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Why do people participate in grassroots sustainability initiatives? Different motives for different levels of involvement

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Grassroots sustainability initiatives experiment with alternative ways of consumption and are promising agents for fostering pro-environmental behavior change. However, sustainability initiatives depend on high levels of volunteering and collective action. With the present research we aimed to better understand why people participate in sustainability initiatives and whether doing so is an expression of a broader set of pro-environmental behaviors. We tested the predictive importance of various motivational factors derived from grassroots innovation research, the theory of planned behavior, and theories on collective action, using data from a cross-sectional factorial survey of participants in several sustainability initiatives in Switzerland ($N = 180$). Our results revealed different motivational patterns depending on the level of involvement. The intention to use services and offers of sustainability initiatives (low level of involvement) was best explained by favorable attitudes toward participation and perceived behavioral control, while the intention to volunteer for such initiatives (high level of involvement) was additionally based on strong social identity and a high belief in participative efficacy. Our results also revealed that participation in sustainability initiatives concurs with those other private-sphere pro-environmental behaviors that are most similar to the initiatives' activities. We conclude from our results that the divergence in motivational factors between users and volunteers might pose a challenge to the success of sustainability initiatives and therefore deserves greater attention in future research.

KEYWORDS

sustainable consumption, theory of planned behavior, social identity, collective action, pro-environmental behavior, ecological self-identity

1. Introduction

Respecting the carrying capacities of our ecosystems requires a comprehensive transformation of our prevailing consumption and productions systems (Bengtsson et al., 2018). Sustainability initiatives are promising change agents; they experiment with social innovations for sustainable consumption, namely with new production and consumption patterns that respect the planetary boundaries and strive for social justice (Seyfang and Smith, 2007; Seyfang, 2009; Cohen, 2015; Longhurst et al., 2016; Avelino et al., 2019).

In this article, we use the term “grassroots sustainability initiatives” to summarize a broad range of community-led initiatives whose primary aim is to help solve our societies’ sustainability problems and which arise on the initiative of committed individuals or groups of people experimenting with new patterns of consumption and production. Sustainability initiatives can be organized in loose, informal groups, in associations and cooperatives, or even in companies, which, however, put their contribution to society before their economic profits. Energy and sharing communities, repair cafés, transition town movements, and community supported agriculture (CSAs) are just a few examples of this phenomenon. Grassroots sustainability initiatives search for new solutions and forms of consumption that are more socially and environmentally compatible, and, in doing so, shape sustainable narratives and visions. Common to them all is a strong reliance on volunteer work and personal commitment, without which many of them would not survive.

Many grassroots sustainability initiatives have emerged in the last decades, and the rise of these movements has increasingly attracted the attention of sustainability social science and consumption research: [Frantzeskaki et al. \(2017\)](#) found more than a thousand related scientific publications from 2010 to 2016. Despite this growing interest, scientific focus on actions that take place at an individual level is recent and of a mainly conceptual and descriptive character (e.g., [Jaeger-Erben et al., 2015](#); [Grabs et al., 2016](#); [Maschkowski et al., 2017](#)). On the other hand, research on pro-environmental behavior offers reliable theories and models of individual behavior and consumption but has only rarely expanded these insights into concepts of collaborative consumption and collective action (e.g., [Fritsche et al., 2018](#); [Jans, 2021](#)). In our view, an integration of these existing research avenues—the typologies, frameworks, and case studies provided by social science research on grassroots sustainable consumption innovations, and the perspective of social and environmental psychology centered on individual pro-environmental behavior and collective action—has the potential to provide novel insights into how sustainability initiatives successfully emerge and become established.

The present study constitutes a step in this integrative direction. On the one hand, we aimed to better understand why people participate in sustainability initiatives, as a high degree of commitment and involvement is a key requirement for these initiatives’ survival. On the other hand, we were interested in gaining a better understanding of whether such engagement is an expression of a broader sustainable lifestyle. Potential spillover effects of engagement in sustainability initiatives to broader areas of everyday action is one way in which sustainability initiatives can contribute to natural resource conservation beyond their core activities. Our integrative approach enabled us to understand the factors explaining different degrees of participative involvement in

sustainability initiatives and the effects of such an involvement on consumption behavior. With our findings, we contribute to a better understanding of the potential of sustainability initiatives to foster natural resource conservation. By integrating the previously rather independent strands of research, our study also helps to integrate and advance the sustainability initiatives research field in a novel way.

2. Conceptual background

Various strands of research, largely independent to date, provide conceptual foundations for a better understanding of the motives for participation in sustainability initiatives. In this chapter, we outline three conceptual strands relevant to this study. First, we introduce research on grassroots movements and social innovation in sustainable consumption (section 2.1). Second, we derive insights from research in environmental psychology. This research can be divided into approaches that focus on explaining individual pro-environmental behavior, on the one hand (section 2.2), and approaches that explain collective environmental behavior, on the other (section 2.3). Often, a distinction is made between private-sphere and public sphere behavior ([Stern, 2000](#); [Ertz et al., 2016](#)). Private-sphere behavior includes purchases, use and disposal of goods and services in everyday private life. Corresponding behavioral decisions have a direct influence on the state and availability of natural resources. Public sphere behavior, on the other hand, includes engagement to change the contextual conditions of behavioral decision, for example by environmentalist activism or more passive public behavior such as voting. Thus, public sphere behavior contributes indirectly to the protection of natural resources by shaping more favorable contexts for private-sphere behavior decisions. While previous research on pro-environmental behavior (section 2.2) primarily takes a perspective on private-sphere pro-environmental behavior, the research strands on collective action (section 2.3) tend to focus on public sphere behavior.

2.1. A grassroots innovation research perspective on participation in sustainability initiatives

Participation is a key factor for the survival of sustainability initiatives. In contrast to market-oriented innovations, grassroots initiatives rely heavily on the voluntary engagement of their members to provide alternatives to prevailing consumption and production patterns ([Geels, 2019](#)). Many of these initiatives are not financially self-supporting, at least at the beginning, and are thus unable to compensate all of their members’ efforts on a financial basis. Possible financial income stems from the provision of services and products. However,

this requires a certain number of users who are willing to purchase these alternative offers instead of conventional (and thus usually more competitive) ones (Hossain, 2018). In other words, participation is central to initiatives in two respects: on the one hand, *via* the idealistic commitment of a core group of volunteers, and on the other hand, *via* the interest and commitment of a broader group of users.

Case studies on grassroots and social innovations in the field of sustainable consumption emphasize that participants in sustainability initiatives have diverging motives and expectations (e.g., Moraes et al., 2012; Dubois et al., 2014; Grabs et al., 2016; Martin and Upham, 2016; Schor, 2016; Maschkowski et al., 2017). This research characterizes co-founders and volunteers as strongly committed people who have transcendent values and are driven by a high problem awareness of how our current consumption habits are harming the environment. These are strong motivational forces for the considerable engagement and voluntary work required, in particular during the founding phase of an initiative. Through their engagement, people search for new, collective ways of overcoming the impotence of private-sphere behavior change by challenging the structural conditions that impede sustainable behavior, and by providing and exemplifying alternative consumption practices. By contrast, the motives of the customers, or users of the offers and services of sustainability initiatives, have been described as more diverse. Social connection and affiliation—as well as personal hedonistic reasons, such as experiences and enjoyment—appear to be just as important as societal and ecological values or problem awareness. Such diverging motives and expectations between the people involved may, however, challenge the success of initiatives (Dubois et al., 2014; Seyfang and Longhurst, 2016) or even provoke their failure (Fitzmaurice and Schor, 2018).

People have different reasons for taking part in sustainability initiatives. At the same time, the various initiatives also address different motivations. Jaeger-Erben et al. (2015, 2017) have offered a systematic comparison and characterization of sustainability initiatives from a social innovation perspective. They distinguish between five types of sustainability initiatives, each addressing different motivational aspects. The first type, so called “do-it-together” innovations, are mainly characterized by a high degree of communality and, among the members, strongly shared alternative values and a high degree of personal engagement and social identification with the initiatives. Examples of “do-it-together” innovations are urban gardening projects, ecovillages, or community supported agriculture (CSA). The second type, so called “do-it-yourself” innovations such as “repair cafés” or fablabs, focuses on providing new (or lost) competences and offering facilities for self-production or repairing of products and assets. The third type, “sharing communities” such as collaborative consumption platforms or time banks, are characterized as communally organized new social settings that facilitate swapping and sharing. The fourth

type, “utility-enhancing consumption,” such as car sharing or bike sharing, mainly provide new or facilitated “material settings” and options for action, which improve the fit of the utility value of a product and the needs of the customer. Finally, the fifth type, “strategic consumption” innovations such as “buycotts” or “carrot mobs,” are described as community creating, albeit more on an opportunity driven and short-term basis than the other innovation types.

