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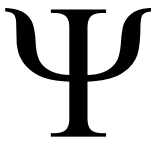

Can the Covid-19 Pandemic Function as a "Moment of Change" for Vacation Air-Travel? – The Influence of Past Behaviour, Social Norms, and Efficacy Beliefs

HOVEDOPPGAVE

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Forord

Verden står overfor komplekse utfordringer knyttet til klimakrisen og det neste tiåret er kritisk for fremtiden til menneskeheten. Denne oppgaven bidrar til å belyse hvor vidt reiserestriksjoner under pandemien kan påvirke villigheten til å redusere flyreiser når restriksjonene opphører. Den individuelles innsats for å redusere klimaendringene kan anses som begrenset, men i samspill med sosial påvirkning, normer, mestringstro og systemiske faktorer kan det være et potensiale.

Målingene som er brukt i studien er en del av spørreundersøkelsen Norsk Medborgerpanel (Runde 21), som driftes av Kjernefasilitet for digital samfunnsvitenskap (DIGSSCORE). Ideas2Evidence står for den praktiske innsamlingen av data. Målingene er utformet av meg i samarbeid med veiledere og godkjent av vitenskapelig komité ved DIGSSCORE. Jeg har utført dataanalysene og skrevet manuskriptet.

Jeg vil takke DIGSSCORE for anledningen til å bruke Norsk Medborgerpanel til datainnsamlingen, for nyttige innspill og for at jeg fikk tildelt medborgerstipendet. Det har vært inspirerende å få jobbe med et tverrfaglig forskningsnettverk som bidrar til å belyse viktige samfunnstema. Og en takk til alle deltakerne som har svart på spørreundersøkelsen.

Jeg er svært takknemlig for de dyktige og engasjerende veiledere jeg har hatt, Thea Gregersen og Gisela Böhm. Tusen takk for all veiledning og hjelp.

Merknad: Oppgaven er inkludert innholdsfortegnelse som avviker fra APA 7-standard.

Abstract

Reductions in individual air-travel have the potential to help limit climate change, and air-travel has been heavily restricted during the Covid-19 pandemic. The habit-discontinuity hypothesis states that if habitual behaviours are disrupted by a context change, they are more likely to be reconsidered. The present study aims to investigate whether the Covid-19 pandemic function as a "moment of change" that could lead to a reduction of vacation air-travel. Previous research has found that past behaviour, social norms, and efficacy beliefs are associated with pro-environmental behaviour. The goal of this study (N = 2057) is to investigate whether Norwegians intend to change their number of vacation flights after the Covid-19 pandemic, and the relative importance of past behaviour, social norms, and efficacy beliefs in predicting their intention to change behaviour. A national survey was conducted for data collection and a linear multiple regression analysis was performed. The results show that 66% of the respondents do not intend to change their vacation air-travel frequency, while 26% intend to reduce vacation air-travel after the pandemic. Flying behaviour pre-pandemic, perceived social norm about flight reduction, and efficacy beliefs were all related to estimated future flying frequency. Overall, the paper conclude that the Covid-19 pandemic is not likely to function as a moment of change for vacation behaviour. Especially those with a high past flying frequency, low efficacy beliefs, and who do not perceive flight reduction as a norm do not intend to reduce their vacation air-travel after the pandemic. The paper discusses possible explanations as to why the pandemic might not be a moment of change and suggests topics for future research.

Keywords: Covid-19, air-travel, climate change, norms, efficacy, habits

Sammendrag

Reduksjon av flyreiser har høy innvirkning på den individuelles bidrag til å begrense klimaforandringene, og under Covid-19-pandemien var det restriksjoner på flyreiser. «The habit-discontinuity hypothesis» foreslår at når vaner blir forstyrret av forandringer i konteksten, er det større sannsynlighet for at vanene blir revurdert og endret. Kan Covid-19-pandemien fungere som en forandring i konteksten som kan føre til en reduksjon i flyreiser i forbindelse med ferier? Tidligere forskning har funnet at tidligere atferd, sosiale normer og mestringstro er assosiert med sannsynligheten for atferdsendringer. Forskningsmålet for denne studien (N = 2057) er å undersøke om deltakere har intensjoner om å endre antall flyreiser i forbindelse med ferier, og den relative påvirkningen av tidligere atferd, sosiale normer og mestringstro. Data ble samlet inn gjennom en nasjonal spørreundersøkelse og en lineær multippel regresjonsanalyse ble gjennomført. Funnene viser at 66.4% skal fly på ferie som tidligere, og 25.7% har tenkt å redusere ferie-flyreiser. I tillegg er det en signifikant effekt av tidligere fly-atferd, sosiale normer og mestringstro på «fremtidig flyreise-hyppighet». Samlet sett konkluderer oppgaven med at Covid-19-pandemien antakelig ikke fungerer som en kontekstforandring som fører til reduksjon i ferie-flyreiser og at dette er påvirket av tidligere hyppig fly-atferd, lav mestringstro og å tenke at å redusere flyreiser ikke er en norm. Videre diskuteres mulige forklaringer for hvorfor pandemien ser ut til å ikke føre til varige bærekraftige forandringer og forslag til videre studier.

Nøkkelord: Covid-19, flyreiser, klimaendringer, normer, mestringstro, vaner

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Human influence on climate change is unprecedented and unequivocal according to the 6th assessment report from the Intergovernmental Panel on Clime Change (IPCC, 2021). Psychological research could contribute to facilitate a change in human behaviour to limit climate change (Nielsen, Clayton, et al., 2021; Swim et al., 2009). One example is psychological research focusing on how changes in context can make it easier to change habitual behaviour that are contributing to climate change. A hypothesis is that if habits are disrupted by a life-change, behaviour is more likely to be influenced by environmental values and new habits can be established (Verplanken et al., 2008). The Covid-19 pandemic has led to substantial changes in context due to restrictions put on certain behaviours and could potentially lead to behavioural change (Verplanken & Whitmarsh, 2021).

One of the behaviours that were restricted because of the Covid-19 pandemic was personal air-travel, which is one of the individual-level behaviours with the largest impact on climate change (Ivanova et al., 2020; Wynes & Nicholas, 2017). The current paper focuses on Norway, where travelling abroad has been substantially more difficult than before the pandemic. In July-September 2020, the number of vacations spent abroad decreased by 88%, while 95% of all vacations in that period were located in Norway (Oyier, 2020; Statistisk Sentralbyrå, 2021). This raises the question of whether the experiences during the pandemic can change vacation behaviour beyond the pandemic. In other words, can the pandemic function as a "moment of change" for air-travel behaviour? The current paper studies whether people think they will change their air-travel frequency after the pandemic, as well as factors that might function as barriers to change.

Air-travel

The field of environmental psychology has called for research with an increased focus on behaviours that have a high impact on climate change, which is why the current paper focuses on air-travel (Nielsen, Clayton, et al., 2021; Nielsen, Cologna, et al., 2021; Whitmarsh, Poortinga, et al., 2021). Air-travel accounts for 3.5% of the total global warming effect caused by human behaviour (Lee et al., 2021, as cited in Andreassen, 2020). Out of all household behaviours that contribute to climate change, air-travel is one of the behaviours with the highest individual mitigation potential; one flight less could already decrease the individual "carbon budget" substantially (Ivanova et al., 2020; Wynes & Nicholas, 2017). High-income households fly more frequently, and the global top 10% of income earners (more than 38000 USD yearly) are contributing 48% of the total global emissions (Capstick et al., 2020). In other words, the global warming effect from air-travel is caused by a small, wealthy, proportion of the global population (Ivanova & Wood, 2020).

