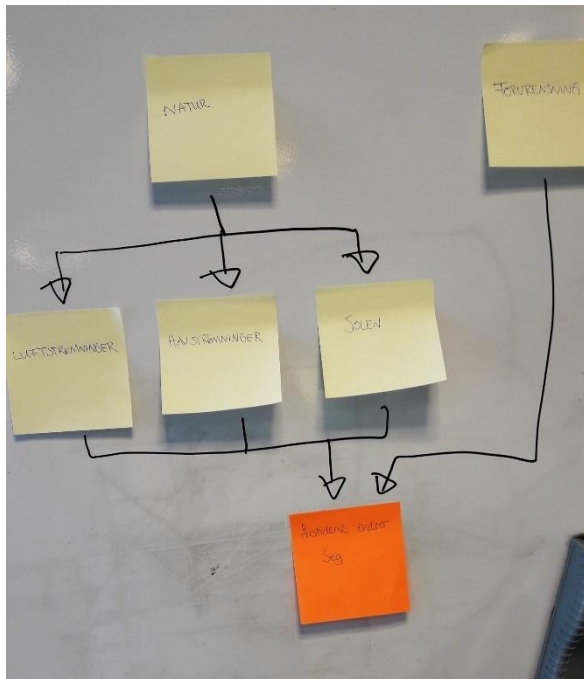


Example 1. A photo demonstrating the causal map drawn for the factors influencing “a piece of wood floating”, by one of the participants. The “+” sign is treated as bidirectional arrow, indicating that the factors (masse and weight) influence one another, whilst the arrow merging from two individual lines underneath (marked with a red circle) the two factors are analyzed as two unidirectional arrows.



Example 2. In this causal map, the lines without arrowheads are interpreted as being bidirectional arrows, because they indicate a understanding of a relationship between selected factors. In total there are three lines (marked with circles red circles) in this causal map , and

thus three bidirectional arrows (between; global warming and influence, coincidence and influence, environment and weather).



Example 3. In this picture, the causal map seems to have 5 factors and 5 unidirectional arrows. However, some of the lines can also be interpreted as interconnected. Instead of drawing a line from the sun (solen) and to the seasons changing event, the participant have joint the three factors in proximate distance towards each other, and provided the information that they all influence the event together, without providing information on what extent. Through the analysis, causal maps like this will be treated the same as those in *example 1*. In this causal map there will be 7 unidirectional arrows, based on the individual lines drawn from each factor.

Structural features of causal maps

Since the aim of this study was to look at what causal models different groups hold for events, the causal maps were analyzed according to unidirectional (leading one way) arrows and bidirectional (leading two/both ways) arrows, as well as the number of factors displayed in the maps. An independent sample t-test was conducted overall, as well as for all of the domains internally, and all the maps in total. This step differs from the initial distribution of factors in the sense that the participants are given the opportunity to illustrate their method of reasoning in terms of the event, and reflect upon their causal association based on their domain knowledge. The factors from step 1 would be available on the desk in front of them for them

to choose from, giving them a control-room overview of their domain knowledge, and the ability to choose freely from all domains and focus solely on structuring the map. The following tables displays the causal maps in according to step 2.

The average scores for all domains in total show that the Saami had more unidirectional arrows ($M=40.42$, against $M= 32.20$) and slightly more overall factors ($M= 40.57$, against $M= 39.50$), but slightly less bidirectional arrows ($M=8.10$, against $M= 11.35$) than the Norwegians. There was a significant difference between the groups at the .05 alpha level for unidirectional arrows; $t(33) = -2.11$, $p < .05$. But not a significant between-groups differences for the other factors; $t(30) = .89$, $p = .38$ (bidirectional arrows), $t(33) = -.31$, $p = .69$ (factors, Table 4a).

Table 4a. Number of Factors and Arrows Overall

	Norwegian		Saami		df	t	p
	M	SD	M	SD			
<i>Unidirectional arrows</i>	32.2	14.36	40.42	9.20	33	-2.11*	.04*
<i>Bidirectional arrows</i>	11.35	14.23	8.10	7.75	30	.89	.38
<i>Factors</i>	39.50	10.94	40.57	5.19	27	-.31	.69

* $p < .05$ (two-tailed)

In the physical domain the Saami participants used slightly more unidirectional arrows ($S=7.26$), than the Norwegian participants ($N= 6.27$), but less bidirectional arrows ($S=2.12$, against $N= 3.09$), and less over all factors ($S= 6.84$, against $N= 7.31$). Those differences were, however, not significant at the .05 alpha level; $t(31) = -1.19$, $p = .23$ (unidirectional arrows), $t(16) = 1.14$, $p = .26$ (bidirectional arrows), $t(31) = .77$, $p = .44$ (factors, Table 4b).