Taken together, research on social and grassroots innovations suggests that different types of sustainability initiatives address different motivational factors. The initiatives may address personal or social benefits and values, offer social affiliation and communality, enhance competences, or provide and facilitate access to alternative material settings and thus foster perceived behavioral control. Moreover, the characteristics of an initiative that attract engaged volunteers may differ from those that attract users or customers.

2.2. A pro-environmental behavior research perspective on participation in sustainability initiatives

Sustainability initiatives provide new or facilitated ways of collaboratively consuming in ways that are less resource-intensive. From a behavior change perspective, participating in sustainability initiatives can therefore be conceptualized as a specific form of private-sphere pro-environmental behavior, which means that environmental psychological behavior-change theories may be informative in identifying motivational drivers. One of the most commonly used theories in this context is the theory of planned behavior (Ajzen, 1991; Fishbein and Ajzen, 2011). The theory of planned behavior describes three motivational factors that influence individual behavior intentions and reasoned behavior decisions, considering different aspects of expected costs and benefits: behavioral attitudes, subjective social norms, and perceived behavioral control. Originally proposed for a broad spectrum of (social) behaviors, the theory of planned behavior found frequent application in studies explaining pro-environmental behavior, as a stand-alone theory as well as combined with other predictors (for overviews, see, e.g., Bamberg and Möser, 2007; Klöckner, 2013).

Occasionally, the theory of planned behavior has been applied to the context of participation in sustainability initiatives. Roos and Hahn (2017b) for example explored predictors of participation in consumer and peer networks to borrow, rent, donate, swap, or buy used goods. They found that the intention to participate was mainly based on personal norms and attitudes and less on subjective social norms. Moreover, personal norms were related to strong altruistic and biospheric values, and positive attitudes resulted from

positive outcome expectations regarding cost savings, more efficient resource use, communality, as well as positive effects on the environment. Perceived behavioral control, the main factor explaining the implementation of the intention into behavior several weeks later, was affected by factors such as easy internet access, geographic proximity, and density of behavior opportunities. In another study, Barnes and Mattsson (2017) explored the effects of attitudes and subjective social norms on the intention to participate in car-sharing initiatives. They found that immediate positive outcome expectancies, such as expected usefulness and enjoyment, explained the intention to participate, while subjective social norms did not show any predictive power. Expected usefulness and enjoyment for their part depended on the level of perceived economic, social, and environmental benefits, as well the sense of belonging to the sharing community.

Thus, research on pro-environmental behavior suggests that considerations of personal costs and benefits, particularly in the form of attitudes and perceived behavioral control, may explain why people participate in specific sustainability initiatives.

2.3. A collective action research perspective on participation in sustainability initiatives

Making a sustainability initiative thrive often requires a much stronger commitment than simply using the offers and services provided. At least at the outset, many initiatives depend on the voluntary engagement of their members, who collectively complete the necessary work and organize meetings, events, etc. An understanding of participation in sustainability initiatives should thus go beyond individual behavior change theories. Promising additional insights are offered by research on activism, and collective action, which examines why people come together with like-minded others to collectively work toward broader societal transformation.

One of the roots of this research goes back to Klandermans (1997), who conceptualized three main motivational elements for getting involved in collective action. A first, instrumental, element involves the perception of a common problem, which manifests in a sense of injustice, a desire to change the adverse circumstances, and a conviction that change is possible (Klandermans, 2004). With regard to instrumental beliefs, Van Zomeren et al. (2008, 2013) highlighted the importance of participative efficacy beliefs. Participative efficacy encompasses the belief that one's own contribution to the collective will make a significant difference in terms of reaching the collective goals. The second motivational element is a process of collective identification with those suffering from the unjust situation and particularly with the group trying to change the disadvantageous circumstances (Klandermans, 2004). The third element, finally, is the need for expression or articulation of the injustice, that

is, going into action as an expression of one's own ideology or moral conviction (Klandermans, 2004; Van Stekelenburg et al., 2009; Van Zomeren et al., 2012).

This previous work has been further developed by Fritsche et al. (2018), who proposed a theoretical framework on pro-environmental collective action, with a main emphasis on the relevance of social identity. According to this framework, individuals engage in collective action if they feel a strong coherence between their own self-identity and the group's norms, values, and goals, and if they identify strongly with the other group members. A second important predictor of collective action, according to this framework, is the belief in collective efficacy, that is, a belief that the collective engagement will successfully change the predominant unfavorable circumstances.

A few studies provide empirical evidence on the importance of these factors regarding participation in sustainability initiatives. For example, Bamberg and colleagues (Rees and Bamberg, 2014; Bamberg et al., 2015) found that the intention to engage in local climate protection initiatives depends on the strength of social identification with the collective, on beliefs in participative efficacy, on perceived behavioral control, and on negative emotions such as guilt. In a study by Schmitt et al. (2019), social identity was the most important predictor of environmental activism. Moreover, social identity was also associated with different private-sphere pro-environmental behaviors, with ecological self-identity being the more important predictor. A meta-analysis by Schulte et al. (2020) supports the notion that social identity is a main driver of participation in pro-environmental collective action. Finally, Jans and colleagues (Sloot et al., 2018; Jans, 2021) found that social identity with bottom-up pro-environmental initiatives—as well as factors such as values, personal norms, or environmental self-identity—explained participation in the initiatives, as well as in implementing various energy-saving measures in the household.

Thus, insights from social psychological research on collective action suggest that group-based processes (social identification, collective efficacy beliefs, and participative efficacy beliefs) may complement the more personal cost-benefit calculations introduced in the previous section when it comes to explaining participation in sustainability initiatives. The relative importance of the personal vs. collective factors might, however, vary depending on the degree of commitment and involvement with the initiative.

3. Hypotheses development and conceptual framework

The aims of the present research were two-fold. First, we strove for a better understanding of the motivational structure that underlies participation in sustainability initiatives. Thus, we were interested in (a) what attributes of different sustainability initiatives influence a willingness to participate, (b)

what psychological motives may explain such a willingness to participate, and (c) whether there exist possible differences in motives for different involvements of participation.

Second, we wanted to learn more about the interrelations between participation in sustainability initiatives and other private-sphere pro-environmental behaviors. Thus, we wanted to find out whether a relationship exists between participation in sustainability initiatives and other pro-environmental behaviors in private daily life.

To approach our first aim—explaining participation—we referred to different potential motivations put forward by the three research threads introduced in the previous section: First, based on the typology of Jaeger-Erben et al. (2015, 2017), we assumed that participants in sustainability initiatives are attracted by these initiatives' attributes. To varying degrees, the initiatives may address different values and benefits, offer social affiliation and communality, enhance competences, or provide access to alternative material settings. Thus, "do-it-together" initiatives are particularly strong in addressing altruistic and biospheric values; "do-it-yourself" initiatives enhance competences; "sharing communities" provide opportunities for social affiliation and community; and "utility enhancing" initiatives facilitate access to new material settings. In our study, we sought empirical evidence of this typology.¹ Based on the typology, we hypothesized:

H1: Variation of four attributes of initiatives will explain behavioral intentions to participate; (a) social benefits (compared to personal benefits), (b) easy (compared to difficult) accessibility, (c) high (compared to low) encouragement of competences, and (d) high (compared to low) opportunities for communality enhance the intention to participate in sustainability initiatives.

