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# Social Learning of Sustainability in a Pandemic—Changes to Sustainability Understandings, Attitudes, and Behaviors during the Global Pandemic in a Higher Education Setting

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**Abstract:** When people learn from each other and change their behavior accordingly, this is called social learning. COVID-19 not only taught us new habits to limit contagion, imposed restrictions also limited people's everyday practices and behavior. Our study aims to analyze how (much) the pandemic may have incidentally fostered social learning of sustainability (SLS), representing a shift from rule-based behavior and forced behavior changes to more associative and potentially long-lasting sustainable behavior. To answer this question, we analyzed data from two mixed-method surveys with which we approached two customized samples in a higher education setting in Australia ($n$ = 100) and Austria ($n$ = 264). The findings show that in a higher education and, specifically, a university context, there are less sustainable practices evaluated as stable and "new normal" than assumed. Still, sustainability is more rule-related and less associative, predominantly in Australia. Nevertheless, a certain degree of awareness of what sustainable practices are can be observed mainly in Austria. As a broader implication, the study at hand leads to the conclusion that through COVID-19, sustainability at least became more tangible. Furthermore, universities as a specific institution have the potential to put sustainability higher on their agenda and take responsibility for social change. In the conclusion and outlook of the paper, limitations of the study as well as future research potential on social learning processes for sustainable development are presented and discussed.

**Keywords:** sustainability; sustainability communication; social learning; responsibility; COVID-19; future; survey; social practices; climate change

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**Citation:** Weder, F.; Yarnold, J.; Mertl, S.; Hübner, R.; Elmenreich, W.; Sposato, R. Social Learning of Sustainability in a Pandemic—Changes to Sustainability Understandings, Attitudes, and Behaviors during the Global Pandemic in a Higher Education Setting. *Sustainability* **2022**, *14*, 3416. https://doi.org/10.3390/su14063416

Academic Editor: Roope Husgafvel

Received: 14 February 2022
Accepted: 11 March 2022
Published: 15 March 2022

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## 1. Introduction

Over the past decades, individuals, communities, businesses, and even entire cities have become increasingly aware of the need to operate more sustainably. There is a polyphony of messages about sustainability by the media, corporations, NGOs, and politicians, and even by individuals predominantly through social media. It is not easy, however, to precisely define what constitutes a "sustainable lifestyle" or "sustainable behaviors", whether it be environmentally, socially, economically, or culturally. Nevertheless, sudden changes, or what we consider 'cracks,' to established processes, practices, and structures have the potential to break something formerly seen as complex and intangible down, to initiate change. These so-called cracks from existing patterns to new, more sustainable ways

of doing things, however small, can become the starting point of social learning processes which simultaneously lead to changed individual and collective action to a cultivation or normalization of new values and related behaviors and, thus, to transformation.

Social learning is a process that does not happen in a vacuum but, rather, is embedded in social, cultural, and institutional contexts [1]. Social learning happens at an individual level influenced by interests, values, power, beliefs, needs, and communication processes [2,3]. The theory of social learning helps to analyze and identify causes of certain behavior. The theory underpinning social learning as a process is predominantly a pedagogical one, meaning it is typically applied to approaches of teaching. As a concept, however, it is increasingly being applied to understand broader developmental processes, such as societal and socio-ecological transformation, which again is influenced by communication on various levels (interpersonal, organizational, and mediated) [4]. Social learning as a theoretical concept enables the explanation of more complex social behaviors, for example moral, sustainability-related behavior; it also acknowledges certain defining moments of change, such as crises or life-changing events, and makes it possible to identify their impact on future behavior.

The COVID-19 (SARS-CoV-2) pandemic of 2019–2022 (at the time of writing) represents the largest public health emergency since the Spanish flu of 1918. Even in 2018, a dire report by the Intergovernmental Panel on Climate Change (IPCC) warning of the existential threats of global warming exceeding 1.5 degrees and calling for rapid, far-reaching, and unprecedented changes in all aspects of society to avert the worst disasters of climate change did not have such impact. It was a pandemic that forced citizens throughout numerous countries to make dramatic changes to their everyday life in the space of only a few weeks.

In this study, we focused on the COVID-19 pandemic as a massive "crack" in how we perceived our normal, more so, how it changed our encounters and lifeworld, our existing patterns of behavior; one that forced individuals and organizations of all kinds to act differently and began a process of transformation. Such new habits ranged from wearing masks and getting vaccinated by individuals, to new policies and procedures such as work-from-home arrangements, social responsibility programs, and mental health support that became institutionalized across all types of workplaces. In 2020 and 2021, staying at home with limited opportunities for travel, entertainment, and consumption made many people's behaviors, lifestyles, and everyday practices more sustainable. During the first months of the COVID-19 pandemic, some studies found evidence of an established new consumer sentiment and related routines [5]. People returned to their local communities and developed greater solidarity, or a so-called "we culture," embracing phrases such as "we are all in this together" [6].

The question arises as to whether such COVID-19 altered behaviors and attitudes are temporary and rather rule-based, or whether (at least some of them) have become engrained through social learning and, thus more likely to be sustained as a new normal into the future? In other words, to what degree did the COVID-19 crisis and related restrictions initiate, stimulate, and stipulate social learning related to sustainability as a normative concept?

To answer this question, in this study, we aimed to, first, understand the perceptions of university students and staff of the ways in which the pandemic disrupted and created cracks in their "old normal" behaviors. Second, we sought to explore their visions for a "new normal" and what role sustainability as a moral principle might play in this process of change and redefinition of "normal." Third, we looked at whether new sustainable behaviors resulting from COVID-19 restrictions had become more intuitive, normalized acts that might persist, rather than merely rule-based obligations. This should help to better understand the pandemic as a global process of social learning of a more sustainable world.

We empirically drew on data obtained from our survey designed with quantitative and complementary qualitative elements (detailed in methodology) with which we approached two customized samples within a higher education institutional setting. These

were from Klagenfurt University in Austria (KLA) and The University of Queensland in Brisbane, Australia (BRI). Here, we found that survey respondents increasingly used sustainability as a principle to evaluate their own behavior during the COVID-19 restrictions (e.g., "*I was much more sustainable because I didn't travel*"). This points to a rule-based perception of sustainability which is predominantly the case from the Australian university sample. Much more, we can see that this is not necessarily related to the willingness or readiness to sustainably change and the commitment to keep these new more sustainable practices in the future (taking agency for the future, feeling responsible), again mainly from the BRI respondents. While in the Austrian University sample, sustainability seemed to be more "normalized" before and after the pandemic, it is more related to the gut feelings of better or worse behavior and related to an overarching narrative of sustainable development and social change. Social learning for sustainability (SLS) and the cultivation of sustainable practices have apparently further progressed in the Austrian university sample, which is for example supported by their significantly higher valuation of conversations with family, friends, and their influence on the individual (increasingly sustainable) behavior.

Therefore, we conclude this paper by providing insights into the advancement of social learning, remaining gaps, and an outlook for future research.