Table 4b. Number of Factors and Arrows for Physical Domain

	Norwegian		Saami		df	<i>t</i>	<i>p</i>
	M	SD	M	SD			
<i>Unidirectional arrows</i>	6.27	1.93	7.26	2.97	31	-1.19	.23
<i>Bidirectional arrows</i>	3.09	2.30	2.125	1.35	16	1.14	.26
<i>Factors</i>	7.31	1.45	6.84	2.24	31	.77	.44

The Saami participants used slightly less of both unidirectional ($M=7.26$, against $M=6.27$) and bidirectional arrows ($M=2.25$, against $M=4.50$) in the Biological Domain. The average score for use of factors was slightly higher for Saami ($M=8.47$) than for the Norwegians ($M=8.47$). However, those differences were not significant at the .05 alpha level; $t(30) = 1.38$, $p = .17$ (unidirectional arrows), $t(10) = -1.86$, $p = .09$ (bidirectional arrows), $t(30) = .57$, $p = .57$ (factors, Table 4c).

Table 4c. Number of Factors and Arrows for Biological Domain

	Norwegian		Saami		df	<i>t</i>	<i>p</i>
	M	SD	M	SD			
<i>Unidirectional arrows</i>	8.89	3.10	7.66	2.15	30	1.38	.17
<i>Bidirectional arrows</i>	4.50	3.07	2.25	1.81	10	-1.86	.09
<i>Factors</i>	8.47	1.71	8.73	1.04	30	.57	.57

For the Social-psychological domain, the Saami used slightly more unidirectional arrows ($M=8.10$, against $M=6.87$), but slightly less bidirectional arrows ($M=3.61$, against $M=5.45$) and overall factors ($M=8.57$, against $M=8.89$), than the Norwegians on average (Table 4d). Those differences were not significant at the .05 alpha level; $t(36) = .69$, $p = .20$ (unidirectional arrows), $t(15) = -.29$, $p = .49$ (bidirectional arrows), $t(35) = .57$, $p = .15$ (factors).

Table 4d. Number of Factors and Arrows for Social-psychological Domain

	Norwegian		Saami		df	<i>t</i>	<i>p</i>
	M	SD	M	SD			
<i>Unidirectional arrows</i>	6.89	2.99	8.10	2.74	36	.69	.49
<i>Bidirectional arrows</i>	5.45	3.69	3.61	1.98	15	-.29	.20
<i>Factors</i>	8.89	1.48	8.57	1.30	35	1.47	.15

The data for causal maps from the Supernatural domain show that the Saami used slightly more unidirectional arrows ($M=7.84$, against $M= 7.47$), and less bidirectional arrows ($M=2.92$, against $M= 5.36$) and overall factors ($M= 8.36$, against $M= 8.57$), than the Norwegians on average. Those differences were not significant at the .05 alpha level; $t(36) = .69$, $p = .67$ (unidirectional arrows), $t(15) = -.29$, $p = .10$ (bidirectional arrows), $t(35) = .57$, $p = .67$ (factors, Table 4e).

Table 4e. Number of Factors and Arrows for Supernatural Domain

	Norwegian		Saami		df	<i>t</i>	<i>p</i>
	M	SD	M	SD			
<i>Unidirectional arrows</i>	7.47	2.71	7.84	2.60	33	-.41	.67
<i>Bidirectional arrows</i>	5.36	4.17	2.92	2.23	14	1.74	.10
<i>Factors</i>	8.57	1.83	8.36	1.16	30	.42	.67

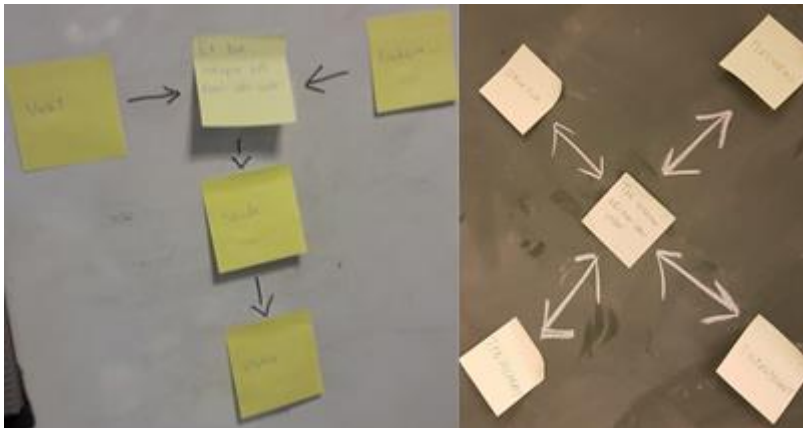
In table 4f the average scores for the Composite domain displays that the Saami used more unidirectional arrows ($M=8.31$, against $M= 7.61$), but less bidirectional arrows ($M=3.68$, against $M= 1.83$) and overall factors ($M= 8.05$, against $M= 8.31$). There was a significant difference between the groups at the .05 alpha level for the bidirectional arrows; $t(14) = 2.29$, $p < .05$. But not a significant between-groups differences for the other denominators; $t(34) = -.78$, $p = .43$ (unidirectional arrows), , $t(33) = -.61$, $p = .54$ (factors).