Second, in accordance with the theory of planned behavior (and empirical evidence of Barnes and Mattsson, 2017; Roos and Hahn, 2017b), we assume that the intention to participate in sustainability initiatives depends on personal considerations, namely behavior attitudes, subjective social norms, and perceived behavioral control. In addition, according to research on collective action (and the empirical evidence of Van Zomeren et al., 2013; Rees and Bamberg, 2014; Bamberg et al., 2015; Sloot et al., 2018; Schmitt et al., 2019; Schulte et al., 2020; Jans, 2021) it also depends on collective motives and beliefs, namely pursuit of social identity and beliefs in collective and participative efficacy. Thus, we hypothesized:

H2: Intentions to participate in sustainability initiatives are related to the level of (a) attitudes, (b) subjective

social norm, (c) perceived behavioral control, (d) social identity, (e) collective efficacy beliefs, and (f) participative efficacy beliefs.

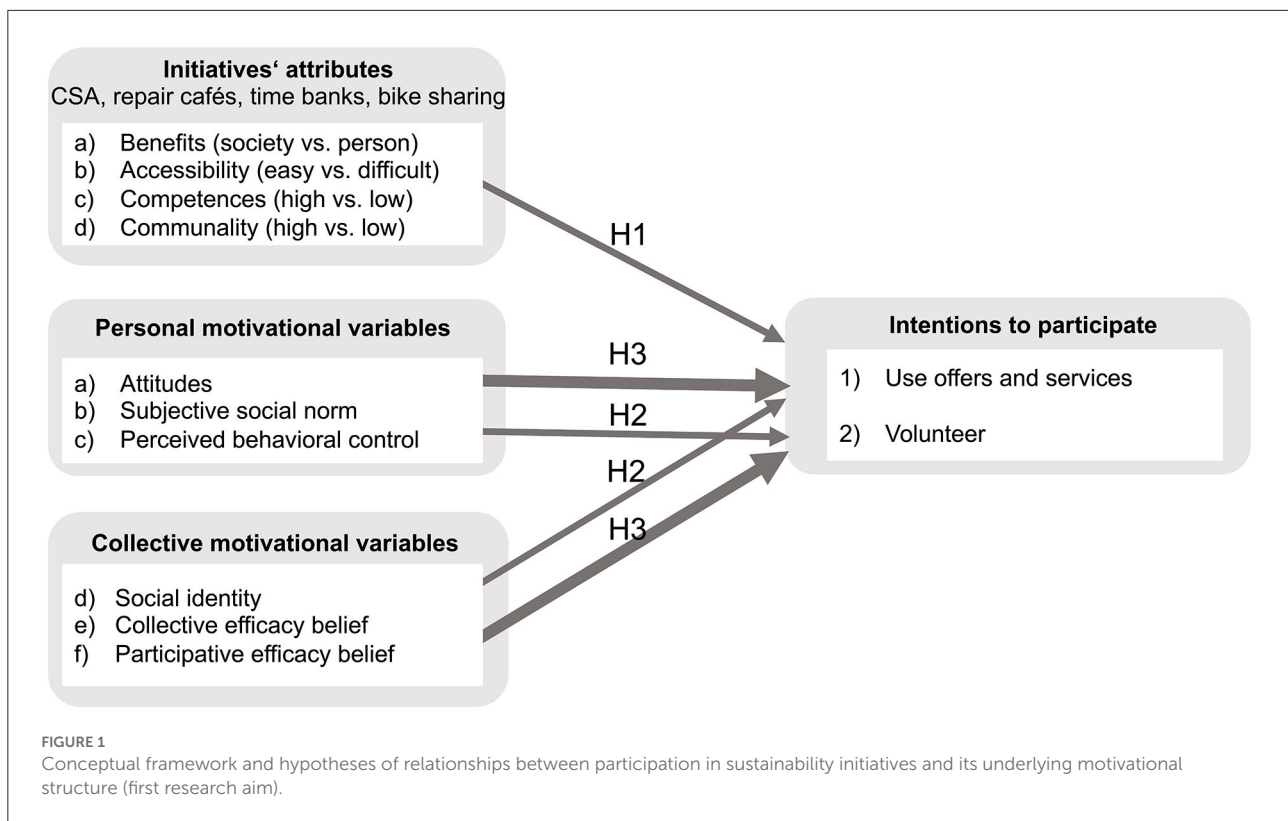
Finally, we assumed that the relative importance of personal and collective factors depends on the degree of involvement in the initiatives; engaged volunteers might more strongly emphasize collective motives than mere users/customers of the initiatives' offers and services. Thus, we assume that the motives of users (which correspond more to private-sphere behavior) differ from those of engaged volunteers (which is rather a public sphere behavior). In this sense, we hypothesized:

H3: The factors of (a) attitudes, (b) subjective social norm, and (c) perceived behavioral control are more strongly related to the intention to use the initiatives' offers and services, whereas (d) social identity, (e) collective efficacy beliefs, and (f) participative efficacy beliefs are in stronger relation with the intention to voluntarily engage in initiatives.

Figure 1 presents a visual overview of the postulated conceptual framework model, and the three hypotheses.

Our second aim was more explorative. We wanted to learn more about the interrelations between participation in sustainability initiatives and other private-sphere pro-environmental behaviors, as well as the common underlying motivational structure. We built on studies positing that readiness for collective action is accompanied by high problem awareness, pro-environmental self-identity, strong efforts to save natural resources, and high levels of private-sphere behavior (e.g., Sloot et al., 2018; Tagkaloglou and Kasser, 2018; Schmitt et al., 2019). Other studies have found that public sphere behavior predicts private-sphere behavior (Liobikiene and Poškus, 2019), and that both, private-sphere as well as public sphere behavior is predicted by supportive attitudes (Ertz et al., 2016). Moreover, it has been found that individuals who engage in sustainability initiatives have lower overall carbon footprints than persons who do not engage in such initiatives (Vita et al., 2020). Qualitative and quantitative research suggests that engagement in sustainability initiatives reinforces underlying norms and attitudes (e.g., Signori and Forno, 2016; Roos and Hahn, 2017a), and thus strengthens engagement in other related pro-environmental behaviors. This is in line with theories on social identity, which emphasize that in-group dynamics may reinforce social identity and collective norms and values of the group members (e.g., Fritsche et al., 2018). In our preliminary qualitative study among participants in sustainability initiatives and corresponding umbrella organizations, we found ambiguous indications (Moser et al., 2018). While some of our interviewees believed that participating in sustainability initiatives reinforces problem awareness and norms, thus positively spilling over into behaviors in other consumption areas, others suspected that some

¹ The fifth type of the typology, "strategic consumption," was not included in the present study, as the nature of participation in this type is much more short-term and spontaneous than for the other four types.



participants use their engagement in sustainability initiatives to excuse other, more environmentally harmful behaviors (such as air travel).

4. Methods

We tested our assumptions through a cross-sectional online survey of participants in various sustainability initiatives in the German-speaking part of Switzerland. The survey was part of a broader research project on Swiss civil-society initiatives and their contribution to sufficiency. Preceding work included a web search on existing initiatives in Switzerland, as well as qualitative interviews with founders, active members, and umbrella organizations (Moser et al., 2018). For the survey presented in this paper, we decided to focus on four different types of initiatives, based on the typology of Jaeger-Erben et al. (2015, 2017). The first are community supported agriculture (CSA) initiatives, which are examples of “do-it-together initiatives.” Second, we chose to focus on bike sharing initiatives, which represent “utility enhancing initiatives.” Third, we looked at repair cafés, which are typical examples of the “do-it-yourself” type. Fourth, we chose to assess time banks, which constitute special examples of “sharing communities” (see text footnote 1).

We intended to conduct the survey among individuals who have a connection to existing sustainability initiatives. In this sense, we did not aim to cover a representative

sample of the Swiss population. Despite a growing interest in and number of sustainability initiatives, they still have to be considered a rare niche phenomenon; only a minority of people have experienced participation. Accordingly, we feared that a representative sample of the Swiss population would not cover enough variance in the answers on current participation. Therefore, we advertised the survey in various networks representing different types of initiatives, such as the association of Swiss repair cafés, the platforms of time banks and complementary currencies, and various community supported agriculture and bike sharing initiatives in Switzerland. In doing so, we aimed to include in our sample individuals showing different degrees of participation in various types of initiatives. Data were gathered in spring 2018. A total of 439 people visited the landing page, and 181 individuals (completion rate of 41.5%) gave their informed consent to participation, after having been guaranteed anonymity and informed on data protection and procedures. Filling in the questionnaire took 26 min on average. One person made subsequent use of their right to have their answers deleted, so that our analysis builds on $N = 180$. To appreciate their participation, at the end of the questionnaire participants were given the option to vote for an initiative of their choice to receive a donation of CHF 500 (equivalent to €416 at an exchange rate of 0.8366 on May 1, 2018). One of the community supported agriculture initiatives obtained the most votes and thus the donation.