Nearly all (93%) Norwegians travelled on vacation in 2018, which is more than in every other European country (Eurostat, 2020). In 2017 and 2018, around 50% of the Norwegian population went on vacation to European countries outside of Scandinavia (Aasen et al., 2019). In 2019, Norwegians went on 18.5 million vacations in total, 7.4 million vacations were abroad, and 9.8 million vacations included air-travel to the destination (Henriksen, 2020).

A report by CICERO in 2019 found that travelling by aeroplane was the carbon-emitting behaviour that Norwegians were least willing to reduce due to climate change, as compared to reducing food waste, meals with red meat and driving by car (Aasen et al., 2019). Overall, 29% people reported being willing to reduce air-travel and this willingness was strongest for people who fly rarely (Aasen et al., 2019).

The present paper focuses on the behaviour of using air-travel for vacations because the behaviour has a high mitigation potential for Norwegians. This excludes air-travel that has different intentions, such as job-related air-travel, because flying on vacations is a deliberate and voluntary individual behaviour, that is less influenced by external obligations. The paper argues that this behaviour can be considered a habit, because the general population in Norway (92.6%) go on vacation each year, and it is an integrated part of their lifestyles. In sum, reducing air-travel has a high mitigation potential, but change might be difficult because it has become an integrated and essential part of Norwegian's lifestyle.

Past behaviour and "Moment of Change"

Past behaviour can guide future behaviour in several ways. For instance, past behaviour can influence intentions that can be used for future decision making (Ouellette & Wood, 1998). Decision making can be influenced by heuristics, which are so-called "shortcuts" in decision making, which are quick, frugal and/or accurate information processing methods that can lead to systemic biases (Gigerenzer & Gaissmaier, 2011). When people decide vacation destination and travel mode, the amount of information to evaluate is endless, and heuristic processing can ease the decision making. People are more likely to choose what they have chosen before, especially if it is more available, desirable, familiar, and normal (Park, 2021). Therefore, past flying behaviour could influence future flying behaviour through intention and heuristic processing in decision making.

Additionally, past behaviour can develop from conscious deliberation processes into habits that are frequently performed in stable contexts (Lally et al., 2010). Habit strength, which is determined by the frequency of the behaviour, is a central aspect of habits (Ouellette & Wood, 1998). Norwegian's frequency of travelling on vacation by aeroplane, can be an indication of the relative habit strength and could influence the likelihood of change in future

flying frequency. Seto et al. (2016) suggest that habits become behavioural “lock-ins”, and they are unlikely to be spontaneously reconsidered or changed by “good intentions”, such as environmental concern (Verplanken et al., 2008). It is possible to resist habits, but this could be mentally exhausting (Verplanken & Whitmarsh, 2021). Because habits are initiated by stable contexts, they are more open to change when the contexts change. This is the assumption behind the habit discontinuity hypothesis, which suggest that habits can change when events such as life-course or structural changes disrupt the habits (Verplanken et al., 2008). Even though not all vacation air-travel can be considered habitual, the current paper argues that the theoretical framework of the habit discontinuity hypothesis is a relevant lens for looking at changes in air-travel after the pandemic.

Context change can increase the likelihood that important values and intention are considered and influence decision making (Verplanken et al., 2008). This is a prediction based on a combination of the habit-discontinuity hypothesis and self-activation hypothesis (Thomas et al., 2016; Verplanken et al., 2008). The self-activation hypothesis suggests that when values are a part of the self-concept and are cognitively activated, they are more likely to guide behaviour (Utz, 2004). This prediction was supported by Thomas et al. (2016), who additionally found that the influence of habit disruption diminished over time. The participants were more likely to reduce car use the first months after relocating, and the likelihood decreased after 24 months (Thomas et al., 2016).

The habit discontinuity hypothesis has been tested empirically and research has shown that the timing of the intervention is important for achieving behaviour change (Ralph & Brown, 2019; Schäfer et al., 2012; Thomas et al., 2016; Thøgersen, 2012; Verplanken & Roy, 2016; Verplanken et al., 2008). Giving people free public transportation for one month only changed the car-use behaviour of the people who had recently moved to a new place (Thøgersen, 2012). Similarly, people who had recently moved changed their mobility

behaviour after an informational program, but the non-movers did not (Ralph & Brown, 2019). Schäfer et al. (2012) found that people experiencing recent childbirth or relocating exhibit more sustainable mobility patterns than people that had a stable living situation. Additionally, they found that people reported a higher willingness for change prior to childbirth and for a short period afterwards (Schäfer et al., 2012). Verplanken and Roy (2016) found a change in sustainable behaviours after an intervention for the people who had recently relocated. Additionally, they found that the change was not only because of the disruption of habits but in combination with the intervention. In summary, the empirical findings suggest that shifts in life course disrupt habits and can initiate change in the initial period, and the change is more likely if they are exposed to an intervention.

Experimental studies have found a moment of change when people experience voluntary life changes such as relocation, but does this apply to structural and societal changes such as the Covid-19 pandemic? The literature suggests that after major disasters, such as natural disasters or extreme weather, a window of opportunity exists for changing behaviour (Birkmann et al., 2010; Brundiers & Eakin, 2018; Mochizuki & Chang, 2017). Interventions given in these windows of opportunity can be more successful than in stable contexts. Birkmann et al. (2010) examined the 2004 Indian Ocean Tsunami in Indonesia and Sri Lanka and found that change occurred in multiple domains such as social, economic, environmental, and legal systems and that these changes all interacted. Change occurs in both planned and deliberate ways or unplanned automatic modes. Additionally, they differentiate between formal and informal responses that lead to change. Formal responses are offered by governments, legal interventions or organisational structures, and informal responses occur in social groups, households and on local levels. The Covid-19 pandemic has similarly led to deliberate and unplanned changes on formal and informal levels.

In summary, events that change the context in which people live can lead to behavioural change that can be influenced by formal or informal interventions or environmental values. The Covid-19 pandemic could be an event that can have this effect (Verplanken & Whitmarsh, 2021). The mobility restrictions have influenced society as a whole and provide a unique opportunity for investigating whether this disaster could be a moment of change that can contribute to limiting climate change.

Reasons Why the Covid-19 Pandemic May Not Function as a Moment of Change

An international study by Ipsos, that looked at 30 different countries across the world, was conducted two months prior to the present study, and found that 26% expect to have more post-pandemic vacations at destinations that do not require air-travel (Townend & Skinner, 2021). Additionally, in an unpublished qualitative study, Winkler (2021) found that although Norwegians had positive experiences of vacations at local destinations during the summer of 2020, they did not believe that they would reduce air-travel or fly shorter distances in the future. Previous studies have shown that air-travel frequency has no significant correlation with environmental concern, which has been referred to as an instance of the attitude-behaviour gap between environmental attitudes and flying (Becken, 2007; Juvan & Dolnicar, 2014). Travelling is an important part of life for a lot of people and causes a sense of internal conflict for those who think that human behaviour contributes to climate change (Becken et al., 2021). A participant in a group-interview study formulated this sense of conflict as such: “The unfortunate thing is that we want to see the world before we finish it up” (Becken, 2007, p. 363).

Whitmarsh, Lorenzoni, et al. (2021) commented on their research from 2007, which discussed barriers for achieving pro-environmental behaviour changes (Lorenzoni et al., 2007). They propose that since 2007 psychological barriers have decreased in the sense that more people have higher environmental concern and agree that we should contribute to

mitigating emissions. However, social barriers, profound economic and physical barriers, have not changed as much since 2007. And actual behaviour changes have not increased, which leaves the attitude-behaviour gap wider as compared to 2007; the authors suggest that this is because social, economic, and physical barriers have remained constant (Whitmarsh, Lorenzoni, et al., 2021).