## 2. Theoretical Background

### *2.1. Sustainability as a Normative Principle and Moral Compass for Individual Behavior*

The term "sustainability" has been popularized for a broad range of contexts. In its broadest sense, sustainability means enduring into the future; something that can persist over time. From a social perspective, it is often looked at in terms of the present and future welfare of people, "the ability to meet the needs of the present without compromising the ability to meet the needs of the future" [7]. Then, there is economic sustainability—or sustainable development—being the ability to sustain practices of economic growth long term without adverse social, cultural, or environmental impacts (a challenge from a political, economic, psychological but also linguistic or philosophical perspective). Key is to minimize environmental impacts from economic production and consumption by decoupling economic development from environmental degradation (e.g., disturbance of natural systems, resource extraction, ecosystem degradation, pollution, waste generation, etc.). Sustainable development is a narrative used in subsystems such as politics, economics and the corporate world. It is portrayed as the "good story" and the answer to the "bad story" of climate change, ecological destruction, and biodiversity loss (ref). Sometimes, the narrative includes technological innovations that lead to higher efficiencies, though typically ignores the premise of Moore's Law that improved efficiency leads to cheaper production and thus, greater consumption. Norton argues, however, that it is ecological sustainability—the necessity to protect ecological systems—that is the absolute requisite of true sustainability,

> " . . . the moral obligation to act sustainably as an obligation to protect the natural processes that form the context of human life and culture, emphasizing those large biotic and abiotic systems essential to human life, health, and flourishing culture. Ecosystems, which are understood as dynamic, self-organizing systems humans have evolved within, must remain "healthy" if humans are to thrive. The ecological approach to sustainability therefore sets the protection of dynamic, creative systems in nature as its primary goal" (ibid) [8].

In the fields of social science, philosophy, and psychology, such moral obligation comes from a sense of sustainability that can be thought of as a moral compass, directing individual and organizational action; other times it can be used to label certain behaviors and decisions as better than others [9].

A growing body of research on sustainable consumption seeks to discover what motivates individuals to act more sustainably [10–12]. If individuals believe that human activities are the cause of almost all environmental problems (pollution, global warming, deforestation, loss of biodiversity etc.), then presumably sustainable behaviors would arise

not only from assigned rules but also from a sense of intuition, or "gut feeling", ethics and responsibility in or for deliberate actions focused to provide well-being of all living beings, including present and future generations. In the words of [13], "sustainable living is a lifestyle that attempts to reduce an individual's or society's use of the Earth's natural resources and personal resources". Accordingly, we relate true sustainable behavior to an individual's sense of responsibility [4], to an individual's processes of reflection and learning and perceptions of change [14], and to transformation processes [3].

However, psychology offers the understanding of two separate ways to understand more or less sustainable behaviors or lifestyles: (1) a rule-based, conscious, rational, and deliberate system or reasoning, and (2) an associative system, which is rather unconscious, sensory-driven, and impulsive [15,16]. The rule-based system makes decisions based on evidence and facts and is driven by compliance, influence, or social acceptance. The associative system, on the other hand, is much quicker and intuitive, following the abovementioned "gut feelings" [13]. Increasingly, institutions have placed a large focus on the development of sustainability frameworks to provide a guidepost or moral compass for individual and organizational action [9]. This indicates that sustainability is still more rule-based [17], something that comes in (but can also be blended out of) processes of rational reasoning. Sustainability frameworks are still used in the assessment and moral evaluation of mainly organizational and systemic action [18]. They provide a norm, principle and therefore guideline for how one should act, which direction one should think, and how one should reflect and communicate in order to distinguish the seemingly infinite possibilities of action in their 'preferentials' [19].

Accordingly, it seems that most sustainable behaviors, at least today, happen as a ruleset of what people think they must or should do, rather than what comes instinctively. This idea is supported by studies that looked at sustainable consumer practices and related challenges [20] and dissonances [9,10,21,22]. Other studies have characterized direct and indirect behaviors that contribute to a more sustainable lifestyle; some of these are more intrinsic and associative than rule-based or influenced [13,23,24]. Indirect intrinsic types of actions include civic (e.g., voting, petition signing), educational (e.g., looking up information, reading), financial (e.g., donating money, boycotting a company or product), legal (e.g., using legal systems to force compliance of environmental law), and persuasive (e.g., advocacy, letter writing). Direct intrinsic actions include making a one-time purchase (e.g., buying an Energy Star appliance or insulating a home), frequent purchasing (e.g., consistently buying locally produced goods), curtailing certain behaviors (e.g., driving less), substituting a new for an old behavior (e.g., biking instead of driving), or making a behavior more efficient (e.g., carpooling instead of driving alone).

### *2.2. Shifting from Rule-Based to Associative Sustainable Behavior through Social Learning*

To better understand the differences in learning that lead individuals to develop either a rule-based or an intrinsic and associative understanding of sustainability, we revisit the literature on social learning and combine with critical pedagogical approaches from sustainability and environmental communication. In broad terms, learning is the process where information, knowledge, rules, and norms get more and more established, internalized and then reproduced in individual behavior or used in individual decision making. In the social sciences, there are two paradigms to the concept of learning: the functionalist versus the critical constructivist approach.

Sustainability pedagogy or, more officially, Education for Sustainability (or Sustainable Development) [25–27], is mostly seen as a tool for creating learning that has the goal to create sustainable systems on individual, organizational, societal, and environmental levels [28]. In many disciplines, concepts for and applications of reaching transformation to a state of sustainability (both present and in the future) through education are developed and discussed. From a toolkit-oriented and, therefore, functionalist perspective, education for sustainability or sustainable development includes guidelines for teachers at all levels of education [29]. Here, educators (mainly in higher education, [30,31]), are conceptualized

as having an active role as well as being powerful communicators to influence students [32] to take authorship and design a sustainable society [33,34]. More transdisciplinary perspectives create the idea of students becoming change agents in and for the future [35,36]. These approaches, however, approach sustainability education through a largely pragmatic and competence/skills-oriented, "problem-solving" lens [37].

In contrast to the functionalist education for sustainability approach is the constructivist approach of social learning for sustainability. These are based on participatory learning methods—more disruptive, process-oriented, situational techniques based on knowledge exchange and from a constitutive and co-creational perspective [31,38]. A prominent model is offered by Burns [39] and colleagues where social learning for sustainability involves the creation of spaces where learners are motivated and inspired to think differently, ideas are expressed freely, where paradigms are challenged and values shifted, where creativity is promoted, and new knowledge is acquired leading to (sustainable) change—not only in their lives but also within their wider communities. Along this vein, Weder and Milstein [3] and O'Sullivan [40] describe transformative pedagogy principles as survival, critique, and creation. Survival involves contextualization and the development of moral character (moralization, [4]); here, paradigm shifts and a "normalization" of new values and principles (such as sustainability) and the building and recognition of community and interrelatedness happen; critique involves problematization, a meaningful critique with the potential to "crack" established (rather destructive, capitalistic) power regimes; existing practices and meaning is questioned, because human sociocultural issues are seen as systemically interrelated with ecological issues. Lastly, creation means taking authorship, activism, and the creation of conversations and bringing in sites of change [4].