4.1. Participants

The mean age of the 180 participants who entered our data analysis was 50.22 years ($SD = 13.95$ years); 36.1% were male. The sample was very highly educated, with 63.2% of our participants having a bachelor's, master's, or doctoral degree. A total of 74.4% reported they were (self-)employed; most of the 25.6% of non-working participants said they were retired. The median annual gross salary ranged between CHF 39,000 and 52,000/year. The average household size was 2.77 persons; a majority of 52.0% lived in urban residential areas with more than 10,000 inhabitants.

4.2. Survey design

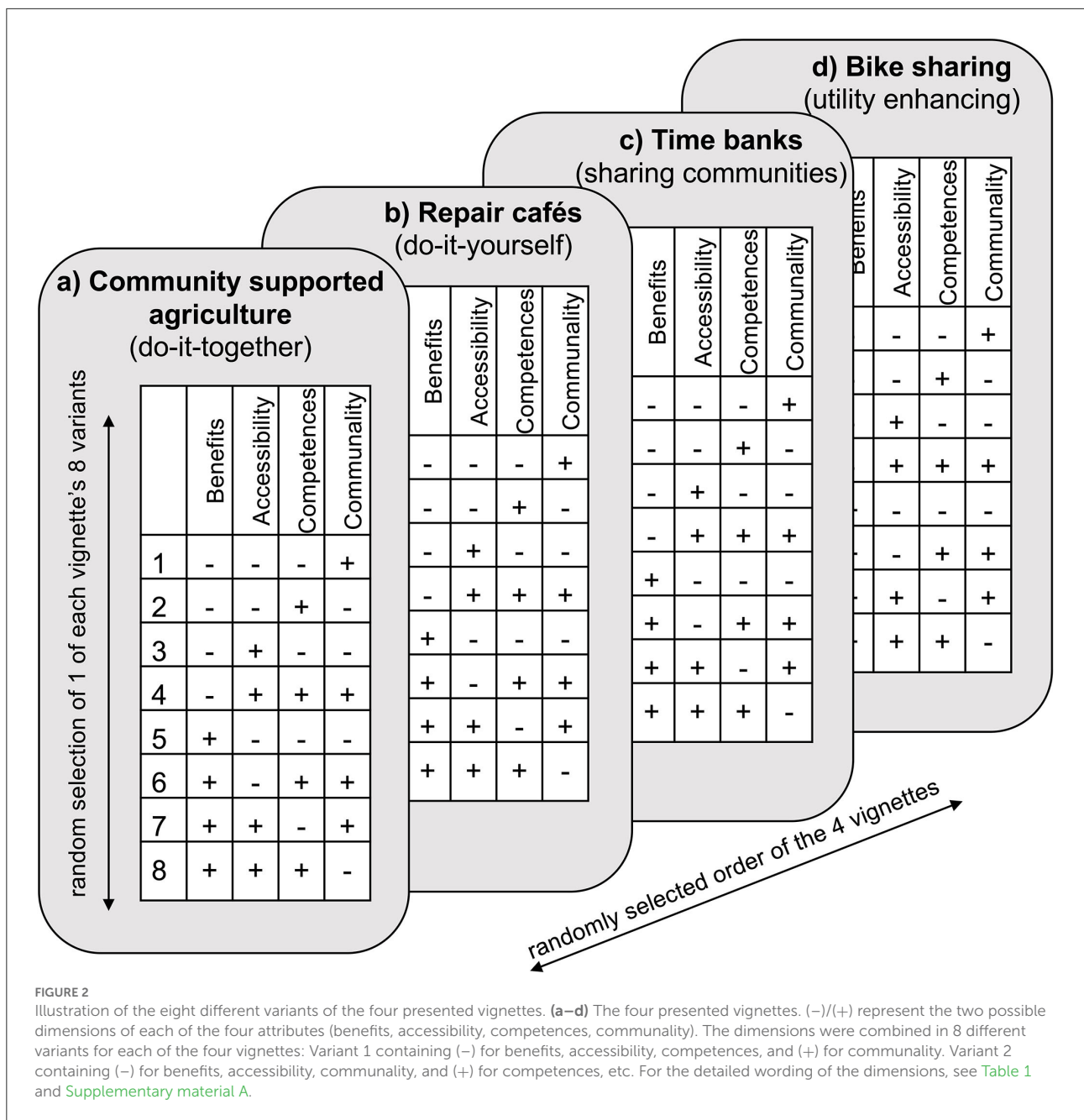
Our online questionnaire contained standardized items on sociodemographic characteristics, pro-environmental motivations, the frequency of different pro-environmental behaviors, and the degree of current participation in different types of sustainability initiatives. Moreover, we embedded four different “vignettes” which were presented to the participants in a randomized order. Each vignette described one of the four types of sustainability initiatives: (a) a description of a community supported agriculture (CSA) initiative, representing “do-it-together” initiatives; (b) a description of a repair café, representing “do-it-yourself” initiatives; (c) a description of a time bank, representing a “sharing community” innovation; and (d) a description of a bike sharing initiative, representing a “utility enhancing consumption” initiative (cp. [Figure 2](#)). For each vignette, four different attributes, each containing two dimensions, were systematically varied. These were: (a) addressing personal (–) vs. societal (+) values and benefits; (b) describing accessibility to offers and services as difficult (–) vs. easy (+); (c) describing support in enhancing one's own competences as low (–) vs. high (+); and (d) describing opportunities for social affiliation and communality as low (–) vs. high (+). For the detailed wording of the different variants of the four vignettes, see [Table 1](#) and [Supplementary material A](#). Our procedure followed a “fractional factorial survey design” ([Auspurg and Hinz, 2015](#)). Factorial surveys contain short descriptions of hypothetical situations with systematically varied attributes (“vignettes”), with participants' reactions assessed on different evaluative scales. Factorial surveys thus combine survey methods with experimental design. Our design was “fractional” because we did not include all of the 4^2 potential attribute combinations. Rather, we chose a balanced confounded D-efficient design (following suggestions of [Dülmer, 2016](#)). This means that we used eight variants for each vignette, with minimal intercorrelation of the dimensions

and interaction terms. Thus, each participant was presented with one (randomly chosen) of the eight potential variants for each of the four different vignettes. Each presentation was followed by an item set assessing participants' reactions (the items are described in more detail in the next section). This design allowed us to test for how the initiatives' systematically varied attributes affected participants' evaluations (Hypothesis 1). The vignettes' attributes were identified in preceding exploratory qualitative research ([Moser et al., 2018](#)) and passed technical pre-testing.

4.3. Measures

4.3.1. Appraisal of the different types of initiatives (vignettes)

To test our Hypotheses 1–3 related to our first aim—explaining the motivational structure that underlies participation in sustainability initiatives—the presentation of each vignette (i.e., each type of sustainability initiative) was followed by the same item set assessing participants' agreements with statements on psychological appraisals and participants' participation intentions. Agreement was assessed on an answer scale ranging from 1 = “Do not agree at all” to 5 = “Totally agree.” Participation intentions were assessed in two ways (based on own formulations): First, the *intention to use offers and services* of the initiative described was assessed through three items (“I would want to try such an offer/service,” “I can imagine using such an offer/service regularly in the future (e.g., taking out a subscription),” and “I would like to buy more products from such an offer in the future instead of in a supermarket.” The three items showed a high reliability, with Cronbach's α ranging between 0.87 and 0.95 for all four types of initiatives, and the mean scores were used for the subsequent analysis. Second, we assessed the intention to engage in or volunteer for such an initiative (single item, own formulation: “I could imagine actively volunteering for such an initiative”). The motivational items assessed as exploratory variables after the presentation of each vignette were inspired by the ones used by [Bamberg et al. \(2015\)](#) and in our qualitative pre-study ([Moser et al., 2018](#)): For each type of sustainability initiative, we assessed a single item for *attitude* (“This initiative would significantly enrich my everyday life”), *perceived behavioral control* (“This initiative would be easily accessible to me”), *subjective social norm* (“People who are important to me would appreciate my participation in such an initiative”), *social identity* (“Taking part in such an initiative would be an important part of my being”), *collective efficacy belief* (“Such an initiative would significantly contribute to a sustainable society”), and *participative efficacy belief* (“My active participation would make an important contribution toward the initiative reaching its goals”).