Table 4f. Number of Factors and Arrows for the Composite Domain

	Norwegian		Saami		df	<i>t</i>	<i>p</i>
	M	SD	M	SD			
<i>Unidirectional arrows</i>	7.61	2.35	8.31	3.07	34	-.78	.43
<i>Bidirectional arrows</i>	3.8	2.39	1.83	1.40	14	2.29*	.03*
<i>Factors</i>	8.31	2.08	8.05	1.54	33	-.61	.54

**p* < .05 (two-tailed)

The significant differences in the causal maps for the Saami and Norwegian participants mainly concerned the arrows. Shown in the picture below the actual difference in the use of unidirectional and bidirectional arrows are apparent (example 4).



Example 4. The causal maps above are presented in the following order; Saami – left, Norwegian-right. They are both causal maps from the event; *a roof collapsing while someone is sitting underneath*, which is an event part of the composite domain.

3. Key Factors in Causal Maps

In order to identify the main features of the causal maps, the participants were asked to single out the three most important factors (two-, if they only had two) in their causal map. The key factors were identified using the same cut off point as with the individual categories in table 1b, where the individual factors difference of < 6 were not included (Table 5). The reasoning behind

this was that the number of differences less than 6 were far too great to confine the factors in a table. The key factors with the greatest difference from the causal maps of the Saami were:

Sun, physical domain. Mentioned for “the seasons changing” = 11.

Faith, supernatural domain. Mentioned for “evil things happening” = 4 and, “a prayer being answered or a ritual having an effect” = 9

Construction, composite domain. Mentioned for “a roof collapsing while someone is sitting underneath” = 22.

For the Norwegians:

Structure composite domain. Mentioned for “a roof collapsing while someone is sitting underneath” = 8.

Placement composite domain. Mentioned for “a roof collapsing while someone is sitting underneath” = 2, and “the winter holding off” = 6.

Table 5. Key factors in Causal Map

Factor	<i>Norwegian</i>	<i>Saami</i>	Difference
Solen (sun)	1	10	9
Tro (faith)	2	11	9
Konstruksjon (construction)	7	15	8
Struktur (structure)	7	1	6
Plassering (placement)	7	1	6

Discussion

The aim of this thesis was to explore the cross-cultural differences and similarities for the causal models Saami and Norwegians hold for events, and what causal attributions they make when they explain why incidents occur. In step 1, the participant groups differed in terms of the words used to explain the events. *Sun, cycle, construction, confidence, weight* and *medicine*, were mentioned a minimum of 6 or more times more for the Saami than the Norwegians, and the factors; *evolution, knowledge, lack of recourses, patience, training* and *illusion*, were mentioned 6 times more for the Norwegians. When placing the factors in relevant, no significant difference was found between the categories for the two participant group. For step 2, the causal maps of the Norwegians and Saami were quite similar in number of factors; however, there was a difference in the amount and types of arrows used for the composite domain, and for the overall maps. Bidirectional arrows were used more by the Norwegians in the Composite domain, and unidirectional arrows were used more by the Saami overall. For step 3, the greatest between-group difference in the identified keywords were; *sun, faith*, and *construction*, mentioned more by the Saami, *structure* and *placement* – mentioned more by the Norwegians.

First, it was predicted that there would be a difference in the distribution of factors between groups across the domains. Even though the Saami consequently mentioned slightly more factors across domains, the null hypothesis for H1 was accepted, since there was no significant between-group difference in the frequency of responses. There was also no significant difference between the causal factors used, when the words were categorized in associated causal categories. Given that the categorization was done in an appropriate way, these results indicate that Saami and Norwegians can be expected to make causal attributions thinking about related causes (in the same category), and reason in the same categories of factor, even when confronted with a variety of domain-specific situations.

The purpose of creating causal maps was to look at the complexities and structure of the thought processes exhibited by the different groups. When the causal maps were created, they were evaluated according to types of arrows used (bidirectional or unidirectional), and number of factors. The second prediction made in this thesis was that there would be a difference in the causal maps between groups. Within each domain, there was no significant difference in number of factors or unidirectional arrows used for the causal maps. There was, however, a significant difference of bidirectional arrows in the composite domain, where Norwegians on average used more bidirectional arrows to draw causal links. Overall, there

was a significant difference in the use of unidirectional arrows between the groups, where the Saami used more unidirectional arrows to indicate causal relations, across all domains in total. Based on the findings in this study, the null hypothesis can be rejected for H2, as there was indeed a difference between the causal maps held by the Saami and Norwegian participants.