These approaches and perspectives from sustainability and environmental pedagogy go hand in hand with innovative learning concepts and the idea of social learning [41–43]. The three-stage model of social learning includes acquisition, action, and motivation. In the first stage of acquisition, building of attention, awareness, and recognition is key. The second stage, action, is where a certain behavior or knowledge is not only remembered, but it is applied and reproduced, related to a certain problem. With a certain trigger—a "crack" or disruption—the new or at least a certain behavior (i.e., more sustainable practices) is stimulated and actioned. The final stage, motivation, is where motivations from the outside (a new bit of information, a stimulating conversation, or a key event, i.e., a documentary on animal cruelty) and from the inside (shifted or new values, i.e., being vegan) create a situation where a certain action seems to be reasonable.

Social learning for sustainability is the process that includes the survival and acquisition phase, the critique and action phase, as well as the creation and motivation phase, as outlined above. Social learning is defined as how people want to move forward, as "the collective action and reflection that occurs among different individuals and groups as they work to improve the management of human and environmental interrelations [44] (p. 4); it is the process of recognizing, evaluating, and potentially transcending social norms such as how we treat our resources and sustainability.

Universities and higher education institutions play a central role in cultivating social learning for sustainability, fostered through education, research and governance, and creating deep change with the idea of co-evolution as learning process between those institutions and their communities. Higher education institutions have the vision, the knowledge, and the power to lead transformation processes, and to introduce and induce the changes towards the new paradigm of sustainable development. Universities play a central role in shaping the knowledge, values, and actions of the world's future leaders [45]. Researchers advocate for sustainability education, including critical thinking and reflection [38,46].

Social learning for sustainability goes beyond an understanding that sustainability is the product of education or policy, code of behavior or regulation, rule, and standard. Social learning, reconceptualized as the threefold process outlined above, occurs where knowledge, values, and action competence can develop, but by the same time the learning goals are determined by the learners and the community itself; social learning builds

upon people's own knowledge, skills, and sometimes alternative ways of looking at the world [47], stimulated by "cracks" in existing patterns, here described as active critique and problematization, with new behavior as an outcome, which then again motivates others interrelated to follow the example. Social learning includes dissonances, created by introducing new or alternative views, values and information which stimulate learning, creativity and change, as well as the creation of spaces and environments that enable and facilitate social learning.

This can be better explained through the lens of the COVID-19 pandemic—a massive "crack" that changed our behaviors. Did this motivate people to be more sustainable and stick with these behaviors in the future on an associative rather than merely a rule-based level?

### *2.3. Cracks in the Normal—The Case of the COVID-19 Pandemic*

Not only is social learning for sustainability open-ended and transformative itself, but it is rooted in the life worlds of people and the encounters they have with each other [47]. The global COVID-19 pandemic presented a massive "crack" in how we perceived our normal, more so, it changed our encounters and life worlds and began a process of transformation. In this study, we sought to better understand behavioral changes imposed from initial rule-based decisions might lead to more associate and long-lasting change.

The COVID-19 (SARS-CoV-2) pandemic of 2019–2022 (at the time of writing) represents the largest public health emergency since the Spanish flu of 1918 (Robert et al., 2020). Even in 2018, a dire report by the Intergovernmental Panel on Climate Change (IPCC) warning of the existential threats of global warming exceeding 1.5 degrees and calling for rapid, far-reaching, and unprecedented changes in all aspects of society to avert the worst disasters of climate change did not have such impact. It was a pandemic that forced citizens throughout numerous countries to make dramatic changes to their everyday life in the space of only a few weeks. Conceptualizing COVID-19 as this "crack" roots in the complementarity of a philosophically driven sustainability communication perspective [4,9] and the pedagogical perspective from above. Moreover, this is in line with the social-psychological concept of critical life events and habit breaking events [48–50].

To this end, we postulate that COVID-19 and the related restrictions may have made sustainability more comprehensible and tangible from something previously ill-defined and complex [51]. Therefore, the overarching research question is the following: How (much) did COVID-19 and related restrictions initiate, stimulate, and stipulate social learning related to sustainability as a normative concept? Furthermore, we assume the pandemic made clearer that an individual is to be held responsible for the outcomes of her or his actions in an instance for which she or he is accountable (e.g., wearing masks, staying at home, getting vaccinated etc., see i.e., [52]). Our assumption is further that, during the pandemic, people developed more of an associative, "gut feeling" for sustainable behavior, developed a normative competence, which involves the individual ability to grasp and apply moral reasoning, and to govern one's behavior by the light of such reason [53]. We want to contribute to further theoretical development in the area of sustainability communication by asking the question: Do learning processes include the development of something that can be described as sustainability agency [4]? Sustainability agency is as something that is realized in individual interactions and communication; sustainability agency is always directed towards improving the lives of others [54,55]—in a socio-environmental dimension. Then, we would be able to further conceptualize social learning for sustainability. We test these hypotheses and answer the questions with the findings of a survey from two different social contexts (Anglo-American vs. European) within an institutional setting, further described in the next section.

## 3. Material and Methods

The present paper is based on an online survey conducted between June and September 2020 in Austria and Australia. This time period followed the first series of lockdowns in many countries around the globe in March and April 2020 and a stepwise easing of regulatory constraints in May, June, and July, which saw shops and restaurants reopening, while schools were in shift operation, universities were still operating distance learning, and a large quantity of people still working from home.

The survey was conceptualized with a case study approach, where two customized samples of people within a university setting were approached with the online questionnaire implemented through Qualtrics. For respondent gathering, a snowball system was used, approaching students and professional and academic staff dealing with sustainability at an Austrian (University of Klagenfurt) and Australian university setting (The University of Queensland). For the Austrian sample, authors forwarded the survey to their networks, and thus, commencing with contacts to the authors, and asked recipients to complete the survey, as well as to forward it to their own professional networks and colleagues. In Australia, the survey was made available through The University of Queensland's volunteer webpage and advertised on social media accounts of a number of schools and faculties. Both universities have established sustainability agendas both at the research and curricular level. In addition, while at both universities, sustainability is institutionalized in the strategic plan, the University of Klagenfurt has a specific sustainability program and is a thought leader in Central Europe and UQ has recently entered into the Sustainability Tracking Assessment and Rating System (STARS) program (https://stars.aashe.org (accessed on: 2 March 2022)).

A total of 225 Klagenfurt University, Austria (KLA) and 117 University of Queensland, Brisbane, Australia (BRI) responses were collected. Some respondents did not complete all questions; therefore, the sample size is reported for each question. Overwhelmingly, the majority of respondents were female and more so in BRI (82%) than KLA (71%). This gender phenomenon has been reported in several studies (Curtin et al. 2000). Gender-diverse respondents accounted for only 1% of respondents ($n$ = 8), all were from KLA. Because of this small sample size, gender differences are only compared between male and females; however, all three gender categories are reported for KLA and BRI comparisons as well as total observations.