4.3.2. Current participation in sustainability initiatives

Current participation in different types of initiatives was assessed as explanatory variables with a view to explaining pro-environmental behavior. After being presented with the four vignettes, participants were asked to report on how often they participated in similar real-world initiatives. For each type of initiative, they were asked how often in the last 3 months they had (a) attended meetings and events, (b) actively

used offers and services, and (c) volunteered (e.g., working for an association, organizing events or work inputs, etc.) (three items for each of the four types of initiatives, based on own formulations). We used an answer scale ranging from 1 (=“never”) to 5 (=“every day”). The reliability of these three items was high, with Cronbach’s $\alpha = 0.85$ for community supported agriculture, 0.87 for time banks, 0.90 for repair cafés, and 0.80 for bike sharing. The mean scores were used for the subsequent analysis.

TABLE 1 Wording for community supported agriculture (CSA) vignette (for the wordings of the other three vignettes see [Supplementary material A](#)).

Introduction		
This association is committed to the principles of community supported agriculture. Members choose from a wide range of organically produced vegetables, fruits, dairy products, bread, and cereals, which are produced within the association's own farming and processing operations. Members pay a subscription fee, thus contributing to production costs. As "prosumers," they are partly responsible for production.		
Attributes/dimensions	(-)	(+)
Benefits (person vs. society)	The association provides its members with fresh, healthy, and organically produced products at an affordable price.	The association wants to contribute to the development of a sustainable and local food production system.
Accessibility (difficult vs. easy)	The service is membership-only. Subscriptions to the food box can be changed or canceled once a year. Food boxes are delivered once a week to a central "food point," located about 3 km from your home.	Users can sign up to a six-month trial subscription before becoming full members. The subscription to the food box can be changed or canceled four times a year. Food boxes are delivered once a week to your home.
Competences (low vs. high)	If they have questions, members have access to written instructions on subscription, the cultivation of vegetables or fruits, or preservation of food.	If they have questions, members have access to professional advice on subscription, cultivation of vegetables or fruits, or preservation of food. The association also organizes a broad program of professional courses and education on "Cultivating vegetables and fruit," "Urban gardening," "Treatment and preservation of food," etc.
Community (low vs. high)	A monthly newsletter informs members and followers about news and upcoming activities.	Members and followers are invited to actively engage in the association. Collaborative assignments (e.g., collaborative sowing, cultivation, or harvest) and social events (e.g., brunches and dinners, lectures, and films) offer opportunities for like-minded people to get together and exchange experiences.

4.3.3. Private-sphere pro-environmental behaviors

To achieve our second aim—testing the interrelations between participation in sustainability initiatives and other pro-environmental behaviors—we assessed a list of different private-sphere behaviors. These were assessed prior to the presentation of the vignettes, with answer scales ranging from 1 = "never" to 5 = "very often" for each item (own formulations, inspired by [Geiger et al., 2017](#); [Kaiser, 2020](#)). Items were merged by building mean scores for nutrition [three items: "I buy seasonal vegetables and fruits"; "I make sure that the food I buy is labeled (e.g., organic, MSC, fair trade)"; "I make sure that fruits and vegetables I buy are locally produced," Cronbach's $\alpha = 0.69$], collaborative consumption [six items: e.g., "I give away or swap things I don't use anymore"; "I purchase clothes and other things second-hand (e.g., bicycles, books, furniture, etc.)," Cronbach's $\alpha = 0.66$], and slow mobility (two items: "Shopping or recreational trips I do by public transport, e-bike, bicycle, or on foot"; "I commute to work by public transport, e-bike, bicycle, or on foot," Cronbach's $\alpha = 0.84$). Moreover, a single item was used for air travel ["I go by plane for longer journeys (500 km or more)"].

4.3.4. Ecological self-identity

Several pro-environmental motivational variables were assessed prior to the presentation of the vignettes. For the explanation of pro-environmental behavior presented in this paper we included "ecological self-identity" as a control variable. Ecological self-identity was assessed by means of three items

adapted (and translated to German) from [Van der Werff et al. \(2014\)](#): "Acting environmentally friendly is an important part of who I am"; "I am the type of person who acts environmentally friendly"; "I see myself as an environmentally friendly person," with answer scales ranging from 1 = "I totally disagree" to 5 = "I totally agree." The three items showed high internal reliability (Cronbach's $\alpha = 0.83$), so the mean score was used for further analysis.

5. Results

5.1. Predicting the intention to use offers and services of sustainability initiatives versus the intention to volunteer for initiatives

In a first step, we ran two series of multilevel regression analyses with random intercepts and maximum-likelihood estimations (as proposed for the analysis of factorial surveys by [Auspurg and Hinz, 2015](#)). The first series of models predicted the intention to use offers and services of sustainability initiatives across all initiative types, while the second predicted the intention to volunteer for sustainability initiatives. The baseline model (Model 0) included respondents' IDs as second-level in-between variable, as each participant had been successively questioned for each of the four types of initiatives in a randomized order. Model 1 additionally included the type of initiative described by the vignette [community supported agriculture (CSA), repair café, time bank, bike sharing]. Model 2

TABLE 2 Fit indices for supplementary multilevel linear regression models explaining participants' intentions.

	Chi-square	AIC	AICC	CAIC	BIC	Parameter	df	Δ Chi-square
Intention to use the initiatives' offers and services								
Model 0	2,249.05	2,255.05	2,255.09	2,271.80	2,268.80	3	–	–
Model 1	1,990.67	2,002.67	2,002.79	2,036.17	2,030.17	6	3	258.38***
Model 2	1,976.90	1,996.90	1,997.21	2,052.72	2,042.72	10	4	13.78***
Model 3	1,295.22	1,321.22	1,321.74	1,393.51	1,380.51	13	3	681.68***
Model 4	1,249.98	1,281.98	1,282.78	1,370.82	1,354.82	16	3	45.23***
Intention to volunteer								
Model 0	2,419.92	2,425.92	2,425.95	2,442.66	2,439.66	3	–	–
Model 1	2,242.81	2,254.81	2,254.93	2,288.29	2,282.29	6	3	177.11***
Model 2	2,237.40	2,257.40	2,257.71	2,313.19	2,303.19	10	4	5.41
Model 3	1,825.07	1,851.07	1,851.60	1,923.35	1,910.35	13	3	412.33***
Model 4	1,678.00	1,710.00	1,710.80	1,798.82	1,782.82	16	3	147.07***

*** $p < 0.001$.

additionally included the manipulated attributes on the vignettes (benefits, accessibility, competences, and communality). In Model 3 we added the three personal motivational factors (attitudes, perceived behavioral control, subjective social norm), and in Model 4 we additionally included the three collective motivational factors (social identity, collective efficacy belief, participative efficacy belief).

Model fit indices for both model series are shown in Table 2. All fit indices improved as the models became more inclusive. For the intention to use the initiatives' offers and services, the models' Chi-square values were significantly improved by adding the type of vignette (Model 1), the vignettes' attributes (Model 2) the predictors of the theory of planned behavior (Model 3), and those of the theories of collective action (Model 4). By contrast, for the intention to volunteer for the initiatives, the vignettes' attributes (Model 2) did not add to the model's fit. All in all, Model 4 achieved the lowest fit indices in both series and was thus the most promising model.

Table 3 details the model parameter estimates for Models 4. We found that the type of initiative presented on the vignettes significantly explained both the intention to use products and services and the intention to volunteer for initiatives. Both intentions were higher for CSA initiatives, repair cafés, and time banks than for bike sharing initiatives (post-hoc tests of an ANOVA revealed that intentions between CSA initiatives, repair cafés, and time banks do not differ significantly).