Doherty and Webler (2016) found that social norms and efficacy beliefs are significant and direct influences on climate action in the public sphere (voting, donating, volunteering, contacting politicians, and protesting) amongst climate-concerned individuals. In addition, Geiger et al. (2020) explored several psychological barriers for behavioural change, and social norms and efficacy beliefs are important factors that function as barriers. Based on these findings, it is expected to find grounds for the statement that the pandemic may not be a moment of change, and that change is less likely if vacations abroad is considered a norm, if flight reduction is not considered a norm, and if efficacy beliefs are low.

Social Norms

One barrier to achieving behaviour change is social influence (Geiger et al., 2020). People's behaviour is influenced by what they think other people do in similar situations (descriptive social norm) and what they think other people think they should do (injunctive social norms). When people are faced with a decision, they can be guided by what they think other people do in the same situation (Cialdini et al., 1990). Descriptive social norms are important predictors of sustainable private behaviours such as energy conservation, hotel towel reuse, littering and recycling (Doherty & Webler, 2016).

As 50% of Norwegians travelled on vacations outside of Scandinavia before the pandemic (Henriksen, 2020; Aasen et al., 2019), the paper argues that vacation air-travel was considered a social norm. Consequently, it is likely that many associate the concept of

vacations with travelling abroad by air. Additionally, literature found that air-travel was considered social status, which is an influential aspect of the norm (Pappas, 2014). The trip's expenditure and distance from home are different features of the vacation that were associated with high social status, and distance was found to be the most significant (Pappas, 2014). Gössling and Stavrinidi (2016) explored mobility patterns through Facebook profiles, and they found that there was a substantial focus in posts on the frequency of travelling and destinations visited, indicating that this enhances their social status. Associating vacations with travelling abroad and social status could contribute to the resistance people might have for changing vacation behaviour.

On one hand, air-travel has been associated with excitement, culture exchange, privilege, and luxury. On the other hand, knowledge about the need for environmental action might increase people's sense of responsibility for reducing the number of flights. In 2019, the rise of the new word, "flight shame", changed the discourse of air-travel and vacations (Becken et al., 2021). Flight shame is the term for the feeling of shame or guilt that emerges because of the discrepancy between personal flying and the knowledge that air-travel is contributing to climate change (Doran et al., 2021; Henley, 2019). The term originated in Sweden in 2019, spread through social media and became a globally discussed topic (Becken et al., 2021). Data from Germany indicate that the flight shame debate has influenced social norms, but a significant behaviour change was not measurable at the time of the study (Gössling et al., 2020). Through social media analysis, Becken et al. (2021) found that the acceptance and discussion of flight shame on Twitter were isolated in an echo chamber of like-minded people. Approximately a year after the emergence of flight shame, the pandemic put a stance on air-travel. And Becken et al. (2021) suggested that the interactions between flight shame and travel restrictions can accelerate the behaviour changes in air-travel. The flight shame literature suggest that certain groups have a descriptive social norm that says one

should reduce the number of flights to contribute to limiting climate change. This descriptive social norm could influence whether people aim to reduce their number of flights.

Efficacy Beliefs

One essential barrier to climate action is that it can seem meaningless to change our habits in an attempt to limit climate change unless we believe that our effort will have a positive impact on the climate (Geiger et al., 2020). According to Bandura (1977), people's behaviour is guided by self-efficacy beliefs, that is, the belief that one can execute behaviours that will lead to a wanted consequence. Efficacy beliefs consist of a) the expectancy that the behaviour is feasible, here referred to as efficacy expectancy, and b) the expectancy of that behaviour leading to certain outcomes, here referred to as outcome expectancy (Bandura, 1977). The effect that efficacy beliefs have on behaviour is widely accepted in social science (Hornsey et al., 2021a). Several studies have shown correlations between efficacy beliefs and pro-environmental intentions (Bamberg et al., 2015; Gulliver et al., 2020; Heath & Gifford, 2006; Hornsey & Fielding, 2016; Kim et al., 2013; Xie et al., 2019). There is a theoretical distinction between collective or individual efficacy beliefs. Collective efficacy is the belief that as a group, we can successfully work together and accomplish a wanted outcome (Gallagher, 2012). Efficacy beliefs may not derive from analytic information processing as previously assumed, but could additionally be formed non-analytically by emotion, normative and identity-expressive motivations, and influenced by imagery, not only by verbal explicit knowledge (Hornsey et al., 2021b). This perspective is important because it emphasizes that the sheer knowledge that reducing air-travel is feasible and could lead to mitigation of emissions, may not be enough to form high efficacy beliefs.

Efficacy expectancy could have a substantial influence on the intention of reducing vacation air-travel. Some people have less experience with and knowledge about alternative

ways of travelling and this could be a barrier to achieving a successful vacation. There are only a few studies that have found interventions that successfully increase people's environmental efficacy beliefs (Hornsey et al., 2021a), and the paper propose that the Covid-19 pandemic might increase the sense of efficacy expectancy related to vacations without air-travel. The pandemic led to new experiences with vacations spent in Norway, and this has been a positive experience that may open people up for similar vacations in the future (Winkler, 2021). Can these experiences influence the belief that they can execute vacations without air-travel? And if they do not believe that the pandemic has changed efficacy expectations, can that belief function as a barrier to change?

Additionally, of interest to the present study is individual outcome expectancy concerning whether people think that reducing their number of flights can contribute to limiting climate change. Given that reducing air-travel is one of the most effective behaviour changes on an individual level (Ivanova et al., 2020; Wynes & Nicholas, 2017), there are grounds for believing that reducing your number of flights can limit climate change. Still, it can be argued that one less round trip by aeroplane does not contribute substantially to the global emissions, and that individual behaviour generally has little impact when it comes to mitigating a global and collective challenge. Findings suggest that most people underestimate the mitigation potential in reducing air-travel and other high-impact behaviours, as compared to low-impact habits such as recycling (Townend & Skinner, 2021). These different stances can lead to high or low outcome expectancies and could influence the participants anticipated flying frequency after the pandemic. The habit-disruption might not be a moment of change if air-travel reduction is not seen as effective in mitigating climate change.

Psychological constructs often interact, and studies show that social norms and social identities are related to efficacy beliefs (Hornsey et al., 2015). High efficacy beliefs related to climate action correlate with other attitudes: believing that climate change is anthropogenic,

having high concern, intending to engage in pro-environmental behaviours, and believing that individuals and collectives can mitigate climate change. Hornsey et al. (2015) argue that these attitudes make up a "green identity". Which could indicate that in certain social groups where green identities are accepted and valued, there are social norms that support reducing vacation air-travel and that this is possibly related to efficacy beliefs. This is relevant for achieving collective change because literature suggest that normative change happens in small groups and can reach a "tipping point" and get accepted by the majority (Centola et al., 2018). In this sense, individual action can be "contagious" and aggregate collective change.

Research Aims

In summary, the current state of research indicates that context changes increase the likelihood that values or interventions change habits (Verplanken et al., 2008; Verplanken & Whitmarsh, 2021). Also, involuntary disruptions, such as disasters, can lead to long-term changes in behaviour (Birkmann et al., 2010; Brundiers & Eakin, 2018; Mochizuki & Chang, 2017). The Covid-19 pandemic has led to involuntary changes in vacation behaviour (Oyier, 2020; Statistisk Sentralbyrå, 2021). Reese et al. (2020) postulate different ways in which the pandemic could influence how people appraise and potentially respond to climate change and suggest that future research question could include "How does the experience of behavioural restrictions affect our future routines and our social bonds?". Based on this, the current paper looks at whether the travel restriction during the pandemic can function as a moment of change for vacation travel mode.