Interpretation of results

Through traditional practices and learning in society, values can be formed and affect our style of reasoning. Studies examining cultural attribution differences have a tendency to view their findings against individualistic versus collectivistic value dimensions, highlighting the components facilitating a different cultural perspective. If the culture one resides in only has a few variations to the cultural background a person has, the critical question when investigating cross-cultural causality entails how much of an impact culture, and especially value dimensions, have on the domain knowledge and mechanisms of causal reasoning.

The “collectivist-type” societal structures previously dominating the traditional Saami societies have slowly been replaced, as many now live in the cities where independent and individualistic value dimensions are common (Hofstede & Hofstede, 2001). Even though many Saami today, are families that have migrated from their traditional environments, they might experience a pull towards a cultural foundation similar to those represented in the close-knit structure of collectivistic societies (Berry et al., 2011). Although, one could argue that the pull and primary need for belonging to a group is a drive intrinsic in all humans. In many ways, culture and the use of a common language is based around this interdependent structure, and prompts individuals to conform to the society. Roughly translating this notion for the findings in this study, the similarities in the factor frequencies and the causal categories suggests that the Norwegian culture and the modern Saami culture are largely interconnected despite having independent culture tradition. Oyserman et al. 2002 found evidence suggesting that differences in value dimensions can occur amongst people living in the same country depending on their cultural background. Thus, the Saami and Norwegians might not share the same value dimensions even if they live closely together, and reason through a similar processes. It could very well be that the cultures have conformed to one another.

The theory of *identity negotiation* (Ting-Tomney, 1993) involves ethnic identity as a multidimensional construction of aspects like connection to group members, shared attitude, individualistic and collectivistic self-perception. It is possible that group members who experience that their identity is somewhat divided, feel as they should negotiate certain ways

of reasoning, sharing it with people who live within in their cultural context (Owe et al., 2013). Since the factors from the causal categories used by both the Saami and Norwegian were quite similar, their connection to each other as cultural groups is quite apparent. They are not segregated by geographical distance, and they make up the same society. This is something they have done, long before the influx of eastern cultural identities, and immigration started. That there would be any clear and noticeable difference between the two cultures in terms of causal attribution would therefore be quite surprising, as they have access to the same sources of knowledge, and since much of their similarities can be explained through their cultural proximity. The causal categories created in this study were also quite general, which means that a possible difference between the groups might lie in their factor content and causal reasoning process, rather than in overarching categories of causal factors and their domain knowledge.

The results from this study are somewhat vague in the sense that they describe many important aspects of causal attribution. For instance, similarities in the number of factors mentioned could indicate similarities in the depth of the causal attributions both groups make. However, this also has to be dependent on the actual information and meaning provided by the factors. When the Saami participants propose that the *sun* is important factor for the seasons changing (which is true), and the Norwegian propose that this is more dependent on the *placement* (related to the agent, which is also true), their reasoning might lead them to highlight different factors even though their core knowledge is the same. Both group will most likely know about the importance of the other groups chosen factors, but differ in whether they highlight decontextualized or situation-specific characteristics. The Norwegians view the event in terms of where the components are in relation/*placement* to each other (seasons changing), whilst the Saami view the external *sun* as an important influence. Most of the between group differences in the causal factors were factors from the composite- and physical domain. Since the findings suggest that Saami approach composite event and events that require physical domain knowledge in a different way, the reasoning behind this difference is something that needs to be investigated further.

When interpreting the causal maps, the distinction between unidirectional arrows and bidirectional arrows is simply the use of one arrow head versus two. It is surprising then, that there would be a significant difference in the use of such arrows when explaining the exact same events. There are many ways to interpret these findings, though the most logical way of thinking about double headed versus single headed arrows, is to consider that one is more straightforward than two (Eden et al., 1992). Bidirectional arrows are more complex, and

indicate a more intricate understanding of the events presented. Unidirectional arrows offers an efficient and also direct understanding of the event, and even though it might not represent the complex thought process of the individual, it could still symbolize direct maps, in front of what could have been a complex narrative. The overall use of factors in the causal maps were not significantly different, and given that the participants in one group used more specific types of arrows for the same amount of factors, this indicates that a significant preference for one arrow type versus the use of two might not be random.

For the final task, there was a six-or more response differences in the key factors mentioned by the participants in their causal map. For the Saami: *the sun, construction* and *faith*, were such factors. For the Norwegian participants, those factors were: *structure* and *placement*. *Construction* and *structure* are quite synonyms in the sense that they describe the general form of the agent, and are quite contextual (Nisbett et al., 2001). Additionally *placement* is a more holistic factor that can describes the orientation of something, and is therefore related to the context. Since the factors *sun* and *faith* are more related to symbolic representation and features of the actual event, these findings suggest that there is a distinction between two groups. It has to be noted that it is common to use an analytic approach when faced with unfamiliar scenarios. The difference it seems, is that the Saami participants are more analytical and the Norwegian participants are more holistic in their way of thinking, (Heider, 1958). The findings correspond with the notion of naïve psychology, and with the findings in the first task. The Norwegian participants typically identified internal causes and controlled mechanisms such as *confidence, evolution, and structure* as the casual factor, and the Saami identified that the event were externally influenced and out of the individual's control, among factors such as: *sun, cycle* and *medicine*.