We found only limited confirmation of our Hypothesis 1, which assumed that the initiatives' attributes explain the level of participation intentions. We saw that easy accessibility increases the intention to use products and services ($b = -0.11^*$). However, no significant effects were revealed for the variation of benefits, competences, or communality. Moreover, we found

that the variation of these attributes is irrelevant for explaining the intention to volunteer (as was already suggested by the non-significant improvement of Model 2 compared to Model 1 in Table 2).

Hypothesis 2 was largely confirmed. As shown in Table 3, the intention to use products and services of an initiative depends on attitudes ($b = 0.43^{***}$), perceived behavioral control ($b = 0.19^{***}$), collective efficacy ($b = 0.10^{**}$), and social identity ($b = 0.10^{**}$). No significant effects were found for subjective social norm and participation efficiency beliefs. The intention to volunteer for an initiative showed a similar predictor pattern, with significant effects found for attitudes ($b = 0.16^{***}$), perceived behavioral control ($b = 0.19^{***}$), participative efficacy beliefs ($b = 0.23^{***}$), and social identity ($b = 0.36^{***}$). No significant effects were found for subjective social norm and collective efficiency.

In a second step, we examined our Hypothesis 3: the assumption that the psychological predictors from the theory of planned behavior are more important than those of collective action in explaining the intentions to use an initiative's products and services, and vice versa for doing voluntary work for the initiative. While the previous multilevel analysis provided a broad overview across the different initiative types, we subsequently calculated linear regressions on the intentions to participate in each initiative type separately, in two steps. Model 1 encompassed the three motivational predictors from the theory of planned behavior (attitude, perceived behavioral control, subjective social norm). Model 2 added the collective motivational factors (social identity, collective efficacy belief, participative efficacy belief). This gave us detailed insights into the relative importance of the different standardized regression weights of the relationships.

TABLE 3 Predicting the intention to use services and offers of, and to volunteer for, sustainability initiatives across different types of initiatives (multilevel regression with randomized intercepts).

	Intention to use offers and services			Intention to volunteer		
	<i>b</i>	<i>SE</i>	95% CI	<i>b</i>	<i>SE</i>	95% CI
Constant	0.41**	0.14	(0.14; 0.67)	0.14	0.19	(−0.23; 0.50)
Type of initiative						
CSA (vs. bike sharing)	0.49***	0.07	(0.36; 0.62)	0.41***	0.09	(0.23; 0.58)
Repair café (vs. bike sharing)	0.61***	0.06	(0.49; 0.74)	0.31***	0.09	(0.14; 0.47)
Time bank (vs. bike sharing)	0.53***	0.06	(0.40; 0.65)	0.48***	0.09	(0.31; 0.65)
Initiatives' attributes						
Benefits (society vs. person)	0.03	0.04	(−0.06; 0.11)	−0.04	0.06	(−0.16; 0.07)
Accessibility (difficult vs. easy)	−0.11*	0.04	(−0.20; −0.02)	−0.05	0.06	(−0.17; 0.07)
Competences (high vs. low)	0.00	0.04	(−0.09; 0.09)	−0.01	0.06	(−0.12; 0.11)
Communality (high vs. low)	0.06	0.04	(−0.02; 0.15)	−0.09	0.06	(−0.20; 0.03)
Personal motivational variables						
Attitudes	0.43***	0.03	(0.37; 0.49)	0.16***	0.04	(0.07; 0.24)
Perceived behavioral control	0.19***	0.03	(0.14; 0.25)	0.19***	0.04	(0.12; 0.27)
Subjective social norm	−0.01	0.03	(−0.07; 0.04)	−0.04	0.04	(−0.12; 0.03)
Collective motivational variables						
Participative efficacy belief	0.04	0.03	(−0.02; 0.10)	0.23***	0.04	(0.14; 0.31)
Collective efficacy belief	0.10**	0.03	(0.03; 0.16)	−0.02	0.05	(−0.11; 0.07)
Social identity	0.10**	0.03	(0.04; 0.17)	0.36***	0.04	(0.28; 0.45)

$N_{\text{vignettes}} = 720$; $N_{\text{respondents}} = 180$; *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$; CSA, community supported agriculture.

The upper part of [Table 4](#) reports the findings on the regression of the intentions to use offers and services of the different initiatives (for corresponding descriptive statistics and correlations, see [Supplementary material B](#)). For all four examples, attitudes and perceived behavioral control were the strongest predictors, and this remained the case even after adding the collective motivational predictors in Model 2 (with β s between 0.36*** and 0.53** for attitude and 0.16* and 0.28*** for perceived behavioral control in Models 2, and an unexpected negative relation between subjective social norm and CSA). The collective motivations improved the explained variances of Models 2 only marginally. Occasionally, however, collective motivational factors explained additional variance (social identity in the case of repair cafés and CSA, collective efficacy belief in the case of time banks). Overall, these results supported our assumption that personal cost–benefit

calculations (i.e., attitudes and perceived control) are more important than collective factors when it comes to understanding why people use offers and services of sustainability initiatives.

The lower part of [Table 4](#) shows the same models for the intentions to volunteer (for corresponding descriptive statistics and correlations, see [Supplementary material C](#)). These results turned out to be more diverse. Contrary to the intentions to use offers and services, and in line with our assumption, this time we found collective factors to be more important than cost–benefit considerations: Social identity was an important predictor for all four initiative types (with β s between 0.26** and 0.39***), followed by belief in participative efficacy, which significantly predicts three of the four different types (with β s between 0.21** and 0.31** for those three types but non significantly with 0.09 for bike sharing). Cost–benefit considerations were less important than

TABLE 4 Predicting the intention to participate in different sustainability initiatives (standardized regression coefficients).

Model	Bike sharing		Repair café		Time bank		CSA	
	1	2	1	2	1	2	1	2
Intention to use offers and services								
Attitude	0.59***	0.53***	0.52***	0.36***	0.55***	0.43***	0.63***	0.52***
Perceived behavioral control	0.27***	0.24***	0.21**	0.16*	0.31***	0.23***	0.32***	0.28***
Subjective social norm	0.02	-0.03	0.10	0.04	-0.02	-0.01	-0.09	-0.14*
Social identity		0.10		0.18*		0.17*		0.16*
Collective efficacy belief		0.06		0.07		0.16**		0.08
Participative efficacy belief		0.01		0.10		-0.03		0.02
R^2	0.61	0.62	0.50	0.53	0.64	0.66	0.67	0.69
ΔF		1.42		2.87*		4.99**		3.49*
Intention to volunteer								
Attitude	0.33***	0.14	0.53***	0.19*	0.43***	0.16	0.42***	0.21**
Perceived behavioral control	0.29***	0.21**	0.24***	0.13*	0.32***	0.19**	0.39***	0.29***
Subjective social norm	0.05	-0.05	-0.02	-0.14*	-0.02	-0.03	-0.02	-0.11
Social identity		0.33***		0.38***		0.39***		0.26**
Collective efficacy belief		0.04		-0.05		-0.11		0.02
Participative efficacy belief		0.09		0.31***		0.21**		0.22**
R^2	0.36	0.41	0.44	0.57	0.47	0.57	0.52	0.59
ΔF		7.29***		17.80***		13.10***		9.90***

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$; CSA, community supported agriculture, missing values were replaced by mean substitution.

in the preceding analysis, with regression weights (β s) for perceived behavioral control between 0.13* and 0.29** and attitudes showing significant associations only for repair cafés ($\beta_{\text{RepairCafé}} = 0.19^*$) and community supported agriculture ($\beta_{\text{CSA}} = 0.21^*$). Subjective social norms and collective efficacy beliefs showed no explanatory power. Based on these results, we suggest differentiating our assumption in Hypothesis 3: The collective motivational factors, namely social identity and participative efficiency, play a more important role in explaining the intention to volunteer than in explaining the intention to use offers and services. Personal cost-benefit considerations (namely attitudes and perceived behavioral control) are less important, but do not completely lose their explanatory power.