A survey looking at 30 countries across the world found that 26% think they will reduce their number of vacation flights after the pandemic (Townend & Skinner, 2021), indicating that the pandemic might not be a moment of change for most people. Which raises

the question of who does not want to reduce vacation air-travel, which factors influence the intention to change.

The goal of this study is to investigate whether people anticipate a change in their number of vacation flights after the Covid-19 pandemic, and the relative importance of past behaviour, social norms regarding vacation and flight reduction, or efficacy beliefs in predicting this change. Specifically, it can be expected that people are less likely to report a willingness to reduce air-travel after the pandemic if

- H1: Their past flying behaviour was frequent before the pandemic, in other words, their habit strength was higher than that of others.
- H2: They believe that other people associate vacation with flying abroad, referring to an injunctive social norm concerning vacation.
- H3: They believe that other people do not think one should reduce flights due to climate change, which is referred to as an injunctive social norm regarding flight reduction.
- H4: The experiences of travel restrictions during the pandemic did not increase their belief in their ability to effectively reduce their number of flights in the future (efficacy expectancy).
- H5: They have low outcome expectancy, meaning that they do not think that reducing their number of flights would limit climate change.

Method

Data Collection

The data was collected through the Norwegian Citizen Panel (NCP), Wave 21, 2021. The goal of the NCP is to measure public opinion on important political and societal topics in Norway, including climate change. A random sampling from the Norwegian National

Population Register (NNPR), a register of Norwegian residents, was conducted to recruit participants for the NCP. Surveys were conducted between May 26th and June 15th, 2021. The participants received an e-mail invitation and used their personal internet devices. An informed consent form was signed by all participants. The present study is based on a randomized subgroup of the participants in the NCP. This subgroup consists of 2057 participants: female *n* = 978 (47.5%), male *n* = 1079 (52.5%). The distribution on level of education was as follows: 0-10 years of education (*n* = 102), 10-13 years of education (*n* = 611), university or college (*n* = 1309). The subgroup had geographical national coverage.

Weights

For the results to be generalizable, the present analyses are based on a weighted sample. Some strata in the total population tend to be underrepresented in surveys. To compensate for this, each case has been given a weight value of around 1. If the participant is in a stratum that is underrepresented, this participant was given a weight value over 1; participants in an overrepresented stratum were given a weight value under 1. The weights were calculated based on the participants' geographical location, gender, age, and educational level.

Measures

The present study measured anticipated future flying frequency, past flying behaviour, social norms regarding vacations and flight reduction, efficacy expectancy change because of the pandemic and outcome expectancy. Some of the measures mention climate change, which lead to a risk that questions concerning climate change prime the participants by cognitively activating attitudes regarding climate change on other questions that did not mention climate change. Verplanken and Holland (2002) state that when people are reminded of environmental values, they make more environmentally friendly choices, if that value is

related to their self-concept. The measures that mention climate change were therefore asked last.

Future Flying Frequency

We measured whether participants thought they would travel by aeroplane on vacation more or less often after the pandemic. This was measured by a single item: “When the Corona pandemic is over, do you think you are going to travel by aeroplane on vacation more or less than before the pandemic?”. (Original wording: “Når koronapandemien er over, tenker du å reise med fly i forbindelse med feriereiser oftere eller sjeldnere enn før pandemien?”). The answer options were on a seven-point scale: *Much more often, more often, a little more often, about the same, a little less often, less often, much less often.* This variable will be referred to as future flying frequency. There were 14 (0.8%) missing cases on this variable.

Past Flying Behaviour

We measured participants’ flying behaviour prior to the Covid-19 pandemic by using a single item: “If you look back at the time before the Corona pandemic, how often would you say that you travelled on vacation by aeroplane?” (Original wording: “Hvis du tenker tilbake på tiden før koronapandemien, hvor ofte vil du anslå at du reiste med fly i forbindelse med feriereiser?”). The answer options were a) *about __ vacations (round trip by plane) a year* (insert number of vacations); b) *I flew less than once a year*, or c) *I never flew.*

This variable was categorized into five categories based on descriptive statistics. The first category included those who flew never or flew less than once a year (n = 799, 38.2%), the second category were participants who flew about once a year (n = 383, 18.3%), the participants who flew about twice a year (n = 462, 22.1%), about three times a year (n = 177, 8.5%), and the fifth category are the participants who flew about four or more times a year (n

= 261, 12.5%). One extreme value (120 vacations a year) was considered not valid and coded as a missing value. Nine participants (0.4%) had a missing value on this variable.

Social Norms

Vacation Norm. The study measured two different social norms. The first item measured whether associating vacation with flying abroad is considered a social norm: "To what extent does this statement apply to you: Most people I know associate *vacation* with travelling abroad by aeroplane" (Original wording: "I hvilken grad stemmer denne påstanden for deg: De fleste jeg kjenner forbinder *ferie* med flyreise til utlandet"). Answers were given on a five-point scale: *a very large extent, large extent, some extent, small extent, not at all.* Seven cases were missing on this variable, which accounts for 0.5% of the sample.

Flight Reduction Norm. The second measurement of social norms was related to flight reduction: "To what extent does this statement apply to you: most people I know think that we should reduce the number of flights because of climate change" (Original words: I hvilken grad stemmer denne påstanden for deg: De fleste jeg kjenner mener at vi bør redusere antall flyreiser av klimahensyn). The answers were on a five-point scale: *a very large extent, large extent, some extent, small extent, not at all.* 39 cases were missing on this variable, which accounts for 1.9%.

Efficacy Beliefs

Efficacy Change. The study included a measure of whether the participants have had a change in efficacy expectancy because of the experience of reducing vacation flights during the pandemic. This was measured using a single item: "Less air-travel can contribute to limiting climate change. During the corona pandemic, we have had to reduce the number of flights. Do you think that the experiences we have had during the pandemic make it easier or harder to reduce the number of flights for climate-related considerations in the future?"

(Original wording: “Færre flyreiser kan bidra til å begrense klimaendringene. I løpet av koronapandemien har vi måttet redusere antall flyreiser. Tror du erfaringene vi har gjort oss i løpet av koronapandemien kan gjøre det lettere eller vanskeligere å redusere flyreiser av klimahensyn i fremtiden?”) The answers were on a seven-point scale: *A lot easier, easier, a little easier, no difference, a little harder, harder, a lot harder.* There were 37 (1.6%) missing cases on this measure.

Outcome Expectancy. The study measured the participants’ outcome expectancy for reducing flying. This was measured with a single item: “To what extent do you think that reducing your number of flights can contribute to limiting climate change?” (Original wording: I hvilken grad tror du at å redusere dine egne flyreiser kan bidra til å begrense klimaendringene?). The answer scale was as follows: *a very large extent, a large extent, some extent, a small extent, not at all.* Missing cases on this measure were 37 (1.6%).

Control Variables

The analysis controlled for gender and age because previous studies have found that these factors can influence climate change attitudes (McCright & Xiao, 2014; Shaw & Thomas, 2006). Age was measured as a categorical variable in order to ensure participant’s anonymity. The age variable consists of three categories: participants who are born in 1959 or earlier (n = 538, 25.8%), born between 1960-1989 (n = 1125, 53.8%) and participants born 1990 or later (n = 538, 20.4%).

Statistical Analysis

IBM SPSS Statistics 26 was used for the statistical analysis. Descriptive analyses were used for all the variables to explore distributions. The second step for the analysis was to explore the relationships among the variables by using Pearson correlation (two-tailed). The third step was a one-way between-subjects analysis of variance to explore the

relationship between past flying behaviour and future flying frequency. The final step was linear multiple regression analysis to test the hypotheses that past flying behaviour (H1), vacation norm (H2), flight reduction norm (H3), efficacy change (H4), and outcome expectancy (H5) predict future flying frequency. The significance level was set as $p < .05$. Missing data were excluded listwise.