To understand individual behavior, we designed a survey of quantitative and qualitative questions as previously used for sustainable consumption and sustainability communication research [9,18]. The questionnaire had mostly closed questions, using items and categories from previous and comparatively relevant studies. Some open questions were used to capture associations and interpretations of sustainability and issues and risks that people feel pressing. The survey was broadly divided into three sets of questions. The first set explored respondents' views on major issues, risks, and climate change as well as a self-assessment of the values they regarded as most important. The second set examined the influences of different actors and the media on people's views. The third set looked at the changes in behavior that have resulted from the COVID-19 pandemic and how respondents felt about such changes, including whether they thought their behavioral changes were likely to be transient or represent a long-term shift. The majority of quantitative questions produced Likert scaled data; some were ordinal/categorial. Quantitative data were analyzed using SPSS® Statistics (IMB®, Armonk, NY, USA), employing descriptive statistics and a $t$-test to compare samples. Open-ended qualitative responses were examined using NVivo.

Overall, the complement of descriptive, explorative, and quantitative insights of the questionnaires in two different socio-economic and socio-political contexts (Brisbane, Australia and Klagenfurt, Austria) offers insights into individual perspectives on sustainability, sustainable practices, and action and the way people perceive the COVID-19 pandemic and relate the restrictions to more (or potentially less) sustainable behavior.

## 4. Results and Discussion

Related to our research questions, we were mainly interested in learning processes and, thus, tried to identify the aspects of sustainable behavior that people want to "stay", where they developed the "gut feeling" of being more sustainable. We were interested in what people narrate as a "more sustainable future" and what the sources of information are and how (much) this led to sustainable behavior (more rule-based? more associative?). In the following, the data will be presented with a focus on the most important insights.

### *4.1. Views of the Most Important Issues Facing One's Country over the Next 20 Years*

Although respondents were aware that the survey was on the topics of sustainability and climate change, prior to asking questions related to them, respondents were first asked to state what they believed would be the most important issue facing their country in the next 20 years. Climate change and related themes were mentioned highest in both countries, although we acknowledge that the survey may have attracted individuals interested in the topic. Differences were found between samples, however, with only one third of BRI (32%) respondents stating climate as most urgent, compared to about half of those from KLA (47%). With climate change as a threat, respondents from KLA associated urgency (28%), warming (25%), and natural catastrophes (24%). After climate issues, BRI respondents were most concerned about economic issues (25%), particularly due to COVID-19 impacts, for example, "Recovering the economy from COVID-19," "Unemployment and economic collapse" being two BRI responses. Several BRI responses also mentioned Australia's international relations, particularly China, e.g., "Managing the relationship with China," "International reputation". In contrast, the second most mentioned issue from KLA respondents was related to other environmental issues (28%), closely followed by social issues (27%).

### *4.2. Views on Climate Change and Sustainability*

Virtually all respondents (>99%) agreed that the climate was probably changing or definitely changing, although more from KLA (90%) than BRI (83%) were confident of the latter (Figure 1A) Additionally, around 80% of both samples believed that climate change was caused mainly or entirely by human activity and around 90% believed that climate impacts would be rather or entirely negative (Figure 1B).

Despite a consensus to these issues, significant differences emerged between KLA and BRI. Overall, respondents from KLA believed they were more knowledgeable about climate change and regarded it as a more serious issue, despite thinking that it would affect their country less than respondents from BRI. While 55% of KLA respondents believed they knew a great deal or a lot about climate change, only 38% of BRI respondents thought the same ($p = 0.08$). Surprisingly, only 54% of BRI respondents were very worried or extremely worried about climate change compared to 80% from KLA, even though nearly twice as many respondents from BRI (38%) thought climate impacts to their country would be entirely negative compared to those from KLA (24%) (Figure 1C,D). Paradoxically, however, BRI respondents significantly felt more anxious when thinking about climate change ($p < 0.001$) than KLA respondents but felt similar levels of sadness and guilt and significantly less anger ($p = 0.024$, Figure 1E).

In both KLA and BRI samples, guilt was the least expressed emotion while anger and sadness were highest, suggesting that respondents feel that other actors (e.g., corporations or governments) are more responsible for the climate crisis than themselves. Even so, respondents felt a high level of personal responsibility to try to reduce climate change (>8.4/10) but were much less confident that large numbers of people would reduce their energy needs or that their government would take necessary steps to reduce climate change (Figure 1F).

These results challenge existing studies which are focused on eco-anxiety [56,57], which would need further considerations in environmental communication research and

social psychology in the future. The focus of the study at hand was predominantly on the perception of COVID-19 and the global pandemic related to climate change.