5.2. Associations between participation in sustainability initiatives and private-sphere pro-environmental behaviors

In a last step, we tested whether participants' current level of reported participation in one or several sustainability initiatives was associated with other, private-sphere pro-environmental behaviors, and whether such an association could be explained by a common, cross-behavioral motivation, namely high ecological self-identity. We ran linear regression models regressing the reported frequency of different pro-environmental behaviors on sociodemographic characteristics and ecological self-identity (Model 1), supplemented with the frequency of participation in sustainability initiatives (Model 2). Table 5 gives an overview of the standardized regression coefficients of these different models. The corresponding correlation matrix and information on other regression coefficients can be found in Supplementary material D.

Models 1 in Table 5 contain the sociodemographic control variables, as well as ecological self-identity. We found significant correlations between ecological self-identity and the assessed pro-environmental behaviors. People who describe themselves as persons who care for the environment eat more sustainably ($\beta = 0.28^{***}$), engage in more collaborative consumption ($\beta = 0.27^{***}$) and slow mobility ($\beta = 0.20^{**}$), and travel less by air ($\beta = -0.26^{***}$). The sociodemographic control variables in Models 1 only selectively explain variance in the pro-environmental behaviors. Women eat more sustainably ($\beta = 0.18^*$) and are more likely to engage in collaborative consumption ($\beta = 0.27^{***}$). Slow travel is more likely to be practiced by individuals in urban neighborhoods ($\beta = 0.30^{***}$). And individuals with higher incomes eat more sustainably ($\beta = 0.14^*$) but engage in less collaborative consumption ($\beta = -0.17^*$) and travel by air more often ($\beta = 0.18^*$).

TABLE 5 Associations between participation in different sustainability initiatives and individual pro-environmental behaviors (standardized regression coefficients).

Model	Nutrition		Collaborative consumption		Slow mobility		Air travel	
	1	2	1	2	1	2	1	2
Gender (0 = m, 1 = f)	0.18*	0.20**	0.27***	0.26***	-0.08	-0.09	0.04	0.01
Age	0.01	0.07	-0.13	-0.17*	-0.14*	-0.13	-0.01	-0.04
Residential area	0.03	0.02	-0.06	-0.02	0.30***	0.29***	0.04	0.03
Income	0.14*	0.13	-0.17*	-0.14*	0.07	0.07	0.18*	0.19*
Self-identity	0.28***	0.23**	0.27***	0.22**	0.20**	0.18*	-0.26***	-0.23**
Bike sharing		-0.09		0.09		0.02		0.02
Time bank		0.02		0.09		0.04		0.06
Repair café		0.03		0.24**		-0.03		-0.10
CSA		0.23**		0.05		0.06		-0.12
R ²	0.13	0.17	0.23	0.31	0.15	-0.09	0.11	0.13
ΔF	5.06***	2.16	10.34***	5.09**	6.01***	0.273	4.06**	1.11

***p < 0.001, **p < 0.01, *p < 0.05, missing values have been replaced by mean substitution. For other model coefficients see Supplementary material D. Increasing values represent increasing pro-environmental behavior for nutrition, collaborative consumption, and slow mobility, whereas the opposite is the case for air travel.

Models 2 in Table 5 show that current participation in sustainability initiatives can explain variance in pro-environmental behavior beyond the underlying ecological self-identity in two of the four tested behaviors. Individuals who are involved in CSA initiatives eat more sustainably ($\beta = 0.23^{**}$). Individuals who are involved in repair cafés are more likely to engage in collaborative consumption ($\beta = 0.24^{**}$). However, no additional variance can be explained for slow mobility and air travel.

6. Discussion

6.1. Discussion of the results

The first aim of this study was to gain a better understanding of why people participate in sustainability initiatives. We surveyed participants' intentions to participate in four different fictive examples of initiatives with varying attributes. Figure 3 visually summarizes our results for the intention to use offers and services of initiatives (left) and the intention to volunteer for initiatives (right). Contrary to our first hypothesis, we found only partial support for our assumption that differences in the motivation to participate in sustainability initiatives depend on the type and attributes of the initiative, as proposed by a typology of social innovations for sustainable consumption by Jaeger-Erben et al. (2015, 2017). Overall, we found that easy access to the offers and services of an initiative is key for the intention to use them. However, the other attributes assessed (benefits, competences, communality) were unimportant in explaining intentions, and even accessibility lost its explanatory role when looking at the intention to volunteer.

In line with our second hypothesis, we found confirmation that different motivational factors derived from the theory of planned behavior and theories on collective action related positively to the intention to participate in sustainability initiatives. Moreover, in line with our third hypothesis, the results suggest that motivational patterns differ depending on the level of involvement (a low level of involvement being the “use of offers and services” of initiatives—as a customer—and a higher level being “engagement in or voluntary work for” initiatives). The higher level was best predicted by a strong social identity—in our case, the degree of identification with the initiatives' goals and members—and the belief in high participative efficacy, which is the belief that one's own engagement will make a significant difference. By contrast, we found that less intensive involvement, in the form of the intention to use the services and offers of initiatives, was better predicted by cost–benefit considerations, that is, favorable attitudes and perceived behavioral control.

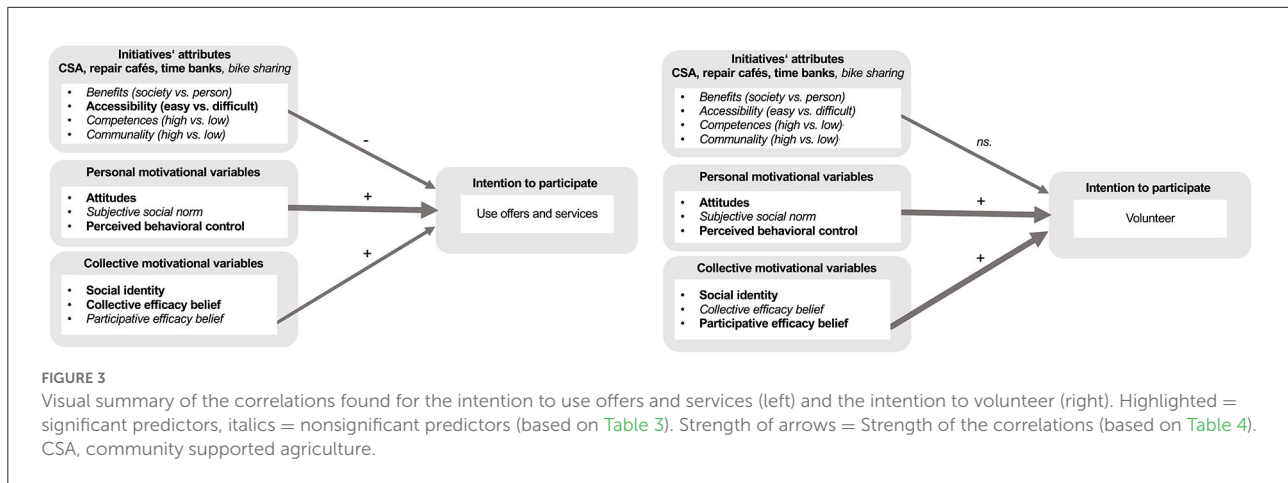
Our second aim was to learn more about whether participation in sustainability initiatives is associated with other, private-sphere pro-environmental behaviors. We found positive

relationships for those two out of the four assessed behaviors that were more closely linked to the examples of initiatives used, namely nutrition and collaborative consumption. This nourishes the assumption that engagement in sustainability initiatives might motivate related other private-sphere pro-environmental behaviors. Most interestingly, the relationships found even persisted when controlling for ecological self-identity.

6.2. Theoretical implications

Our study shows that a comprehensive framework of notions about grassroots innovations, individual behavior-change theories (such as the theory of planned behavior, Fishbein and Ajzen, 2011) and collective action theories (Van Zomeren et al., 2008, 2013; Fritzsche et al., 2018), as applied in the present research, expands our understanding of why people participate in sustainability initiatives. First, our results affirm the findings of the more descriptive approaches used in research on sustainable grassroots innovations (e.g., Moraes et al., 2012; Dubois et al., 2014; Grabs et al., 2016; Maschkowski et al., 2017). Second, our findings show that attributes of initiatives (Jaeger-Erben et al., 2015, 2017) namely an easy access to the offers and services of initiatives matter for participation in some cases. Third, and most interesting, our findings add empirical evidence to the theoretical frameworks from environmental psychological research on individual and collective action, i.e., private-sphere, and public sphere pro-environmental behavior. The diverging predictor patterns that we found between the different forms of involvement support the idea that it may be particularly promising to combine the theory of planned behavior and theories on collective action into a more comprehensive framework to enrich our understanding of differences in motives of different levels of involvement, as done in the present study.