Results

The goal of this study was to investigate whether people anticipate a change in their number of vacation flights after the Covid-19 pandemic, and the relative importance of past flying behaviour, social norms, and efficacy beliefs.

Descriptive analyses

To answer the question whether people anticipate a change in their vacation flight frequency, an analysis of the distribution on the measure future flying frequency was conducted, which is shown in Table 1. The majority thought that they are going to travel on vacation by aeroplane about the same as they did before the pandemic. In sum, 25.7% thought that they will fly less after the pandemic, and 7.2% though that they will fly more often.

Table 1

Descriptive Analysis for Future Flying Frequency

Future flying frequency	***n***	***%***
Much more often	15	0.7
More often	52	2.5
A little more often	85	4.0
Just as much	1388	66.4
A little less	292	14.0

Less	150	7.2
Much less	95	4.5
Missing values	14	0.7

Note. These results are weighted.

Results for the measure vacation norm show some participants agreed to a very large extent (8.8%) and to a large extent (32.3%) with the statement that most people they know associate *vacation* with travelling abroad. The majority (38.6%) agreed to some extent, and some (16.2%) to a small extent. 3.8% indicated that they do not at all agree with the statement. Table 2 show the descriptive analysis of the rating scales. And the mean score for vacation norm point to the direction with agreeing that most people associate vacation with travelling abroad.

Table 2

Descriptive Statistics for the Rating Scales: Future Flying Frequency, Vacation Norm, Flight Reduction Norm, Efficacy Change, and Outcome Expectancy

Variable	***n***	***M***	***SD***	***Skewness (SE)***	***Kurtosis (SE)***
Future flying frequency	2031	4.31	.971	.65 (.05)	2.23 (.11)
Vacation norm	2031	2.73	.962	.20 (.05)	-.29 (.11)
Flight reduction norm	2031	3.38	.983	-.15 (.05)	-.45 (.11)
Efficacy change	2031	3.16	.927	.14 (.05)	1.03 (.11)
Outcome expectancy	2031	3.65	1.082	-.49 (.05)	-.37 (.11)

Note. Results are weighted.

The other measure of social norms is the flight reduction norm. The results are that a part of the sample agreed to a very large (2.6%) and a large extent (14.8%) with the statement

that most people they know think that one should reduce the number of flights due to climate change. The majority agree to some extent (36.2%) and a small extent (31.4%). 13.2% do not agree at all. The mean value suggest that the overall tendency is to not agree.

The results regarding efficacy change are shown in Table 3. The mean value indicate that efficacy beliefs have changed during the pandemic. And in sum, the majority (63.7%) think it will be easier to reduce the number of flights because of the experiences during the pandemic. 30.1% think there will be no difference. And 4.4% think it will be harder to reduce the number of flights because of the experiences during the pandemic.

Table 3

Analysis of frequency for efficacy change

Efficacy change	***n***	***%***
A lot easier	76	3.6
Easier	357	17.1
A little easier	899	43.0
No difference	629	30.1
A little harder	74	3.5
Harder	8	0.4
A lot harder	10	0.5
Missing values	37	1.8

Note. These results are weighted.

The results concerning outcome expectancy show that this was on average low. Some participants agreed to a very large extent (3.9%) and a large extent (9.3%) that reducing their number of flights can contribute to limiting climate change. Most people agreed to some extent (28.8%) and a small extent (31%). While 25.3% did not agree at all, indicating that they had a low outcome expectation of flight-reduction contributing to limit climate change.

Correlations

The correlations between the variables are shown in Table 4. The results were that future flying frequency correlates significantly with vacation norm, flight reduction norm, efficacy change, and outcome expectancy.

Table 4

Correlation for the Rating Scales: Future Flying Frequency, Vacation Norm, Flight Reduction Norm, Efficacy Change, and Outcome Expectancy

Variable	2	3	4	5	6	7
1. Future flying frequency	.097**	-.132**	-.148**	-.141**	.004	-.126**
2. Vacation norm		-.056*	-.135**	-.001	-.006	-.208**
3. Flight reduction norm			.368**	.554**	-.051*	-.159**
4. Efficacy change				.322**	-.079**	-.054*
5. Outcome expectancy					-.094**	-.189**
6. Gender						-.033*
7. Age						

Note. The results are weighted.

* $p < .05$

** $p < .001$

The correlations between the other variables are of interest to better understand the relationships amongst the variables and for testing the assumption of multicollinearity in the regression analysis. The two measures of social norms, vacation norm and flight reduction

norm had a small significant negative correlation. This indicates that participants who think others associate *vacation* with flying abroad, also think that others disagree that we should reduce the number of vacations flights due to climate change. Furthermore, the separate measures of efficacy beliefs (efficacy change and outcome expectancy) correlate moderately with each other. Meaning that lower efficacy expectancy due to the pandemic is associated with low outcome expectancy. Flight reduction norm and efficacy change correlate moderately, additionally, flight reduction norm had a strong correlation with outcome expectancy. Indicating that believing that other people think that we should reduce air-travel, is associated with believing that reducing air-travel can limit climate change and associated with thinking that reducing air-travel has become easier because of the pandemic. Efficacy change also had a small negative correlation with vacation norm. Which indicates that thinking that reducing air-travel has become harder because of the pandemic is related to associating *vacation* with traveling abroad.

One-Way Between-Subjects Analysis of Variance

To investigate the relationship between past flying behaviour and future flying frequency, without the influence of the other variables, a One-Way Between-Subjects ANOVA was conducted. Participants were divided into five groups based on how often they travelled by air on vacation before the pandemic. Group 1: participants who flew never or flew less than once a year; Group 2: those who flew about once a year; Group 3: those who flew about twice a year; Group 4: flew about three times a year; Group 5: flew about four or more times a year. There was a statistically significant difference on the means on future flying frequency for the five groups, $F(4, 2068) = 8.298$, $p < .001$. The actual mean differences are quite small. Post-hoc comparisons using the Tukey HSD test indicated that the mean score for group 1 ($M = 4.40$, $SD = 1.127$) was significantly different from Group 3 ($M = 4.20$, $SD = .801$) and Group 5 ($M = 4.07$, $SD = .961$). Group 5 was significantly different

from Group 2 (*M* = 4.1, *SD* = .831). Group 4 (*M* = 4.34, *SD* = .860) did not differ significantly from the other groups. The results indicate that past flying behaviour are associated with future flying frequency.

Regression

Linear multiple regression was performed by predicting future flying frequency as the dependent variable from past flying behaviour, vacation norm, flight reduction norm, efficacy change, and outcome expectancy as the predictors. The control variables gender and age were also included in the analysis. Analysis was performed using IBM SPSS REGRESSION. The analysis included tests that ensure no violation of assumptions of normality, multicollinearity, and homoscedasticity. Table 5 shows the unstandardized regression coefficients (*B*), the standardized regression coefficients (*β*), standard error (*SE*), 95% confidence interval for *B*, and probability value (*p*). *R* for regression was significantly different from zero, $F(10, 2020) = 15.663$, $p < .001$, with R^2 value of .072. The adjusted R^2 value of .067 indicates that 6.7% of the variability on future flying frequency is predicted by past flying behaviour, vacation norm, flight reduction norm, efficacy change, outcome expectancy, gender, and age.