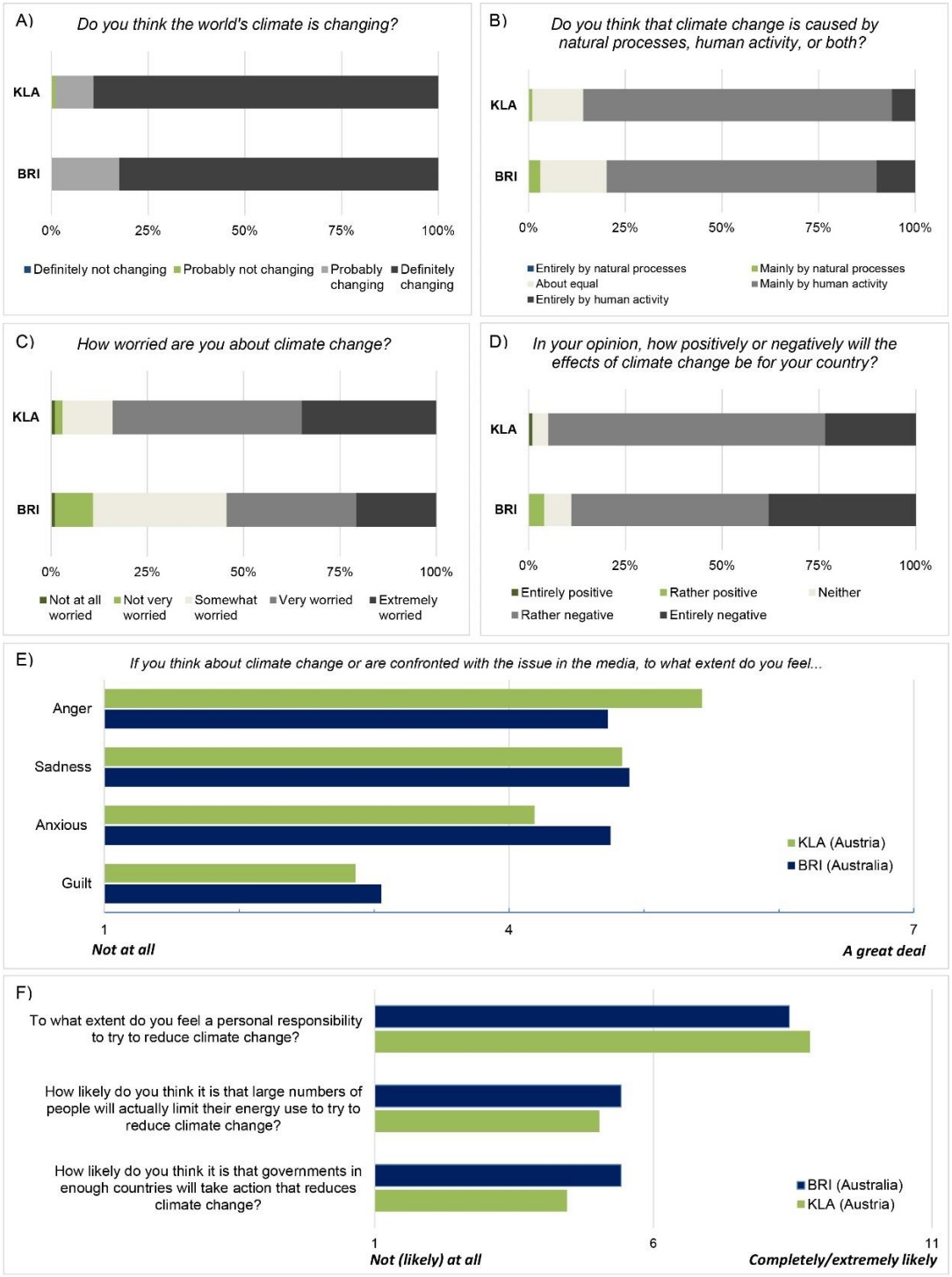


**Figure 1.** Comparative views on climate change between respondents from BRI, Australia ($n$ = 99) and KLA, Austria ($n$ = 196), when asked how one thinks as to, (**A**) whether the world's climate is changing, (**B**) whether it is caused by natural or human processes; (**C**) how worried one is to climate change; (**D**) whether climate impacts will be positive or negative; (**E**) the extent of emotions one feels toward climate; and (**F**) how responsible one feels to reduce climate change, and the likelihood that large numbers of people and/or governments will take action to reduce climate change. (**A**–**D**) are the % of respondents by response; (**E**,**F**) are the mean Likert scores.

### *4.3. Values and Beliefs*

To gauge what values people regarded as most important, respondents were asked to rate how well they identified with a person of various social, environmental, and economic principles. In general, the majority of values listed were very deemed important for both KLA and BRI samples (X > 5/7), with only four values that respondents did not identify with (Figure 2). Overall, altruistic values rated highly among respondents. For example, [It is important for this person . . . ] that everyone has the same chances and rights scored highest, and to help others, to care for those in a worse situation and also scored high. However, self-centered values, such as to be rich and to have authority, and to do things that he/she likes also scored fairly high, yet other self-centered traits such as to have control over others and their actions, to be influential, and to be happy were some of the lowest-ranking, though BRI respondents regarded these values more important than those from KLA. From an environmental perspective, respondents felt a high sense of values in terms of, respecting nature, and avoiding pollution, but did not relate this to protecting the environment which ranked least important in both samples. This suggests that respondents feel a personal responsibility to avoid environmental damage and their climate footprint, they feel less inclined to play an active role in preventing other actors doing so. This may be associated with a perceived ability to do something about climate change (e.g., ride bikes, use less energy, catch public transport), than to make an impact to the natural world.

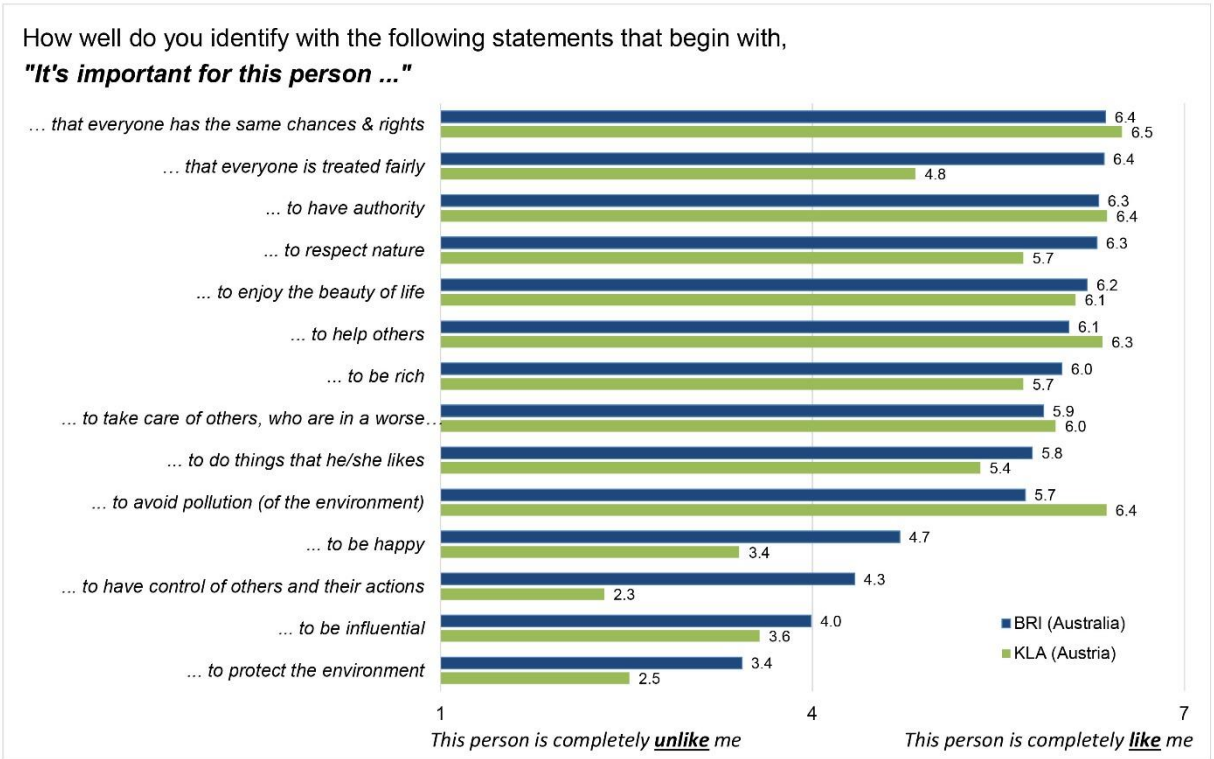


**Figure 2.** Values of the most importance to respondents, reported as the mean likert score on a scale of 1–7.

Finally, the most striking difference of climate change views between KLA and BRI samples was the acceptance toward renewable energy projects being situated within their own community (Figure 3). Whilst a majority of KLA respondents would agree to a solar PV, wind turbine, or small-scale hydro plant being built close by, an opposite trend occurred for BRI respondents, with most disapproving. This may be due geographic factors and norms, with many renewable projects in Australia being located in rural and remote areas, whereas in Austria and throughout Europe, space limitations have made local renewable energy facilities commonplace.