In the same way studies on causal attribution showed that Hindus were more inclined to make broad inferences when explaining events, the Saami can be said to do this as well, even though this was not the case for events related to the above example of *seasons changing*. In terms of explaining *the moon waning* as an *illusion* (which was done by the Norwegian participants, and is true to a certain extent), the understanding that the *moon decreases in size (waning)* being due to its *cycle* and the *sun* (which is indeed true) was something that many of the Saami participant seemed to contemplate on, but most eventually suggested this either way. This is an interesting finding, as it suggests that they possessed an intuitive understanding of this physical event, despite many noting that they did not grasp why the moon should be decreasing in size in the first place. Making broad inferences towards the situational processes relates to a holistic attribution style, and can therefore indicate that the

Saami share this tendency of causal attribution with other collectivistic cultures, like the Chinese and South American (Hofstede & Hofstede., 2001). The difference between evaluating that the moon is decreasing in size due to an *illusion*, as opposed to understanding that it is part of the lunar phase process involving the *sun* and the *cycle*, suggests that certain aspects of the physical domain knowledge that are inherit to the Saami participants, and not something that necessarily universal.

As Peng & Knowles (2003) rightfully point out, there are possibilities of a universal framework of knowledge. Despite evidence suggesting a cultural difference in the physical domain knowledge of adults, studies have found that the cultural influence on cognition is something that can develop over time, and can therefore might be universal for infants (Miller, 1984). Over time, the culture one inhabits can shape the framework of this core knowledge. Since the findings in this study involve both differences and similarities in causal attribution, this study recognizes that there are two ways of interpreting the result difference: either in the way that the internal structure of the groups indicates individual and circumstantial differences, or that there is indeed a difference between the groups related to culture. For the similarities found in this study, the Saami might exhibit a tendency to adapt to Norwegian culture and vice versa, or the cultures could have been similar to one another to begin with. In any case I propose the following two perspectives on the similarities in this study:

1) This first perspective involves the development of causal reasoning. The modern day cultural practices are somewhat similar for the Norwegians and the Saami. Most use Norwegian language, have the same occupational background, and are exposed to similar media and culture. Easy access to knowledge and input from a variety of global sources can therefore influence the causal attribution that the participants make. For studies on countries which have previously been isolated, or that have practiced strict cultural and traditional maintenance (China is an example of this, Oyserman et al, 2002), the gap between their own knowledge tradition and the universal knowledge could now be overlapping. This should also be applicable when investigating modern Saami and Norwegian cultures, and particularly the scope in which they make causal attribution. Through older generations of Saami being exposed to assimilation strategies, their distinct culturally influenced conceptualization mechanisms can now be viewed as faded versions of their former cultural perspectives.

Carey (2009) proposed a method of understanding this change and establishment of concepts and their content through *Quinian Bootstrapping*. Throughout the child's

development, this would entail that the mental representation of something they encounter, like a word or the concept of *seasons changing*, would be related to the information they know and learn along the way. The *Bootstrapping* mechanism can explain how Norwegian culture can be a prominent influence on the causal explanation the Saami hold for events. Despite Saami knowledge tradition being thousands of centuries old, Saami children who have been deprived of their cultural traditions could lose the cultural perspective, which ultimately could have been identified as their groups distinct causal mechanism. For Saami individuals living in the main Norwegian cities, the need to maintain their Saami culture might not be as crucial either way, depending on how often and well their traditional context and knowledge is facilitated (other than for specific national holidays). In combination with the assimilation policies, geographical location and access to others with a Saami heritage, it would be reasonable to expect findings that would indicate that the Saami use similar factor frequency and similar causal categories to the Norwegians when making causal attribution

2) This second perspective involves similarities through common causal frames. Similarities in factor distribution and listing across categories and domains, might be due to the Saami participants being able to make use of both Saami to a Norwegian causal frames. These “frames” (different from spectacles on the eye) determines what kind of causal reasoning is elicited, and would be available for the Saami due to their bicultural background. *“Bicultural individuals are typically described as people who have internalized two cultures to the extent that both cultures are alive inside of them. Many bicultural individuals report that the two internalized cultures take turns in guiding their thoughts and feelings”* (Hong et al., 2000, p.710). The bicultural causal frame can also explain the differences in arrows, despite similarities in number of factors.

Supporting this notion, literature on causality proposes that the mechanisms of reasoning are dependent upon the constant regulation of one’s belief (Xu, 2011). As in the study with the Chinese-Americans (Benet-Martínez et al, 2002), multicultural participants who believe that their cultures are quite similar, can have several causal frames disposable. Since the shame and stigma, surrounding having a Saami culture has decreased, a pride in the bicultural background could reinforce possible causal frames inherently available for the Saami. This could explain why the factor frequency and categories were similar, but the reasoning might be different in terms of arrow and individual causal factor difference.