Table 5

Linear Multiple Regression Analysis

Effect	***B***	***β***	***SE***	***95% CI***		***p***
				Lower bound	Upper bound	
Past flying behaviour: once a year	.040	.016	.060	-.078	.157	.509
Past flying behaviour: two times a year	-.161	-.069	.056	-.271	-.051	.004**
Past flying behaviour: three times a year	-.117	-.034	.079	-.273	.038	.139

Past flying behaviour: ≥ four times a year	-.259	-.089	.068	-.393	-.125	<.001**
Vacation norm	.038	.038	.023	-.007	.082	.095
Flight reduction norm	-.056	-.057	.026	-.108	-.005	.033*
Efficacy change	-.098	-.093	.025	-.146	-.049	<.001**
Outcome expectancy	-.097	-.108	.024	-.143	-.050	<.001**
Gender	-.032	-.016	.042	-.114	.051	.454
Age	-.221	-.154	.032	-.284	-.157	<.001**
Intercept	5.606					

Note. The results are weighted.

* $p < .05$

** $p < .001$

The regression coefficients that were significantly different from zero were past flying behaviour (using air-travel for 2 vacations a year, and 4 or more vacations a year), efficacy change, and outcome expectancy It was found that vacation norm did not significantly predict future flying frequency. Flight reduction norm significantly predicted future flying frequency. Future flying frequency was significantly predicted by efficacy change, and outcome expectancy. The significance levels indicates that the relative importance of efficacy change, and outcome expectancy is higher than for vacation norm and flight reduction norm, which serve as an answer to the research goal.

The past flying behaviour variable was coded as a dummy variable, and the result indicate that those who use air-travel for two (Group 3) and four or more vacations a year (Group 5), are less likely to reduce the number of flights, compared to those who used air-

travel for less than one vacation a year (Group 1). Surprisingly, this tendency was not found in the group that have three vacations a year (Group 4).

Gender and age were simultaneously included in the regression to control for their effect on future flying frequency. Surprisingly, gender had no significant predictive value. While age had a significant predictive value, which indicate that younger participants are more likely to reduce air-travel. The standardized regression coefficient for age had the highest value of all the predictors in the model.

The regression results supported the hypotheses H1(past flying behaviour), H3 (flight reduction norm), H4 (efficacy change), and H5 (outcome expectancy) significantly predict future flying frequency, and no support for H2 (vacation norm).

Discussion

The purpose of the current study is to get a better understanding of whether the Covid-19 pandemic might function as a moment of change for reducing vacation air-travel. The results show that 66.4% of the respondents expect to travel as they did before the pandemic, while 25.7% intend to reduce their number of vacation flights after the pandemic. In comparison, Aasen et al. (2019) found in a Norwegian sample that 28.6% were willing to reduce their number of flights in 2019, before the pandemic. Consequently, the results indicate that there has not been a substantial change in the number of people who intend to reduce air-travel compared to pre-pandemic measures. The present results are in line with the findings of Townend and Skinner (2021), which were that 26% in an international sample think that they will have more vacations that do not require air-travel after the pandemic. This indicates that although Norwegians travel on vacations more often than Europeans, they are not more or less willing to reduce vacation flights than people in other countries. The results of correlation analyses and one-way between-subjects ANOVA show that there is a

significant relationship between expected future flying frequency and past flying behaviour, vacation norm, flight reduction norm, efficacy change and outcome expectancy. However, some of the correlations disappear in the regression analysis, where all variables are added simultaneously in the model. The results from the regression analysis support hypotheses H1, H3, H4 and H5; indicating that past flying behaviour (H1), flight reduction norm (H3), efficacy change (H4), and outcome expectancy (H5) significantly predict the scores on future flying frequency.

The Covid-19 Pandemic as a Moment of Change and the Influence of Past Behaviour

This study uses the habit disruption hypothesis and post-disaster-change as a theoretical framework for "moment of change". The descriptive results on future flying frequency show that most people do not intend to change their vacation travel mode, which might indicate that the pandemic will not function as a moment of change. If the results were in line with the habit discontinuity hypothesis, past flying behaviour should have a positive relationship with willingness to reduce air-travel, because when habits are disrupted the likelihood that people want to change increase. However, the results support H1; the hypothesis that frequent past flying behaviour is associated with less willingness to reduce air-travel. The relationship implies that habit strength might be a barrier for the pandemic to function as a moment of change. In other words, frequent flyers do not intend to reduce their number of flights, while those who fly less are more willing to reduce. This means that the actual mitigation potential for the 25.7% who want to reduce air-travel is quite low.

Possible Reasons Why the Covid-19 Pandemic May Not Function as a Moment of Change

There might be several reasons as to why the Covid-19 pandemic might not be a moment of change. First, there might be aspects of the pandemic that do not apply to the theoretical framework of habit discontinuity hypothesis or post-disaster window of

opportunity. In other words, the pandemic might not be a context change that can lead to behavioural change in the same ways previous studies have found, such as natural disasters, relocating or childbirth. One difference between the pandemic and life-changes such as childbirth or relocating is that in the pandemic the changes have been legislative and not voluntary. This could affect the perspective people have on the context change. Public support for the travel restriction during the pandemic has been high in Norway, partly because it was perceived as an effective measure for limiting Covid-19 (Kallbekken & Sælen, 2021). They additionally found that public support was high because the measures were perceived as short term and that the restrictions are only temporary (Kallbekken & Sælen, 2021; Reese et al., 2020). Which is a difference from life changes and post-disaster situations that might seem more long term, thus, the likelihood for habit change might be lessened. This could be one explanation of why the pandemic might not function as a moment of change.

However, Thomas et al. (2016) found that there was a diminishing influence of the habit discontinuity and self-activation hypothesis over the first two years after the context change. In other words, the window of opportunity for behavioural change is limited to a two-year period after the context change. Verplanken and Roy (2016) found that the "mood for change" is most prevalent the first three months after the lifestyle changes (relocating and childbirth). Which suggest that the fact that the global pandemic has lasted for two years, could lessen the likelihood of the pandemic to function as a moment of change.

There has been a difference in how the restrictions during the pandemic have influenced people's lives, for example, rural areas have had fewer lockdowns, and some work sectors have shut down, while essential workers have had to keep working as usual. So, for some people, the everyday lives may not have changed as much, and the disruption of habits has not been as profound as others have experienced. The level and duration of restrictions has varied, which could factor in because the differences could lead to different experiences

and interpretations, and in turn, how the pandemic has influenced peoples reasoning and perspectives on vacation air-travel. Future research could measure how much people were affected by the lockdowns and travel restrictions, and whether this influenced the impact of the pandemic on behavioural change.

The Covid-19 pandemic could differ from disasters that generated moments of change, although they too are involuntary, and include limited personal agency and autonomy. Disasters are defined by the United Nations International Strategy for Disaster Risk Reduction (UNISDR) as "a serious disruption of the functioning of a community or a society causing widespread human, material, economic, or environmental losses which exceed the ability of the affected community or society to cope using its own resources." (UNISDR, 2004, p. 17). So far, Norway has had a relatively low number of deaths and the capacity in hospitals have been under control for most of the pandemic (Norwegian Institute of Public Health, 2021). The level of trust in the governments is high, which lead to high compliance for the travel restrictions (Kallbekken & Sælen, 2021). In total, Norway have handled the pandemic by using its resources, apart from vaccines brought by the European Union. Subsequently, the impact of the pandemic on Norway and its citizens, may not be substantial enough for the pandemic to be classified as a disaster, but rather a crisis. This could be an explanation of why the theoretical framework relating to post-disaster windows of opportunity may not apply to the pandemic in a Norwegian context.

A second explanation why the Covid-19 pandemic might not function as a moment of change is that travelling by aeroplane for vacation might not be a habit that influences future behaviour in the same ways as other habits (such as mobility patterns or recycling). It differs especially in the frequency in which the behaviour is performed. The group that is categorised as the most frequent flyers in the current study reported that they had about 4 to 30 vacations a year, which is not as frequent as other habits. There might be a different kind of information

processing and decision making in choosing air-travel for vacation purposes than for other habits. And if this is the case, then the theoretical background concerning moment of change might not be applicable and might be one reason why this habit is not disrupted by the Covid-19 pandemic.