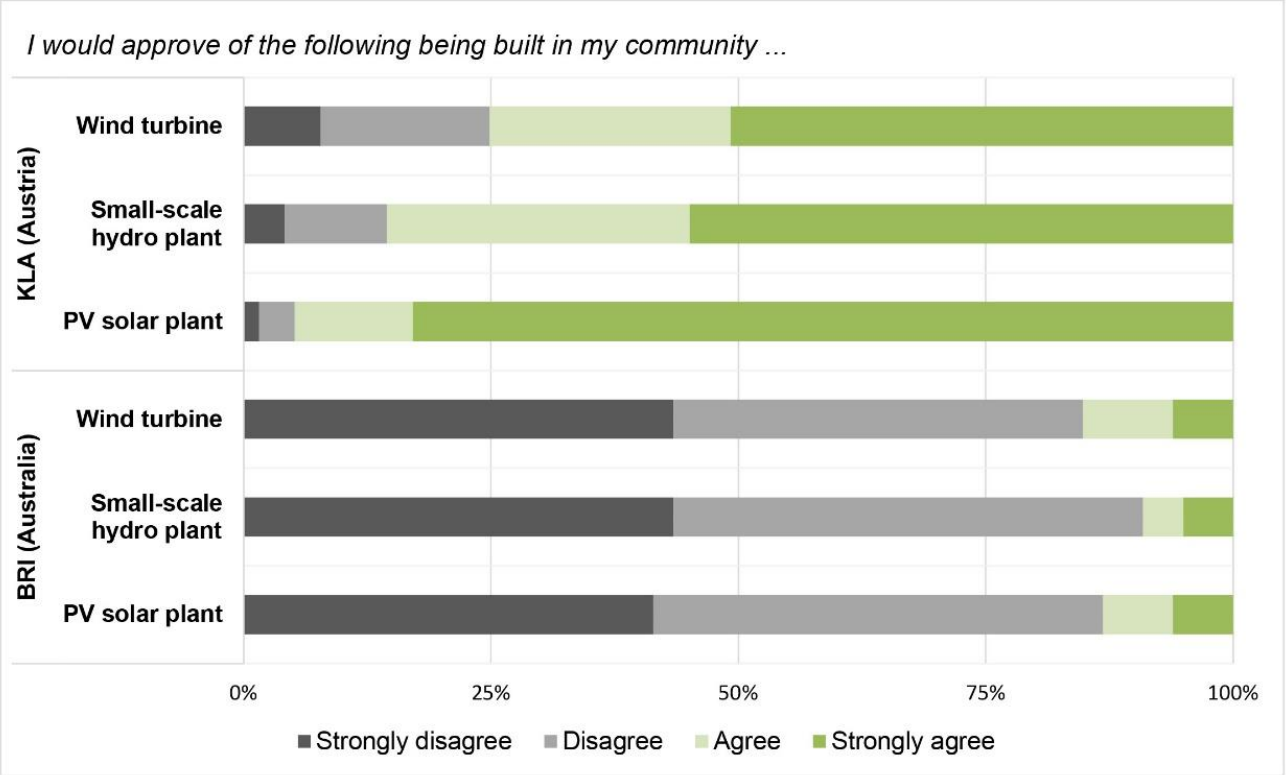


**Figure 3.** Respondents' approval of renewable energy facilities being located in their community (% respondents per sample) in KLA, Austria ($n$ = 196) and BRI, Australia ($n$ = 99) samples.

### *4.4. COVID-19 Related Lifestyle and Sustainability Changes*

In response to being asked how strongly respondents thought the COVID-19 pandemic will have influenced their life in five years' time, BRI respondents reported a significantly higher impact (X = 5.64) compared to those from KLA (X = 3.96, $p < 0.001$). When asked to rate their own "new daily routine" since lockdowns had been mandated after the start of the pandemic (Mar–Jun 2020), on a scale from 1 (negative) to 7 (positive), both samples reported a more positive perception, (X~5).

In the complementary open-ended questions, the time during the first months of COVID-19 when both countries were in lockdown was interpreted by all interviewees in both contexts as a "time to slow down", as time for gardening and less stress, predominantly because of less travelling and commuting and more time for the family. Apparently, most of the people were impacted quite a bit, more so in KLA than in BRI, but most respondents framed this as a rather positive. For those from KLA, this was mainly in terms of the positive behavioral changes to reduce climate change.

Next, the concrete impact of the pandemic in terms of becoming more sustainable and changes that the people wanted to maintain were explored. Related to the literature on sustainable lifestyles, we asked respondents how many changes they had made to various social practices due to COVID-19 related restrictions from before to during the pandemic; additionally, we asked for an outlook and, thus, for practices that the interviewees want to maintain. Following Manning (2009), we sought "direct" sustainable behaviors (as opposed to indirect behaviors such as civic action, financial donations, educational action, activism, campaigning, etc.) related to travel, diet, retail spending, waste and energy, and activities, including curtailing or ending a certain type of behavior, substituting a new for an old behavior (e.g., biking instead of driving), and making a behavior more efficient (e.g., carpooling instead of driving alone). The key results are as follows (Figure 4).