When knowledge processing meets cultural tradition, previous research on Saami participants has shown that some tend to view biological (illness) and physical (physically induced accidents) events in light of supernatural components when they make causal attribution (Nergård, 2006). If the Saami make causal attributions using supernatural reference points in a different way than the Norwegians, the core principles of this domain should be identifiable as a prominent causal category when mapping the individual's way of thinking. As none of the results in this study showed significant differences in factor distribution across domains, the data from the supernatural domain and the supernatural forces category do not support a supernatural reference point amongst the participants. There was, however, a slight difference (non-significant) in both the supernatural domain and the category in general, as the results showed that the Saami used more factors and words with a supernatural reference point than the Norwegians, creating the greatest factor distinction between the groups for that domain. Since between group difference was not significant for the domains and categories, and the supernatural category contained fewer factors in total compared to most of the other categories, the significance of supernatural events in Saami discourse and causal attribution, is something that needs to be investigated further.

In this study, two very different streams of findings were obtained. First, the Saami and Norwegian did not vary significantly in factor frequency for the factors they mentioned, and this was the case irrespective of domain, causal maps or causal categories. This indicates that the two groups are quite similar in the scope in which they make causal attribution. However, there were differences in the content for the individual- and key factors across domains, and the unidirectional arrows overall as well as the bidirectional arrow in the composite domain map. These findings support the assumption that there is a difference between the groups, as well as recognizing that they are similar in many regards. So far, the similarities and differences have been discussed in a general form, primarily through value dimensions, causal frames and *Quanian bootstrapping*. Since they relate to different components of causal reasoning however, the following summation of the components discussed throughout this section, will attempt to elaborate and interpret these finding:

- Holistic versus analytic perspectives (Nisbett et al., 2001): the perspectives can be implemented when noting that Saami used more analytic strategies when making causal attributions to the familiar event of *the seasons changing*, but a more holistic approach to the slightly more unfamiliar event of *the moon waning*. The Norwegian participants were largely analytical in their way of thinking about these event, making

mostly contextual inferences in regards to the most important causal factors. However, these findings were based on the context of the events, and can therefore be evaluated as being dependent on other variables such as the familiarity and relatedness of context. These findings contradict the notion that people are culturally primed to make dispositional or situational attributions (Lee et al., 1996), as it seems to vary based on the nature of the event.

- Dual perspectives of attribution theory (Heider, 1958): as an extension of the holistic and analytic perspectives mentioned above. The attribution theory is mostly related to the interpretation of behavior, but can be implemented when analyzing the causal attribution of events. It involves the combination of the emphasis on internal and external causes. The attribution of internal causes involves viewing the agent as being intentional and in control, while external causes are more dependent on the situation itself. The differences and similarities between the Saami and the Norwegian were characterized in terms of the emphasis put in internal characteristic of the agent (medicine, weight, confidence, construction – Saami, lack of recourses, knowledge, patience, training – Norwegian), rather than to outside forces (illusion - Norwegian, cycle and sun - Saami). The findings show that the participants are approximately proportionate in that they weigh internal characteristics for biological and social-psychological events, and use an external attribution style for physical and composite events.

- *Quinian Bootstrapping* (Carey, 2009): as mentioned in the above section, this mechanism is involved with the learning of concepts. *Quinian Bootstrapping* makes an argument for the differences and similarities in all individuals, not just Saami and Norwegians. Based on the research of developmental and evolutionary psychologists, indicating that babies and infants possess a core understanding of concepts, having a Norwegian upbringing would explain similarities in concepts and causal categories for this study. Through trial and error, exposure, association, classical conditioning and other types of learning, the brain builds on the information that is perceived. Even though people might be born with certain domain knowledge, that knowledge expands and is elaborated through interactions with the culture and ones surroundings. Causal maps can therefore highlight certain aspects of this expansions process. The differences in the causal maps of the Saami and Norwegian can for instance be viewed

as an illustration of the groups causal reasoning process. The findings can indicate that Norwegians construct concepts through interconnected factors when the concept is complex (composite domain – bidirectional arrows). Whilst the Saami generally form concepts based on straightforward cues (unidirectional arrows). It has been argued that culture functions as the scaffolding for conceptualization (Overmann, Wynn & Coolidge, 2011), which aligns with the findings from the causal maps in terms of the arrows, and the assumed difference between the groups.