Habits are defined as automatic and do not necessarily need willpower for execution (Ouellette & Wood, 1998). On one hand, some people might automatically check the internet for the cheapest flights as a first step in planning a vacation. In this sense, planning for air-travel for vacation purposes might be an automated habit. This could be related to associating vacation with travelling abroad, which according to the descriptive results is a social norm reported by the majority. On the other hand, one could argue that planning a vacation requires deliberate reasoning, decision making, and maybe cooperation with travel partners, which are different cognitive processes than those involved in habitual behaviour. The findings are that past flying behaviour is associated with estimated future flying frequency, which suggests that regardless of whether vacation air-travel is defined as a habit, habit strength does have a significant predictive value for future behaviour and could function as a barrier of change.

A third explanation why the pandemic might not function as a moment of change is that the study lacks an intervention that is targeted at reducing vacation flights. Previous studies on the habit discontinuity hypothesis use an intervention such as, informational programs or giving people free public transportation, and measure the differences between people who have experienced life-changes and those who have not (Ralph & Brown, 2019; Schäfer et al., 2012; Thøgersen, 2012; Verplanken & Roy, 2016). By using internet-based surveys as the methodological approach, the possibility of experimental studies was excluded. Additionally, this was not possible at the time of the study since the pandemic was still not over. Future research could use an experimental design including an intervention. Jiricka-Pürrer et al. (2020) suggest that city-tourism post-pandemic should focus on

incentives for climate-friendly travel modes, such as discounts on hotels if they arrive by train, public transportation, or bicycles, as they do on “Hotel Stadthalle” in Vienna. This could function as an intervention that could influence people, together with the experiences during the pandemic. If so, the pandemic might function as a moment of change for vacation air-travel when combined.

Finally, an explanation of the positive relation between past flying behaviour and future flying frequency could be explained by cognitive dissonance theory. Cognitive dissonance theory suggests that people create strategies that reduce the unpleasant feeling of discrepancies between attitudes and behaviour (Festinger, 1957; Harmon-Jones & Mills, 2019). Flight shame derives from the cognitive dissonance that emerges because of the discrepancy between environmental attitudes and air-travel behaviour. One example of a dissonance reduction strategy is “one round trip by aeroplane is just a drop in the ocean, so it does not hurt if I have one vacation abroad”, or “everyone else uses air-travel, so what difference would it make if I take the train?”. These justifications externalise responsibility, which relieves them of the unpleasant feeling of flight shame. A possible explanation as to why the pandemic may not be a moment of change is that these strategies to relieve the cognitive dissonance have not been changed during the pandemic. Thus, the influence of past flying behaviour on future flying frequency is high because frequent flyers have strategies that have not changed during the pandemic. Future research could investigate the influence of flight shame on the relationship between past behaviour and future behaviour.

Moment of Change and the Influence of Social Norms

Climate change is a problem that needs collective solutions and one of the barriers are social norms (Geiger et al., 2020). The results derived from the regression analysis did not find support for H2; the hypothesis that participants would not intend to reduce vacation air-

travel if they believe that other people associate vacation with flying abroad. This indicates that social norms regarding vacation abroad might not influence the likelihood of change. The results support H3; people are less likely to report a willingness to reduce flights if they believe that other people do not think one should reduce flights due to climate change. Which could indicate that social norms specifically related to reducing air-travel have a significant influence for intending to reduce individual vacation air-travel.

What can be gathered from the descriptive analyses is that there is no clear consensus regarding the social norms because the distribution is not substantially skewed. Most of the participants answered the neutral value on both vacation norm and flight reduction norm. This can indicate that at the time of the study there were no clear national social norms regarding vacations and whether we should reduce the number of flights. A possible explanation of this might be that the distribution in social norms might be influenced by social distancing during the pandemic. The social interactions and dynamic social processes that might be central in the establishment of social norms have been reduced to small group gatherings and digital interaction. Which could influence the establishment and strength of social norms regarding vacations and flight reduction. Another explanation might be that there are different norms in subgroups or "echo chambers", which findings from previous literature concerning flight shame indicate (Becken et al., 2021). Additionally, the social norms could be influenced by the fact that people have had to be flexible in terms of what they can expect in the future, for example, planning vacations. The restrictions levels have been fluctuating, which might have led people to be flexible and perhaps influenced the social norms to fluctuate as well.

Moment of Change and the Influence of Efficacy Beliefs

The present results of the regression analysis show that efficacy change and outcome expectancy have a higher predictive value than flight reduction norm. In other words, thinking that reducing air-travel has been harder because of the pandemic (efficacy change) and believing that reducing air-travel will not limit climate change (outcome expectancy), decrease the likelihood that people will reduce the number of vacation flights. Whereas thinking that reducing vacation air-travel in not a social norm, has a weaker predictive value. Altogether, the findings indicate that efficacy beliefs are more important predictors of environmental intention of air-travel reduction than social norms.

The descriptive statistics show that there is some consensus on the measures of efficacy belief. The results on the measure of a change in efficacy expectation show that most people (64%) think that reducing the number of flights will get easier in the future; only 4% report that reducing air-travel will get harder. This could mean people have had experiences with travel restrictions that have led to increased efficacy expectancy for reducing flights in the future. Which could indicate that although the minority intends to reduce air-travel, the pandemic has contributed to a positive change in efficacy expectancy for the majority.

The results show that many participants think that reducing their number of flights contributes to limiting climate change to a small extent or not at all. Which indicates that the overall outcome expectancy is low. This could indicate that most people underestimate high impact behavioural changes and the reasoning behind outcome expectancy are in the line of "one flight is just a drop in the ocean" (Townend & Skinner, 2021). The experience of the Covid-19 pandemic, where individual efforts of social distancing have had a positive outcome for the infection rates of Covid-19 in Norway, have similarities of behaviour changes needed to limit climate change, but it seems that the same experiences have not been generalized to the climate change issue. This could be because most people do not intuitively connect the pandemic and the climate crisis as similar issues (Shaw & Wang, 2021).

Moment of Change and the Influence of the Control Variables

The control variables gender and age were included simultaneously in the regression analysis. The results show that age significantly predict future flying frequency, while gender does not have a significant effect. Which suggest that younger people are more likely to reduce air-travel than older people. This is a consistent finding in the previous literature (Kroesen, 2013; Shaw & Thomas, 2006). Notably, age has a higher standardised predictive value than any of the other variables. The age variable used in the analysis consisted of three categories. This was done instead of having a continuous variable to ensure anonymity for the participants. The categorisation could affect the results because a lot of the information in the data is lost. Arguably, the age variable could be defined as generation instead. Different generations were associated with different environmental concerns and intentions for pro-environmental behaviour (Shaw & Thomas, 2006).

Limitations

There might be several limitations concerning the results of this study. One limitation concerns an issue of the outcome variable future flying frequency. It measures whether participants anticipate a change in their flying frequency after the pandemic. Alternatively, the study could have included a measure of how often they think they will travel on vacation by aeroplane in the future, and then, in the analyses, compared the answers of past flying behaviour, and quantified a potential change in frequency. The change-directed question was chosen because it is more directly related to the goal of the study. A problem with measuring whether they anticipate a change is that people are generally not accurate in predicting their behaviour (Diekmann et al., 2003). However, the study illuminates the current intentions concerning reducing vacation air-travel, and relevant social norms and efficacy beliefs. It is

an attempt to address these issues, and the paper propose that further research after the pandemic may shed light on the measurable changes in vacation travel mode.