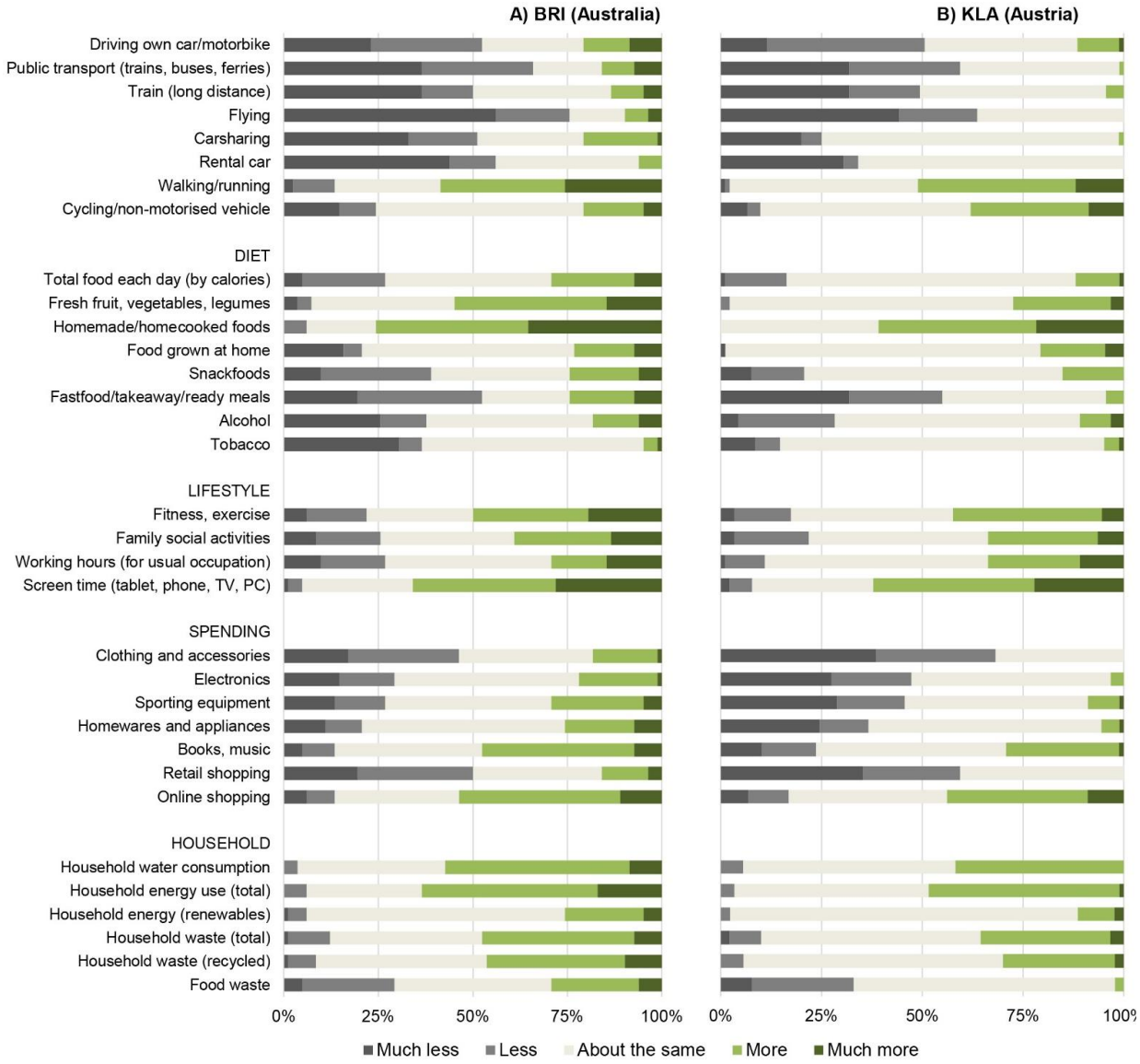


**Figure 4.** Dimensions of and changes in sustainable behavior during the first months of the COVID-19 pandemic in university students in (**A**) BRI, Australia (left panels, $n$ = 99) and (**B**) KLA, Austria (right panels, $n$ = 196). Values denote % respondents by response as indicated in legend.

In terms of travel and mobility, the global pandemic had a great impact on the different areas of consumption, mobility, time management, and in particular on food-choices and waste management. Concerning mobility, more than half of KLA (50%) and BRI (55%) respondents were driving their own car less or much less compared to before the pandemic. Moreover, car sharing, rental cars, public transport, and long-distance trains were used less; three quarters of the survey-participants were flying less or much less in both countries mainly due to restrictions, border closures, and lockdowns. As a substitute, more healthy and sustainable travel options increased, with 53% of KLA respondents cycling more and 60% from BRI increasing their running and walking habits.

Healthier food choices also emerged through lockdowns—with 32% from KLA and 53% from BRI reporting eating more fresh fruit and vegetables and homecooked foods. Eating food grown at home was another major change due to the pandemic, here at least for a third of the interviewees in KLA, and slightly less in BRI. More people also reported having less takeaway foods, alcohol, and tobacco than those that reported having more.

In terms of lifestyle choices, positive impacts were evident with respondents acknowledging spending more time with family for social activities and more time for fitness and exercise; however, the majority of respondents also reported more screen time.

Naturally, most respondents reduced retail shopping. However, this was offset by increasing numbers of respondents shopping online. Noticeably, respondents from KLA generally reduced consumption across all products, with the exception of books and music. Those in BRI, however, showed roughly equal numbers of respondents who purchased more and who purchased less for most categories, except more buying less clothing and accessories. Furthermore, while 40% of those from KLA said that they used online shopping much more than before COVID, in BRI, half of the interviewees shopped more online.

In the household, unsurprisingly, waste, energy, and water consumption increased with more time spent at home, though more respondents reported less food waste, more recycling, and increased use of renewable energy sources.

While these changes describe a more sustainable lifestyle, the question remains if people feel responsible for that or if they rather feel forced in this situation (rule-based). Following the explorative research questions, we were interested in how far the participants of the survey "framed" their increasingly sustainable behavior as sustainable (more associative or, as said, more rule-based or following the rules, but wanting to go back to the pre-COVID "normal"), and what kind of information or media channels in particular influenced this framing.

### *4.5. Influences on Sustainable Behavior*

From the respondents' perspective in KLA, NGOs (43%) communicate the most about sustainability, followed by media (32%) and science (18%); this is pretty similar in BRI (Figure 5). However, their understanding of sustainability comes from different information sources. While in KLA, mostly important friends and colleagues (for 33% of the interviewees (very) important), followed by editorial reporting in newspapers and journals, official websites of political institutions influence their understanding and associations of sustainable behavior, in the BRI sample, sustainable behavior is apparently more rule-based (Figure 5). The interviewees rank scientific literature and official websites (political institutions, NGOs) as mostly influential, and more so for women than for men; family and friends are less influential; this could be interpreted as a less intensive social learning process around sustainable behavior than in Europe.

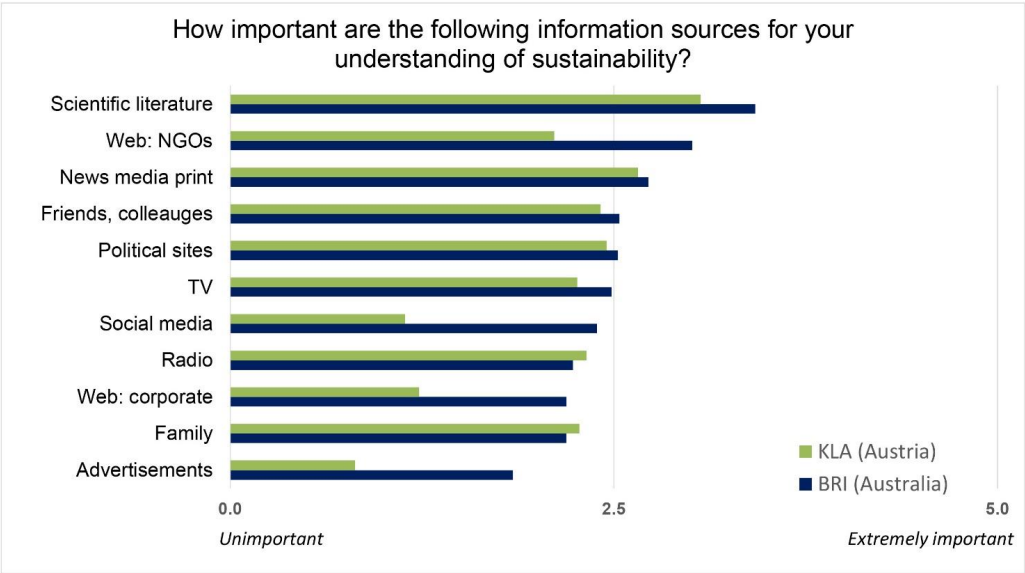


**Figure 5.** Mean Likert scores of level of influence (0–5) of different information and influential sources on understandings of sustainable behavior. (KLA, $n$ = 196; BRI, $n$ = 99).