- Identity negotiation (Ting-Toomey, 1993) and conformity (Bond & Smith, 1996): The idea behind negotiating ones identity and conforming to the society, is related to group inclusion and a need to create an identity in cohesion with the group. For the Norwegian and Saami, their similarities can then be explained through the assimilation policies, as suppression of a social group is a structured phenomenon that reduces the groups position, and ability to maintain their individual and cultural variations (Chang, Mak, Li, Wu, Chen & Lu, 2011). If a person experiences that they have values, personalities, and frame of thoughts that are inconsistent with the surrounding society regardless of any acculturation strategy implemented, and that person has a collectivistic heritage (as the Saami most likely do, Nergård, 2006), it is likely that they will feel the need to conform to this society (Bond & Smith, 1996). It is then reasonable to assume that the acculturation strategy has provoked the identity negotiation and conformity amongst some of the Saami. However, this process is not necessarily something that occurs through surrounding pressures, but can be related to a desire to integrate (Berry, 2011) and belong with the group in general.
- Individualistic and collectivistic value dimensions (Hofstede 2001, Berry, 2011): It is imperative that the value dimensions (Hofstede & Hofstede, 2001) are viewed as potential precursors for causal attribution. Whether bicultural causal frames are relevant or not in the place of these findings (Hong et al. 2000), there is certainly no denying that different value dimensions can be different depending on cultures (Berry, 2011). Even though Carpenter (2000) found that independent self-concepts occurred more frequently in individualistic cultures as opposed to interdependent for collectivistic cultures, the events in this study investigated attribution in terms of domain knowledge. The events might not be appropriate for the elicitation of a variety of value dimensions, even though the physical events such as *tree floating* used in

previous studies on causal attribution (Bender & Beller, 2011). Since the Saami population are integrated, and not isolated like the Tongans or as culturally distant as the Chinese, their conceptualization and causal reasoning motivated by values cannot be expected to occur in the same way. It is more likely that variations in the responses would be due to a complex array of value dimensions, as for instance Power Distance (hierarchical differences within the culture) or Masculinity and Femininity (focus on interpersonal goals and ambition versus caring and compassion), than just individualism and collectivism. Future studies should aim to investigate this further.

Research Limitations

When conceptualizing causal attribution, the content within the concepts have to be examined to the extent that researchers can make inferences about their meaning (Carey, 2009).

However, this process leaves room for biases and FAE when narrowing down and categorizing the data. Even though this was done in cohesion with my supervisor for a second perspective in this study, there are limitations when identifying the meaning and purpose of concepts within one's own classification systems. In some cases throughout this study, factors used to describe the events were based on similarities between the factors and the actual event. Such as *seasons* being listed as a factor for *season changing*. Analyzing whether the participant uses similarity, rather than inductive physical domain knowledge to explain the event, is something the cognitive mapping technique does not investigate, and it is ultimately a research limitation because it is dependent on the researchers skill of identifying these differences. Researchers using the cognitive mapping technique, should ideally be separated by the same individual variables used to identify differences in causal reasoning (age, education, culture, Carey & Spelke, 1994).

In regards to responses and factors provided, one limitation with this study is that the questions and events presented to the participants were in Norwegian. The Saami language might have elicited different responses and frames of causal reasoning, but was not implemented in this study since many of the Saami participants did not speak it. Furthermore, many modern Saami are unfamiliar with the entirety and use of the language. Overall, it is difficult to provide an established opinion on what extent the languages we speak influences causal reasoning, as opposed to the overall culture in general. Language is said to be a prominent component in the causal reasoning process related to culture (Bender et al., in press), but not solitary in its influence and perhaps more related to how wording of events primes factors. One of the Saami participants in this study did mention that the Saami have a

specific word for “big herd” (*gèllo*). This word would have been chosen as an appropriate factor for the event “a lightning bolt striking, killing a number of reindeer”, though this participant had to go with the two factors “group” and “size” instead. However, Norenzayan & Nisbett (2000) did find evidence for cultural differences in causal reasoning occurred despite of language being second or first to the participants. Whether or not language would be crucial in the causal attribution made for these cases, is something future research has to investigate further.

This study uses a combination of quantitative and qualitative methods, and there are some limitations on statistical inferences and broader generalizations that can be made using this technique. However, this study recognizes that overall generalization of causal maps based on groups are close to impossible, as no two groups will be entirely homogenous. The interesting aspects of the maps are the trends of causal frames that they indicate are present for each participant group. Due to the limited number of participants in this study, future studies should investigate the notion of causal frames further.

For the purposes of making this study as efficient as possible, the set restriction on 2-5 factors per event might have limited the scope of construct for the participants. Most of the participants tended to choose between 2-4 factors for each event. Even though a requirement of 10 examples could have been more straining for the participant, it might also have tapped further into the inductive mechanisms of their causal reasoning process. Future studies on causal mapping should compare these restrictions, and evaluate the results they produce.

Future studies should also concern itself with the development of strategies, better suited to identify similarities or differences in specific cognitive structures. This may also provide a more accurate representation of the causal reasoning process as a whole. In regards to any generalization and overestimation of the cognitive structures that might occur in the interpretation of the data.