On the one hand, our findings support arguments of previous studies that collective action as well as collaborative consumption are rooted in a combination of egoistic and normative motives (Bamberg et al., 2015; Martin and Upham, 2016; Roos and Hahn, 2017b). We found that less intensive involvement, in the form of the intention to use the services and offers of initiatives, was well predicted by cost–benefit considerations, that is, favorable attitudes and perceived behavioral control. These findings are in line with results of previous studies on collaborative consumption (Barnes and Mattsson, 2017; Roos and Hahn, 2017b), and they support the notion that pro-environmental behavior change theories, such as the theory of planned behavior, are suitable to inform our understanding of why people participate in sustainability initiatives. Also in line with this previous research is our finding that subjective social norms are less important than attitudes and perceived behavioral control. However, it is possible that



effects of social norms indirectly affect intentions *via* attitudes and perceived behavioral control, as suggested by more complex frameworks (e.g., Bamberg and Möser, 2007, though contrary to the model of Rees and Bamberg, 2014). Another explanation for the low predictive power of social norms is the possibility that the questions we asked in this respect were too general, and that we did not assess in-group norms, which might have been more informative (Fielding and Hornsey, 2016). Future research is needed to shed more light on the exact interplay of social norms with other motivational factors.

On the other hand, we found that high involvement, in the form of volunteering for sustainability initiatives is well predicted by feelings of social identity, and participative efficacy beliefs, as proposed by frameworks of Van Zomeren et al. (2008, 2013) or Fritsche et al. (2018). However, our results suggest that perceived participative efficacy is a stronger motivator for collective action than collective efficacy, that is, the general belief in the power of the collective. In addition to these findings our results suggest that volunteering is not solely based on collective motives: positive attitudes and strong perceived behavioral control in our study were also associated with the intention to volunteer, i.e., collective action theories should be extended by individual cost-benefit considerations.

Last but not least, our results extend our knowledge of possible cross-behavioral effects of participation in initiatives on behavior in private daily life. Ecological self-identity was found to be a cross-behavioral motivational variable in several previous studies (Whitmarsh and O'Neill, 2010; Van der Werff et al., 2013; Sloot et al., 2018; Schmitt et al., 2019). Moreover, it has been argued that engagement in a first behavior (e.g., participation in sustainability initiatives) strengthens one's own ecological identity and thus spills over into other pro-environmental behaviors (Lauren et al., 2019). In this context, our finding that participation explained other pro-environmental behaviors independently from ecological self-identity is of particular interest. We cannot derive causality interpretations from our

cross-sectional design, and the dynamics between participation in initiatives, spillover to other behavioral domains, and the precise role of self-identity absolutely require attention in the future, ideally within longitudinal research designs. What we can say is that our results support the notion that participation in sustainability initiatives might be an important part of a broader sustainable lifestyle (Vita et al., 2020). Moreover, we did not find any indication that participation in sustainability initiatives increases environmentally harmful behavior (e.g., air travel) by serving as an excuse (behavior rebound effects), as suspected by some of our interviewees in the qualitative pre-study.

6.3. Practical implications

Even considering the study's limitations we believe that our findings are of important practical relevance. First, our findings indicate that participation in sustainability initiatives may have beneficial effects on resource-efficient everyday consumption behavior. Although we believe that the exact dynamics deserve more attention in future research, this suggests that participation in sustainability initiatives may act as a door opener for broader behavioral changes, which enlarges the contribution of sustainability initiatives for natural resource conservation beyond their core services and offers. This can strengthen initiatives in their argumentation for support, for example vis-à-vis policymakers.

Second, the divergence found between the motivational pattern of users and volunteers of sustainability initiatives has implications for the operation of initiatives. Diverging motives have been described as a challenge for the success of initiatives in previous case studies (e.g., Moraes et al., 2012; Dubois et al., 2014; Fitzmaurice and Schor, 2018), and consistency in expectations and goals has been identified as one key success factor (Seyfang and Longhurst, 2016). Thus, for volunteers, awareness and consideration of user needs may be indispensable

if sustainability initiatives aim to scale up beyond the small circle of highly aware and engaged initiators to the broader public. Beneficial attitudes and easy accessibility turned out to be of particular importance. Exchange and user inclusion in the design of offers, and also the question of how accessibility can be increased, are therefore of central importance for sustainability initiatives. Easy accessibility is related to the choice of location. For an attractive choice of location, initiatives often depend on support from and collaboration with strong intermediaries and partners or local community authorities. On the other hand, initiatives depend on high levels of commitment from members and volunteers that are not monetarily compensated. Our results show that the conviction of being able to contribute to sustainable development together with like-minded people has a particularly motivating effect. It is therefore vital for initiatives to take these motives into account and to provide space for reflection on efficacy experiences. Perceived costs of volunteering might be a barrier, and finding ways of lowering or sharing the workload and of strengthening social identity and the beliefs in participative efficacy are promising strategies.

Only the long-term survival of sustainability initiatives and a broader uptake of the new consumption practices they promote will eventually bring beneficial changes in terms of a reduction in the overall consumption-based environmental pressure. Based on our findings, balancing the needs of users and volunteers seems to be key to success.

6.4. Limitations and future research avenues

We already mentioned the cross-sectional design of our study as one limitation preventing us from interpreting the causality of the relationships found. For deeper insights, for example on spillover effects from participating in sustainability initiatives, future research should adopt experimental and/or longitudinal research designs (Galizzi and Whitmarsh, 2019). Regarding the explanation of intentions to participate, we tried to counter this shortcoming of cross-sectional surveys by integrating a factorial survey design (Auspurg and Hinz, 2015). We thus investigated the effects of randomly presented attributes on the intentions to participate, which better justifies an interpretation of causal effects than a merely correlative design does. The disadvantage of this procedure was, however, that participants made judgments on fictitious situations and a potential “hypothetical bias” cannot be excluded (Beck et al., 2016). In other words, there is no guarantee that participants would make the same decisions in real life.

A second weakness of our study is that we could only examine behavioral intentions and self-reported behavior. For future studies, it would be desirable to include more broadly based behavior observation.

Third, our predictors, which we derived from the theories of planned behavior, and collective action, were collected with a single item for each of the four vignette examples presented. In the multilevel analysis, the single items were aggregated over the four examples for each predictor. Even though single-item constructs show good validity in some applications (e.g., Postmes et al., 2013; Jovanović and Lazić, 2020) multi-item measurements are generally preferable (Diamantopoulos et al., 2012). However, due to the repetition of the four vignette examples for each participant, we had to compromise with single items to avoid excessive questionnaire length and thus participant fatigue. For future research, however, we recommend an in-depth study with multi-item variables.

Forth, although the wording of the vignettes presented was informed by our qualitative pre-study, the attempt to formulate comparable attributes for all four initiative types might have had the shortcoming of ignoring type-specific features. Thus, to learn more about fostering or hindering characteristics of specific initiatives, future research should go into more detail.

Fifth, with our design, we also cannot rule out the possibility that the randomized sequence of vignettes influenced responses on the motivational factors. Future studies should take this weakness into account.

Finally, our results are derived from a rather small sample, albeit a diverse one in terms of socio-economic characteristics. The generalizability of our findings to other examples of initiatives and other geographic contexts must be questioned. It may be worth seeing whether the same effects are found in broader, more representative samples, with other examples of sustainability initiatives, and in other geographical contexts.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Ethics statement

Ethical review and approval was not required for the study on human participants in accordance with the local legislation and institutional requirements. The patients/participants provided their written informed consent to participate in this study.

Author contributions

SM contributed to the conceptualization, methodology, data gathering, data analysis, and writing of the original draft. CB contributed to the conceptualization and reviewing of the

drafted manuscript. All authors contributed to the article and approved the submitted version.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Supplementary material

The Supplementary Material for this article can be found online at: <https://www.frontiersin.org/articles/10.3389/frsus.2022.994881/full#supplementary-material>

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