A second limitation concerns the variable efficacy change. A change in efficacy expectation after the pandemic was measured by using this item: “Less air-travel can contribute to limiting climate change. During the corona pandemic, we have had to reduce the number of flights. Do you think that the experiences we have had during the pandemic make it easier or harder to reduce the number of flights for climate-related considerations in the future?”. The first issue with this item is that the item has a premise that participants did not necessarily think of or agree with. Some participants might not believe that reducing their number of flights can contribute to limiting climate change, which is confirmed by the results concerning outcome expectancy. Additionally, some participants might not associate the similarities between the pandemic and climate change issues (Shaw & Wang, 2021), and the measure forces the participants to consider it. Consequently, the measure could be biased because it might be too leading.

Another issue with the measure of efficacy change is that it is unclear whether the item measures individual or collective efficacy expectancy. In other words, whether reducing air-travel has become easier or harder for “everyone” or for the participant. This might have influenced the validity and reliability of the measure. And subsequently has implications for the results and the interpretations of the results in the sense that it is unclear whether efficacy expectancy has changed on an individual or collective level.

A third limitation concerning the study is that the results may not be generalised to other populations than Norwegians. Norwegians travel more often than citizens in other European countries, and there is a high median income and little difference amongst the population. The level of trust in governmental policies and science is high in Norway, which

could influence the impact of the Covid-19 pandemic compared to other countries. Additionally, the geographical location limits the possible vacation destinations, as compared to central Europe, and the typography of the country limits the infrastructure. Because of this, the results are arguably not generalisable. The present results from a Norwegian population could function as a “best case”, because changes in vacation travel mode could be considered least likely in Norway. On the other hand, psychological factors that influence the willingness to reduce air-travel could be similar and generalisable.

A fourth limitation is the timing of the study. May-June 2021 was a period of uncertainty regarding the pandemic. The majority of the population had not received vaccines because of several delays, and travel restrictions for the summer were not yet finalized. The timing of the study could be a limitation because the results might be sensitive to the specific timing and not generalisable to the present or future status of intention for change, social norms or efficacy beliefs concerning air-travel reduction. However, the present study serves as an important snapshot of what people, during the pandemic, intend to do after the pandemic, and what the social norms and efficacy beliefs are, and this can function as a comparison for future studies after the pandemic.

The fifth limitation is that categorising continuous variables has some disadvantages. The present study has used an age variable that had three categories. Additionally, past flying behaviour was categorised, which initially consisted of values from 0 to 30 vacations with air-travel a year, to consist of five categories. One disadvantage of categorising is that statistical information that could influence the results was excluded. Additionally, removing statistical data could increase the risk of overfitting the data to the statistical model and thereby decrease generalisability (Babyak, 2004).

Sixth, the study cannot affirm causality, and this is a limitation. This is due to the methodological approach of cross-sectional data collection. The linear regression analysis produces predictive values but cannot state that the predictors cause the outcome. This is an important distinction. For the study to be able to make inferences about causality the methodological approach needs to be experimental. Ideally, a study investigating whether the Covid-19 pandemic functions as a moment of change, should compare groups of people who had experienced the pandemic against people who had not, and measure the number of vacation flights before and after the pandemic. But this is difficult when the pandemic has influenced every country that has similar cultures, and importantly vacation air-travel habits. Instead, future studies could compare past flying behaviour and actual flying behaviour post-pandemic. In this case, the study would not be strictly experimental, because possible confounding variables are not controlled, but a temporal difference could imply some degree of causality.

Self-reports in general, and especially measurements of efficacy beliefs used in the current study might be subject to social desirability bias, which is the tendency to respond with implausibly favourable descriptions of one's behaviour (Grimm, 2010). Hornsey et al. (2021a) reported a correlation between individual efficacy beliefs related to environmental intentions and socially desirable response styles. This raises the question of whether the pro-environmental intentions of reducing air-travel that was measured in this study is influenced by socially desirable responses. Future research should control for social desirability bias when measuring efficacy beliefs and pro-environmental intentions and behaviour.

Finally, one central limitation is that the regression model explains limited variance in future flying frequency, and the current study fails to account for several factors that could influence intentions to reduce air-travel. Previous studies have found that income correlates significantly with emissions (Capstick et al., 2020). More specifically, high-income

households fly more frequently (Ivanova & Wood, 2020; Aasen et al., 2019). Based on this, it is likely that income level would influence future flying frequency. High-income households have a higher mitigation potential, but the resistance against behaviour change could be explained by psychological factors such as habit strength, social norms, and efficacy beliefs. The present study has not included structural and systemic factors, but further research could include the factor income in the question of whether the pandemic can function as a moment of change.

The field of environmental psychology has been criticized for focusing too heavily on the individual and failing to account for structural and systemic explanations to the question of climate change behaviour (Capstick et al., 2020). One structural issue concerning a reduction in air-travel is transportation infrastructure (Capstick et al., 2020). By now, there are no travel mode options that do not require more time. Based on the knowledge derived from psychological research that people are more likely to choose the most easy, available, familiar, normal, high-status or desirable option (Park, 2021), it is not surprising that most people are unwilling to reduce air-travel. It can be argued that air-travel is the carbon-emitting behaviour that has the least available, affordable, and effective alternatives. Intuitively, it can be argued that reducing vacation air-travel would be easier than switching to a plant-based diet or using public transport because it requires less effort since it is not a frequently performed habit. Still, the lack of time-efficient alternatives could be an additional explanation for resistance against reducing air-travel.

Implications

The present study contributes to the field concerning intentions for behavioural change, as well as social norms and efficacy beliefs during the pandemic. Additionally, the study contributes to the knowledge of the effect of past behaviour, flight reduction norm, and

efficacy beliefs on intentions for future change. The measures can function as a baseline for future comparison, for instance, to investigate actual behavioural change. Although a clear-cut ending of the pandemic on a global level might not be realistic and the possibility of investigating "post-pandemic" is uncertain.

Our results suggest that behavioural change does not necessarily happen because of the experiences of travel restrictions during the pandemic. This raises the question of whether systemic and structural changes are needed to initiate a collective change. For instance, travel mode options that are pro-environmental should be affordable, effective, available, and socially desirable. This could be achieved by economic, technological, or political measures. The influence of individual-level variables, often measured in psychological research, might be limited as long as systemic and structural factors remain unchanged. However, some of the psychological variables, such as social norms and collective efficacy beliefs, might contribute to interactions between system and individuals that aggregate change (Capstick et al., 2020).

Conclusion

Reduction in air-travel could limit climate change and travel restrictions during the Covid-19 pandemic decreased vacation air-travel. Based on this, the present study investigated whether the pandemic might be a moment of change for vacation air-travel. The influence of past flying behaviour, social norms, and efficacy beliefs on the intention to reduce air-travel were tested through a multiple linear regression analysis. The results show that most people do not intend to reduce air-travel; and that past flying behaviour, social norms regarding flight reduction, and efficacy beliefs might function as barriers to change. Overall, the conclusion is that the Covid-19 pandemic might not function as a moment of change for vacation travel mode, especially for people with high past flying frequency, low efficacy beliefs, and who do not perceive flight reduction as a social norm. The paper suggest

that future studies measure actual behavioural change in vacation travel mode, and control for potential confounding variables, such as cognitive dissonance or flight shame, social desirability bias, income, and how much people have been affected by the pandemic and travel restriction. Additionally, the paper question whether psychological factors are limited in explaining the resistance against reducing air-travel and point to potential systemic and structural factors that may potentially function as barriers for achieving pro-environmental behavioural change. However, psychological factors and systematic factors combined have great potential for achieving change that could contribute to mitigating climate change.

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