Implication and conclusion

The rationale behind assimilation is to remove potential cultural variables. The findings in this study challenges this strategy, by supporting the notion of cultural influence on causal attribution. The possibilities that open up when different cultures can reason around their “universal” knowledge, allows for the formation of unique and constructive perspectives. Politicians should therefore be careful when implementing strategies designed to promote conformity, as causal attribution is likely to be influenced by this. The way people reason and make attributions is ultimately a resource that can further build on our empirical repertoire, as it provides insight and promotes understanding and reflection through other perspectives. This study challenges the notion that a diverse society is a source of concern, rather than a possibility for valuable frames of thoughts and conceptual perspectives.

Hopefully this study provides more insight in the understanding of differences in human mechanisms of reasoning, by investigating the causal mechanisms in light of other components than value dimensions. Future research on causal attribution can contribute to the understanding of different cultural perspectives, and to what extent culture shapes our cognition. Due to globalization, increasingly more people are becoming bicultural, potentially adding new perspectives and discourse to our formal understanding and core knowledge. The variations that expand our conceptual development can lead to major advancements in vast fields (biological, physical, social and psychological) of science. There are some indications of difference in casual reasoning, but this is ultimately related to the process of causal attribution, which cognitive mapping does not investigate in its full extent. Future research should attempt to improve this technique, so inferences can be made with greater empirical security.

This study set out to investigate the cross-cultural differences and similarities in causal attribution for Saami and Norwegian participants. The findings indicate that causal attribution is related to culture when examining causal content and reasoning process. This is based on the unique features of the groups causal models, such as individual- and key factor difference and more elaborate use of unidirectional arrows for the Saami and bidirectional arrows for the Norwegians. The reason for this difference can be viewed in the light of value dimensions, *Quanian bootstrapping*, identity negotiation and attribution theory. However, the explanations provided are not sufficient in explaining why the differences occurred where they did, as there has been limited research on indigenous cultures similar to the Saami, and the purpose of factor- and arrow difference in causal models. Additionally, the groups were similar in regards to the scope, domain and causal categories used for the explanation of event.

The results have been explained in terms of the relationship between the groups and the individual position within that group, as well as mechanisms of thinking and reasoning. However, questions surrounding why the content might differ is merely speculative, and needs to be investigated further. I do not believe the findings in this study unilaterally create the foundation for Saami causal reasoning, but rather that they provide an interesting framework for future research on the field of causal attribution.

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Appendix

A

Bakgrunnsinformasjon

Masteroppgave - Maha Kamran
Kryss kulturelle modeller for å forklare hendelser

1. Er du mann eller kvinne

Mann Kvinne

2. Hva er din alder?

3. Hvilket yrke har du/hva studerer du? _____

4. Du identifiserer deg mest som ...

Norsk Samisk

5. Ditt hoved-morsmål er ...

Norsk Samisk

Oppgave 1. - Fri Assosiasjon

Spørsmål

Respons

1					
2					
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20					

Oppgave 3. - Identifisere viktigste faktorer i kausalt kart

Spørsmål

Viktigste faktorer

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10			

B

Forespørsel om deltakelse i forskningsprosjektet

Tverrkulturelle modeller for forklaring av hendelser

Bakgrunn og formål

Formålet med studien er å undersøke hvordan du forklarer hendelser igjennom en kartlegging av hvordan du trekker årsakssammenhenger av ulike situasjoner. Dette er en del av min mastergrad på det Psykologiske Fakultetet ved Universitetet i Bergen.

Hva innebærer deltakelse i studien?

Studiet er et eksperiment der du får beskjed om å gjennomføre noen oppgaver basert på egen refleksjon, og i tillegg få i oppgave å arrangere forskjellige kort. Innsamling av opplysninger vil bli gjort gjennom notater og bilde.

Det vil ta rundt 40/50 min å gjennomføre eksperimentet. Som godtgjørelse for deltakelse vil du motta et gavekort på Godt Brød til 65 kr.

Hva skjer med informasjonen om deg?

Alle personopplysninger vil bli behandlet konfidensielt. Student og veileder vil være de eneste som har tilgang til personopplysninger. Datasettet som samles inn vil lagres konfidensielt frem til masteroppgaven er ferdig evaluert for hver deltaker. Deltakerne vil ikke kunne gjenkjennes i en publikasjon

Frivillig deltakelse

Det er frivillig å delta i studien, og du kan når som helst trekke ditt samtykke uten å oppgi noen grunn. Dersom du trekker deg, vil alle opplysninger om deg bli slettet. Dersom du ønsker å delta eller har spørsmål til studien, ta kontakt med masterstudent Maha Kamran på telefonnummer 92089440, eller prosjektleder via epost Andrea.Bender@uib.no.

Du må være 18 år eller eldre for å delta i denne studien.

Samtykke til deltakelse i studiet

Jeg har mottatt informasjon om studien, og er villig til å delta

(Signert av prosjektdeltaker, dato)