This result concurs with findings from existing studies in the area of sustainable consumption [4,9,20]. Private conversations apparently play a key role in social learning processes, in the creation of sense and meaning and the confirmation of a certain behavior as more or less sustainable so that it then turns into being more associative than rule-based. As mentioned at the beginning of the paper, a "normalization" of behavior happens in a social context, social learning is therefore influenced by interpersonal communication mainly. The lack of individual conversations with family, friends and colleagues and the increased skepticism towards the media, as further elaborated in the next paragraph, indicate that social learning for sustainability is less progressed in Australia compared to Austria.

### *4.6. Responsibility, Gut Feelings, and the Need for Rules: Visions of the Post-COVID-Future*

COVID-19 has created a catalyst for change that has made people changed their behaviors, and some realize that it is not that bad/hard/more effort. However, now we have an opportunity to reinforce through both social learning and educational, rule-based approaches. Universities play a role in both of those samples.

Overall, respondents felt very motivated by the sustainability experiences they had during the pandemic-related restrictions—however, there was a difference between those from BRI and KLA that deserves consideration from a social learning perspective. Our results indicate that apparently, sustainable behavior is more "normalized" in KLA than in BRI. The quantitative findings are supported with the results from the open-ended questions, which offered explorative insights related to the question regarding the "status quo" of sustainable behavior—stimulated through COVID-19. While Australians reported feeling rather restricted in their scope of action, they strongly believed in solidarity. They say that the individual cannot do much and is rather defiant: "I live in a rural area, out in the country; how on earth can I not drive my car?" (I89). They allocate responsibility to the government, but, at the same time, they are rather skeptical that governments will take action that reduces climate change, see Figure 2.

This goes hand in hand with economic growth perceived as answer to the climate crisis. There are only few people in Austria that feel as "helpless" or skeptical regarding individual influence and potential to change: "I think that there is only so much that people can do individually and until we make corporations accountable for their part, we will not get enough progress towards mitigating the effects of climate change" (I221). This shows that apparently resignation is stronger in BRI, sustainable behavior and a more sustainable lifestyle are things that emerge if the rules change accordingly, but it is less something that is established, intrinsically motivated, or that works on an associative level.

Risk awareness and the feeling of individual responsibility appears stronger in KLA than in BRI. There, even if people felt more responsible after experiencing changes in lifestyle and consumption during the pandemic, they know that the challenges are too big to be tackled by individuals, the answers are less specific and more general; not many specific notions are made on how (much) individuals can take action in the future, whereas in KLA, respondents state the following: "I can change the world with what I do" (I202). Moreover, sustainable lifestyle is something less initiated from the outside by certain rule sets or a pandemic, but much more " . . . a matter of initiative, individual initiative" (I202). In addition, a KLA respondent stated, "Sustainability should never be stimulated by fear" (I88). Other participants described change as something that comes from within, which is stimulated from the insight of every individual; "my own confidence and consciousness of certain challenges and problems stimulates behavior change—and not regulations, rules or a governmental health strategy" (I202). They describe their role as "lighthouse" and inspiration for others; at the same time, the importance of conversations, communication on an interpersonal level and therefore reflections on individual behavior and action is necessary: "we need to reflect more on our individual actions—and this is what COVID forced us to do" (I6).

The results that BRI respondents' sustainable behaviors are more rule-based, while in KLA, sustainable lifestyle is more associative, intrinsic, and the idea that sustainability is

part of social learning processes in both compared contexts, will be further discussed in the following concluding remarks.

## 5. Conclusions

The study at hand shows that the COVID-19 pandemic made tertiary students more sustainable—at least in Austria and at least within the first months of the pandemic. With a combination of rather descriptive and rather explorative questions, we were able to identify differences between post-COVID-sustainability visions in Austria and Australia. This resonates with the theoretical concept we outlined at the beginning of the paper. We developed an idea of social sustainability learning, which is again related to sustainable lifestyles moving from a rule-based or forced-to set of behaviors and decisions to a more associative, intrinsic behaviors.

To summarize the key findings, we discovered that sustainability apparently works as a moral compass in these future visions, individual behavior (less consumption, less waste, less flying and commuting) was "moralized", it was morally evaluated as "doing good" and "being more sustainable" by most of the interviewees. However, this does not mean that everyone is able, capable, and willing to develop moral and therefore sustainability agency in the future. Only a smaller group (less than a third of the interviewees) is emotional and courageous and feels regulation-independent responsibility.

The pandemic had a great impact on all the interviewees—and it made sustainability more tangible, more comprehensible, and applicable—which we assumed. However, we assumed as well that COVID-19 has taught us to feel more responsible for our individual actions—which is not seen by many the participants of the survey. Further, only one third of the interviewees describes what we conceptualized as normative competence, which would be the "sustainability agency" that we are talking about.

We asked the question of how much sustainability is a social learning process developed during the pandemic, accompanied by many restrictions, forcing people to be more sustainable (no travelling, changes in food and consumption habits, etc.) and if people are willing to keep those changes. The answer is again only partially. There is a certain degree of resignation which might be even stronger after another year of the pandemic, which needs to be further explored in consecutive studies.

The conducted survey represents a snapshot of the opinions of people during a confined time period of the pandemic. In addition, the sample size is limited. The survey was distributed primarily over academic channels; therefore, the respondents are likely to have an academic background and had been already interested in issues related to sustainability and climate change. The validity of the survey is thus limited to providing insights in the opinions from this group. Thus, developing sustainable (consumption) practices and taking and holding "sustainability agency" for and in the future might still be rather part of an intellectual and economic elite [58].

However, with this paper, we took one important step to further deconstruct sustainability as "wicked problem", "blurry", and "elite", we offer individual interpretations of sustainability, related action strategies and certain behavior, and existing individual values that can be linked to the principle of sustainability. Furthermore, with this paper, we link sustainability to individual responsibility and "agency". We see COVID-19, related lockdowns, and changes in people's environments as a defining moment for more sustainable behavior (growing own food, less mobility and travel, etc.), and hopefully stimulate more research on how much responsibility people want to take for the future—in the post-COVID-future.

**Author Contributions:** Conceptualization, F.W., R.H., W.E. and J.Y.; methodology, R.S. and S.M.; software, F.W. and S.M.; formal analysis, S.M. and J.Y.; writing—original draft preparation, F.W. and J.Y.; writing—review and editing, F.W. and J.Y.; visualization, J.Y.; supervision, F.W. All authors have read and agreed to the published version of the manuscript.

**Funding:** This research received no external funding.

**Institutional Review Board Statement:** The study was conducted in accordance with the Declaration of Helsinki, and approved by the Institutional Review Board (or Ethics Committee) of The University of Queensland.

**Informed Consent Statement:** Informed consent was obtained from all subjects involved in the study.

**Data Availability Statement:** Data and interview questions can be requested from franzisca.weder@gmail.com.

**Conflicts of Interest:** The authors declare no conflict of interest.

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